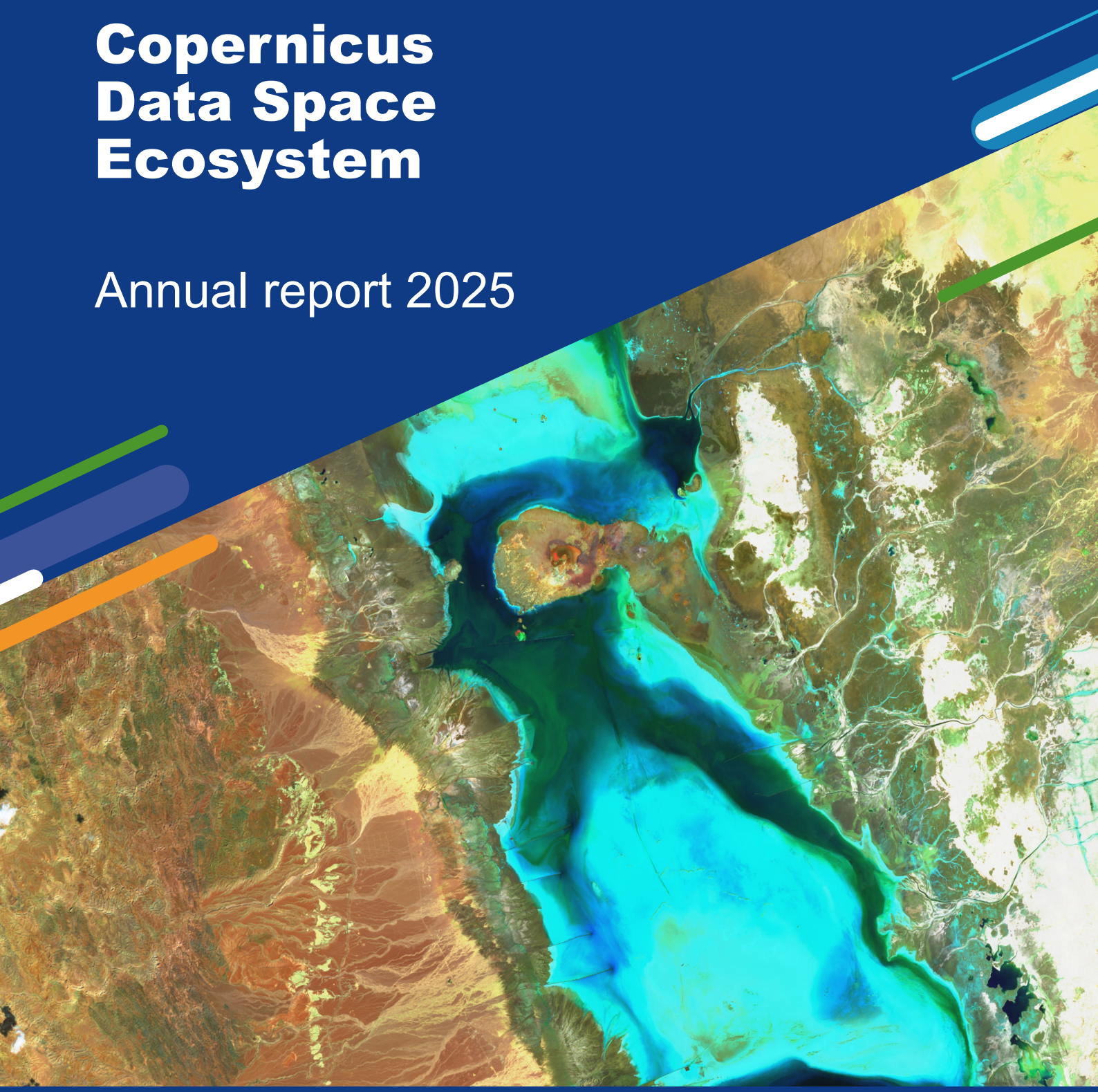
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Copernicus Data Space Ecosystem

Annual report 2025



PROGRAMME OF THE EUROPEAN UNION

Copernicus Europe's eyes on Earth

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FOREWORD



JOLYON MARTIN

ESA, Head of Systems Section in the Copernicus Data Management Division

It gives me great pleasure to introduce the 2025 Annual Report of the Copernicus Data Space Ecosystem. This year also marks a personal milestone: it is now ten years since I wrote the foreword to the very first Sentinels Data Access Annual Report for 2014-2015.

The headline figures in this year's report speak for themselves. The CDSE closed the year with more than 500,000 registered users, up from under 290,000 twelve months earlier, while the online archive grew to some 91 petabytes and more than 120 million Sentinel products. But, for me, the more interesting story of 2025 is the clear shift in how CDSE users are engaging with Earth Observation data.

For much of Copernicus' history, access has meant download — large volumes of imagery pulled from the archive to be processed elsewhere, at considerable cost in bandwidth, storage and time. That model served well, but it was never destined to scale indefinitely, and is increasingly less adapted to how much modern data-intensive analysis works. This year, CDSE demonstrated that the alternative is not merely theoretical. Requests to the streamlined services have nearly doubled, openEO's synchronous API has become the backbone of processing within the Copernicus Browser, and users increasingly discover, visualise and process data close to the archive itself, rather than moving it at all.

This matters well beyond mere technical elegance. Reducing unnecessary data movement supports Europe's digital sovereignty, lowers the barrier to entry for public authorities and research institutions who cannot maintain their own multi-petabyte infrastructure, and brings Copernicus data within reach of commercial users who need answers, not archives. It is, in a very real sense, the point of the exercise: data of enormous value only realises that value when it is usable.

None of this happened by accident. It reflects sustained effort across the year, making robust the multi-cloud architecture to keep Sentinel data publication latency low and availability high, focusing on catalogue modernisation, onboarding of new data offerings such as those from the Copernicus Land Monitoring Service, supporting wider uptake of Copernicus Contributing Missions data, to match an ever-growing demand for high quality EO data.

In the 2015 report, a modest 15,000 registered users and just over 3 petabytes of data disseminated already felt like a remarkable achievement. A decade on, the scale has grown by more than an order of magnitude, and the ambition with it — yet the underlying purpose has not changed: to put Europe's Earth Observation data to work, for everyone who needs it.

I am grateful to and congratulate the CDSE team, and the wider industries that underpin the Copernicus Space Component operations, for what has been achieved in 2025, and I look forward to building on this foundation in the year ahead.

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DOCUMENT OBJECTIVES

This document provides a comprehensive, high-level overview of the Copernicus Data Space Ecosystem's operations and performance throughout the year. It covers the delivery of Data Access Services for the Copernicus Sentinel Missions undertaken by ESA, the availability, utilisation, and performance of Copernicus data, and the status of services in production. Furthermore, it details key developments realised in 2025 and provides an appraisal of future priorities and system enhancements.

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REPORT SUMMARY

Condensed annual overview of the Copernicus Data Space Ecosystem in 2025

1. Executive Overview

In 2025, the Copernicus Data Space Ecosystem (CDSE) further consolidated its role as Europe's principal gateway for Earth observation data, services and operational analytics. The year marked a clear step beyond the initial build-up phase of the platform. CDSE was no longer defined mainly by large-scale download capacity; it increasingly operated as a service-driven environment where users could discover, visualise and process data, close to the archive itself, with particular focus on streamlined data access, i.e. enabling pixel-level, on-demand, streaming-like access to EO data via cloud-native services. This shift is strategically important because it reduces unnecessary data movement, supports the development of European digital sovereignty, and makes Copernicus Earth observation data more accessible to public authorities, research organisations, service providers, and commercial users worldwide.

The scale of growth remained impressive. By the end of 2025, CDSE had surpassed 500,000 registered users, up from 289,592 at the end of 2024, while maintaining more than 50,000 monthly active users. The platform's online offer also expanded from more than 78 PB and over 100 million Sentinel products in 2024 to around 91 PB and more than 120 million Sentinel products by the end of 2025. With the successful launch of the Sentinel-1C and Sentinel-2C missions, 2025 marked another important step in strengthening the Copernicus constellation and ensuring continuity of high-quality Earth observation data. In total, 31.47 million products, corresponding to 19.72 PB of data, were published during the year. This sustained high level of data availability reflects the continued operational strength of the programme, following the exceptionally intensive reprocessing campaigns carried out in 2024. These campaigns, primarily focused on Sentinel-2, extended into 2025 and were successfully completed September 2025, further enhancing the consistency and quality of the data archive.

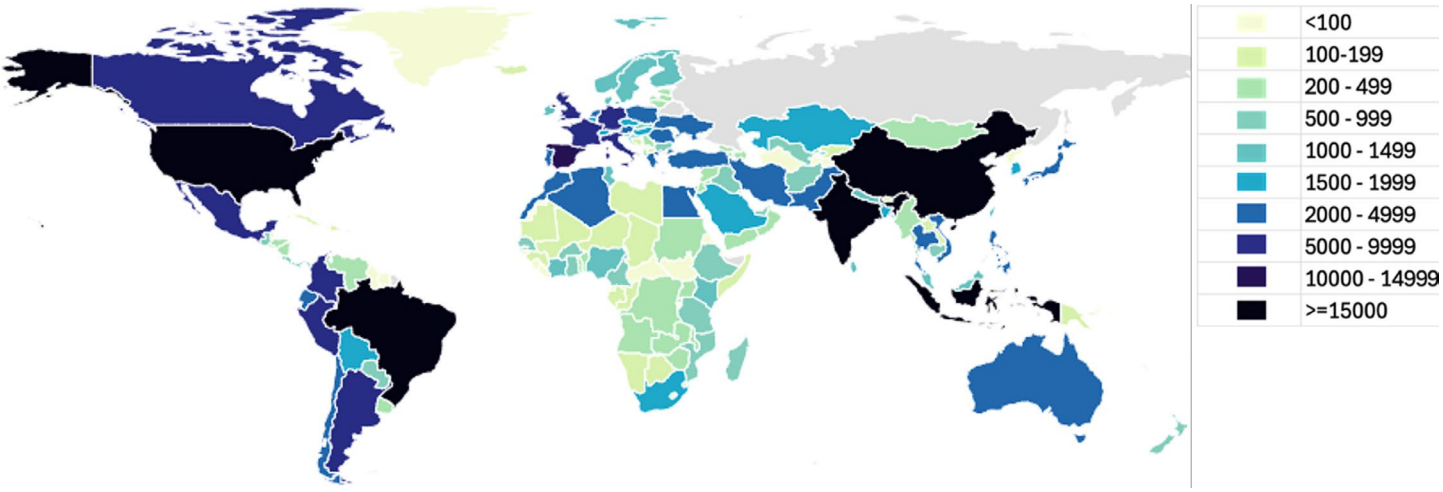


FIGURE 1: New CDSE users by country in 2025.

Another defining feature of 2025 was the stronger integration of services and collections that extend the platform beyond the core Sentinel archive. In 2024, CDSE had already laid critical groundwork for governance, onboarding and service expansion; in 2025 those plans became operational. The year brought major advances in catalogue modernisation, streamlined processing, Copernicus Land Monitoring Service (CLMS) onboarding, Copernicus Contributing Missions (CCM) rollout, and the continued development of user-facing tools such as Copernicus Browser, Sentinel Hub, openEO and Jupyter-based environments.

The European dimension remained central throughout the year. Although CDSE continued to grow globally, European users were the best represented demonstrated by visitor statistics, data access and download volumes. Within ESA and EU countries, the user base remained broad and stable, reflecting a mature operational community. At the same time, the platform supported wider international uptake, reinforcing Europe's role as a provider of open, high-value Earth observation data and infrastructure.

Operationally, 2025 marked a year of enhanced resilience and service maturity. Building on its multi-cloud architecture, service availability increased further, providing CDSE users with a consistently high-quality and stable experience. Publication latency (timeliness) remained low throughout the year, typically measured in hours rather than days, and stayed well within formal thresholds in the vast majority of cases. This level of performance is critical, as near-real-time and short-delay access to data underpins applications such as emergency response, environmental monitoring, and other operational services.

Overall, 2025 demonstrated that CDSE is not only expanding in terms of data volume and functionality, but is also consolidating its role as a reliable, production-grade environment for operational use.



Copernicus Sentinel data 2025: Autumn colours in the apennines in Italy

2. Comparing Key Numbers from 2024 and 2025

A direct comparison with the 2024 Annual Report highlights the areas in which the most significant growth has occurred across the two years. The strongest progress is observed in streamlined data access services, overall user adoption, total data delivered, direct download volumes, cloud-native service usage, and the operational scope and maturity of the ecosystem as summarised in following table.

Indicator	2024 baseline	2025 position	What changed
Registered CDSE users	289.592	More than 500,000	At least 210,000 additional users, meaning growth of roughly 73% or more after the 2024 surge.
Copernicus Browser reach	3.7 million visitors and 8.1 million views	5.9 million visitors and 22 million views	Visibility broadened sharply and engagement deepened well beyond the 2024 baseline.
Online archive	More than 78 PB and over 100 million Sentinel products	Around 91 PB and more than 120 million Sentinel products	The accessible archive became materially larger in both storage volume and catalogue size.
Sentinel products published during the year	34.19 million products, 20.67 PB	31.47 million products, 19.72 PB	Slightly lower than 2024, reflecting large reprocessing campaigns for Sentinel 2 mainly performed in 2024.
Total EO data delivered across all channels	More than 200 PB	More than 242 PB	At least 40 PB more data were delivered than in 2024.
Direct Sentinel-only downloads	97,315 TB and 10.94 billion download events	129,954 TB and 14.71 billion download events	The system added 32.6 PB and 3.77 billion additional download events year on year.
Sentinel Hub	More than 1.3 billion requests and almost 9 billion processing units	More than 2.5 billion requests and 10 billion processing units	Requests almost doubled, confirming much deeper uptake of streamlined access.
openEO	More than 7.3 million requests and over 2,100 unique users	Average 52,000 batch jobs per month; average 1.6 million credits consumed per month; synchronous openEO powers more than 75% of Browser processing volume	The service moved from early growth in 2024 to much deeper operational in 2025.
Service and data onboarding	Groundwork for governance and onboarding for CDSE Service Registry, CCM access reached about 37,000 eligible users	CLMS launched on CDSE, Redesign of Ecosystem Services Registry onboarding multiple services, CCM eligibility rose to 81,765 users	CLMS was launched on CDSE alongside a redesigned Ecosystem Services Registry that enabled the onboarding of multiple services, while CCM take up by eligible users was significantly expanded.

TABLE 1: Comparison of Key Figures: 2024 vs. 2025

3. Copernicus Context and the Role of CDSE

Copernicus is the Earth observation component of the European Union's Space Programme, providing accurate, timely and freely accessible information to support environmental management, climate change mitigation and adaptation, and civil security. Within this framework, the CDSE functions as the operational entry point for user access to the Copernicus Space Component operated by ESA.

By the end of 2025, this included the Sentinel-1, Sentinel-2, Sentinel-3 and Sentinel-5P missions, together with contributing missions and service-derived datasets that broaden the thematic and spatial coverage of the ecosystem.

The platform's value lies not only in its large archive, but in its integration. CDSE unifies multiple sensor types and complementary tools within a single environment, enabling radar, optical, ocean, land, and atmospheric data to be discovered, explored, and processed through shared catalogues, APIs, and cloud-based workspaces. This integrated approach shortens the path from observation to decision-making and reduces barriers for users seeking actionable results rather than raw data alone.

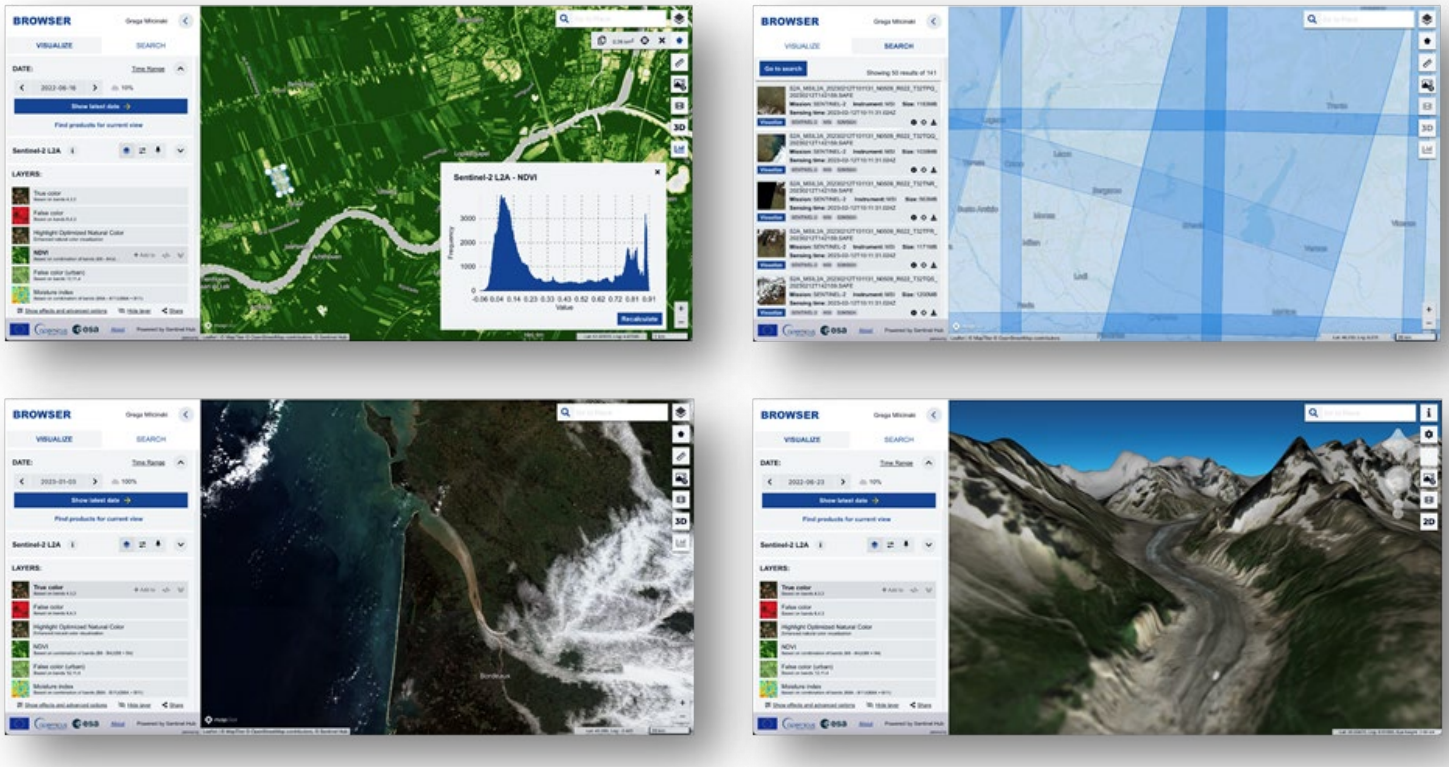


FIGURE 2: Copernicus Browser data exploration

By 2025, the ecosystem had clearly moved beyond the historical model of a pure dissemination service. The report repeatedly shows that significant value now comes from the combination of catalogue services, visualisation tools, standardised APIs, server-side processing and federated cloud environments. In practical terms, this means that the same user may inspect data in Copernicus Browser, launch scalable processing through openEO or Sentinel Hub, and combine Copernicus products with external or private datasets in a single workflow. That is a qualitatively different operating model from the earlier generation of Sentinel data hubs. CDSE has made strong progress in developing streamlined openEO access and in providing users with Jupyter Lab environments that support rapid prototyping and experimental workflows with Copernicus data. In line with other cloud-based geospatial platforms such as Google Earth Engine, continued enhancements are planned to further strengthen usability, expand functionality, and deliver an increasingly seamless and powerful experience for Earth observation analysis in the cloud.

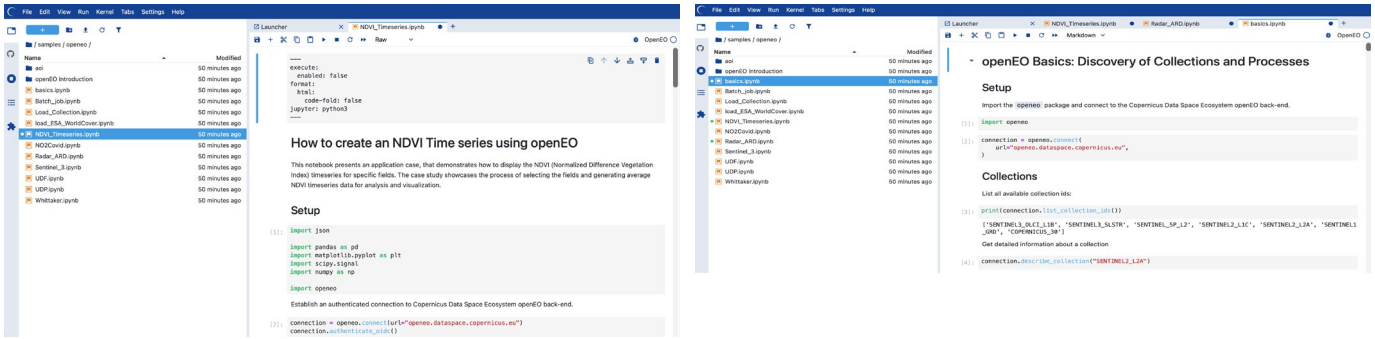


FIGURE 3: openEO and Jupyter Lab at CDSE

4. Main Evolution Milestones in 2025

Data ingestion and new missions

One of the most consequential developments in 2025 was the operational release of Sentinel-1C data. Dissemination began on 26th of March 2025, and from 19th of May 2025 the products were fully calibrated and compliant with mission quality specifications. This was a major step, restoring the Sentinel-1 mission to its 6-day revisit objective, which had been affected since the loss of Sentinel-1B. For users, the practical significance was better temporal coverage, renewed confidence in operational radar monitoring, and access to high-quality SAR products suitable for demanding applications including interferometric analysis.

The Sentinel-1 portfolio was strengthened further by additional auxiliary data for near-real-time geolocation, the release of ETAD processor version 3.0, and a Sentinel-1C ETAD reprocessing campaign published in September 2025. In parallel, the Sentinel-1 processing baseline was upgraded to version 4.0.0, improving calibration, product characterisation and sea-state-related retrievals. These changes matter because they combine more frequent observation with better geometric and radiometric quality. The successful launch of Sentinel-1D in November 2025, with user release planned for April 2026, also gave a clear signal of medium-term continuity for Europe's radar capability.

Sentinel-2 also experienced a notable operational strengthening in 2025. The mission operated an exceptional configuration with three satellites: Sentinel-2A, Sentinel-2B, and the newly introduced Sentinel-2C, ensuring enhanced continuity and increased acquisition capacity. This multi-satellite configuration improved global revisit performance, strengthened data consistency over Europe, and increased observation opportunities in cloud-prone regions such as parts of Africa and South America. Overall, the expanded constellation contributed to more robust and timely optical coverage within the Copernicus programme. At the same time, the large Sentinel-2 Collection-1 Phase 2 reprocessing campaign was completed in September 2025, delivering more than 70 million end-user products over a three-year effort. For users, this meant a more harmonised historical archive and a better basis for long-term land analysis.

For Sentinel-3, 2025 was defined by major reprocessing and baseline updates. The full mission reprocessing of OLCI Level-2 Land products began in March and was completed in October. A full mission reprocessing of OLCI Level-1 products was also launched in March and completed by July, while water-product updates for OLCI and SLSTR were completed by September. The effect of these campaigns was to provide more accurate, better-calibrated and radiometrically more consistent data series across the mission. In addition, Sentinel-3 SYN Level-2 data became available for visualisation in Copernicus Browser and for API access, broadening the utility of the mission for vegetation, carbon-cycle and agricultural applications.

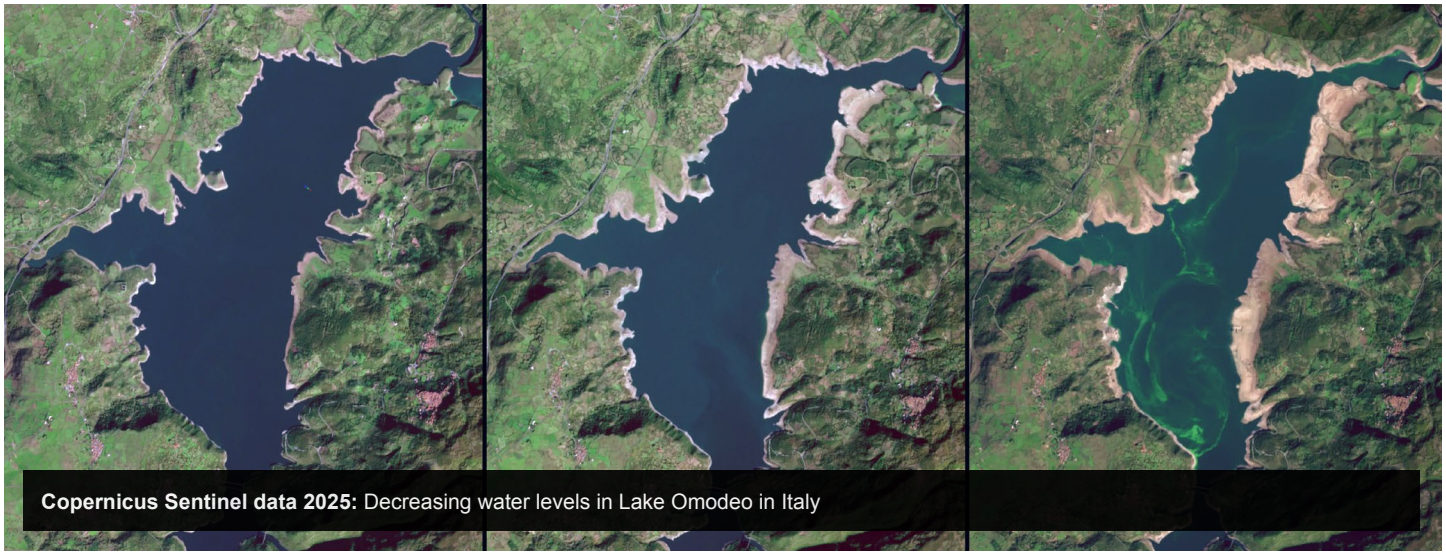
Beyond the Sentinel core, the system expanded its multi-mission capability. The systematic ingestion of Landsat-8 and Landsat-9 Collection 2 Level-1 data from 2021 onwards was established in September 2025, and MODIS data were also integrated. This development is strategically valuable because it extends historical depth, supports cross-sensor analysis, and creates new use cases in which Sentinel and Landsat data can be used jointly to complement each other. All these efforts make the CDSE more attractive as a single access point for long time-series work rather than only contemporary Copernicus operations

CDSE Catalogue evolution, CLMS and CCM

The catalogue layer also advanced substantially. A new STAC Product Catalogue was released in February 2025, first for Sentinel-1 and Sentinel-2 and then extended to the remaining Sentinel missions. Since STAC is increasingly the de facto standard for Earth observation discovery, this is an important modernisation step. A further proof of concept for a STAC catalogue based on OpenSearch technology was developed for wider release in 2026. In parallel, OData was continuously improved and secured through HTTPS-only access. These changes are more than technical housekeeping: they make new collections easier to onboard, discover and use across a broader ecosystem of tools

CLMS became one of the most significant additions to the CDSE in 2025. This is particularly important in comparison with 2024, when CLMS expansion was still part of the forward-looking roadmap rather than the operational offer itself. The service was launched on the platform in May 2025 with an initial offer of 18 product types covering 58 datasets, positioning CDSE as a central access point for the global CLMS portfolio. New product types and datasets were then onboarded steadily throughout the year, and by the end of 2025 the CLMS Global offer had grown to 26 product types covering 112 datasets. These included river and lake water levels, ice and snow extent, snow water equivalent, soil water content, surface soil moisture, top-of-canopy reflectance, vegetation indices and phenology, burnt areas, lake surface water temperature and quality, and net and gross primary production. Over the year, these were complemented by new global-scope categories such as dry and gross dry matter productivity, dynamic land cover, evapotranspiration, land surface temperature and vegetation properties, as well as water bodies. The new Vegetated Land Cover Characteristics (VLCC) suite was also introduced for Europe, covering cropping patterns, crop types, dominant leaf and forest types, grassland and herbaceous cover, mowing events and tree cover density. The new Land Cover and Forest Monitoring (LCFM) suite was introduced and the ingestion of the High-Resolution Water Snow Ice (HR-WSI) portfolio began, continuing into 2026. This broadening of thematic content moves the platform closer to a genuine operational ecosystem rather than a pure satellite archive.

Copernicus Contributing Missions provided a complementary, but equally important layer. In 2025, VHR image mosaics from 2018, 2021 and 2024 were released, and the rollout of the VHR 2024 dataset advanced smoothly. In July 2025, the COP-DEM 10 m datasets became available for authorised public authorities. Within the broader data offer overview, the CCM section records 224,226 published products in 2025, corresponding to 43.5 TB, while the number of registered users eligible for CCM data grew to 81,765. These figures show that high-resolution complementary data are becoming increasingly relevant for users who need more detail than the Sentinels alone can provide.



Copernicus Sentinel data 2025: Decreasing water levels in Lake Omodeo in Italy

The charts below illustrate the year-on-year comparison on main figures for CCM data:

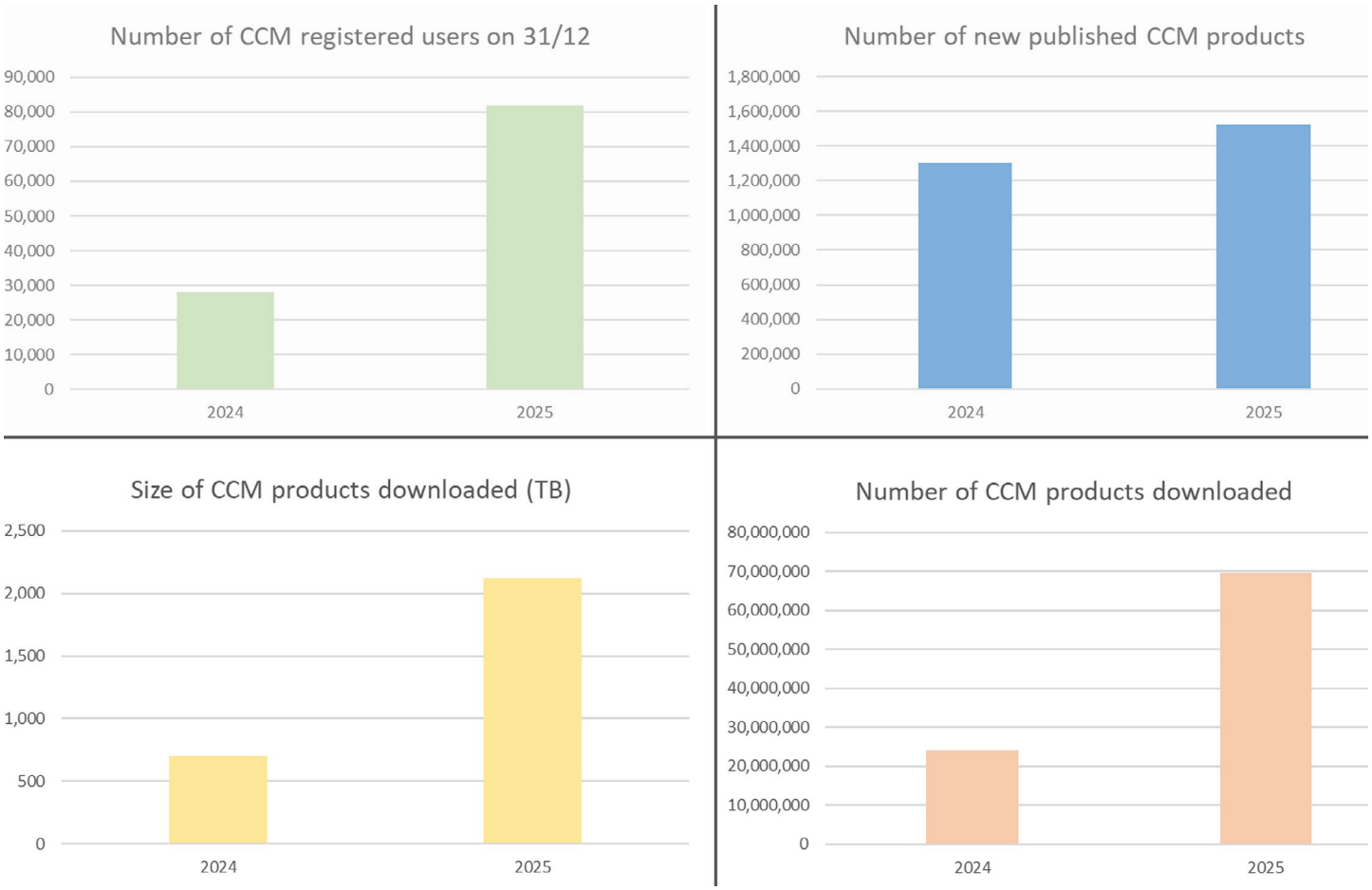


FIGURE 4: Year-on-year comparison on main figures for CCM data

Finally, 2025 also brought important ecosystem-level changes. Whereas 2024 had focused on defining governance models, harmonising onboarding processes and preparing infrastructure for future service providers, 2025 introduced the Ecosystem Services Registry itself, launched the updated CDSE web portal with improved navigation and accessibility, and saw the platform pass the milestone of 400,000 registered users in late June. Taken together, these achievements show a system that is scaling in volume, broadening in capability and becoming easier to navigate.

5. Scale of the Data Offer

The CDSE data offer in 2025 was remarkable not only because of its size, but because of its diversity and freshness. The report confirms that 31,469,696 Sentinel user-level products were published in 2025, with a total volume of 19,722.12 TB. This represented about 34% of all products and 34% of all volume published since the start of the CDSE service in December 2022, showing how large a share of the current offer was refreshed or added during a single reporting year. The wider archive, the richer multi-mission offer and the broader service layer - all expanded.

Sentinel-2 remained the dominant mission in both count and volume. In 2025, more than 23.49 million Sentinel-2 products were published on the platform, corresponding to about 13.46 PB of data. Standard and reprocessed products together made Sentinel-2 the backbone of the archive, with the reprocessing campaign contributing heavily in the first half of the year. The report also notes that Level-2A products made up a larger share of volume than Level-1C, which is consistent with the increasing importance of atmospherically corrected data in operational use.

Sentinel-1 showed especially strong year-on-year growth because of Sentinel-1C. More than 2.03 million Sentinel-1 products were published in 2025, amounting to 4.12 PB, a major increase over 2024. The data offer overview explicitly links this growth to the release of Sentinel-1C user data from March onwards, which almost doubled monthly product output compared with the first quarter.

Sentinel-3 publication levels also rose sharply, driven by reprocessing. In total, 5.78 million Sentinel-3 products were published, amounting to roughly 1.96 PB. The mission's share of total historical output was especially high in 2025 because the OLCI reprocessing campaigns added a large volume of improved products. Sentinel-5P remained smaller in absolute archive size, with 151,877 products and 189.97 TB published in 2025, but still delivered important upgrades through processor changes and SO2 reprocessing.

CLMS and CCM significantly increased the thematic and spatial range of the platform. CLMS brought dozens of service-derived land and water products directly into common catalogues, while CCM expanded access to VHR mosaics, high-resolution optical data, radar data and digital elevation models. Landsat and MODIS integration extended the historical depth of the archive and improved the platform's value for time-series studies. From a user perspective, this means that CDSE increasingly supports cross-domain work within one environment, rather than forcing users to assemble a fragmented data stack from multiple services.

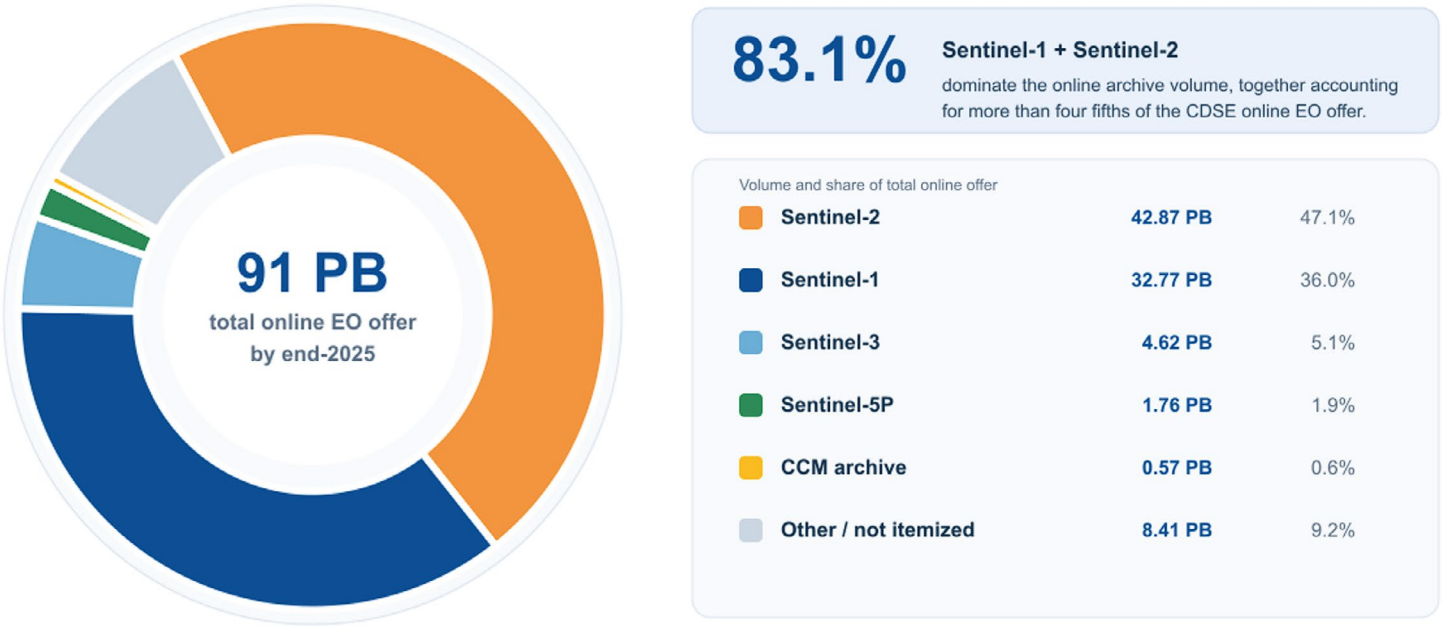


FIGURE 5: Core EO Collections.
The explicit volume figures for the core Sentinel archives and for the CCM archive. CLMS, Landsat, MODIS and other complementary collections are part of the overall offer. For the core Sentinel missions, the figures above reflect cumulative data volume published since mission start; for CCM they reflect the archive size available by the end of 2025.

The result is a platform that combines both depth and breadth. It integrates near-real-time operational data streams with extensive reprocessed historical archives, alongside complementary missions, service-derived products, and advanced visualisation and processing interfaces. This integrated approach is a key strength of CDSE, enabling it to function as a comprehensive data and analysis environment rather than a simple download repository.

6. Data Delivery and the Shift Towards Cloud-Native Use

Direct Sentinel-only downloads continued to grow in 2025, reaching 129,954 TB and 14,706,520,229 download events, compared to 97,315 TB and 10,935,342,504 events in 2024. On average, this corresponds to approximately 10.8 PB and more than 1.22 billion downloaded products per month, or around 466 download events per second over the year. Notably, 2025 marked the first time the platform surpassed the 100 PB threshold for annual Sentinel downloads, underlining its strong and sustained uptake.

Mission-level download patterns also reflect the year's major developments. Sentinel-2 remained dominant in volume and number of downloads, but Sentinel-1 showed particularly strong growth thanks to Sentinel-1C and the expansion of radar use cases. The report records 39,965 TB downloaded for Sentinel-1, representing a year-on-year increase of more than 58%, while Sentinel-2 continued to dominate the total counts, accounting for 82.9% of all products. The dominance of Sentinel-2 may partially stem from the intensive reprocessing campaign and users' need to refresh their data repositories with the latest processing baseline. The two-cloud structure of the platform, with CloudFerro Cloud in Warsaw and Open Telekom Cloud in Amsterdam, also supported resilience and growth in user access.

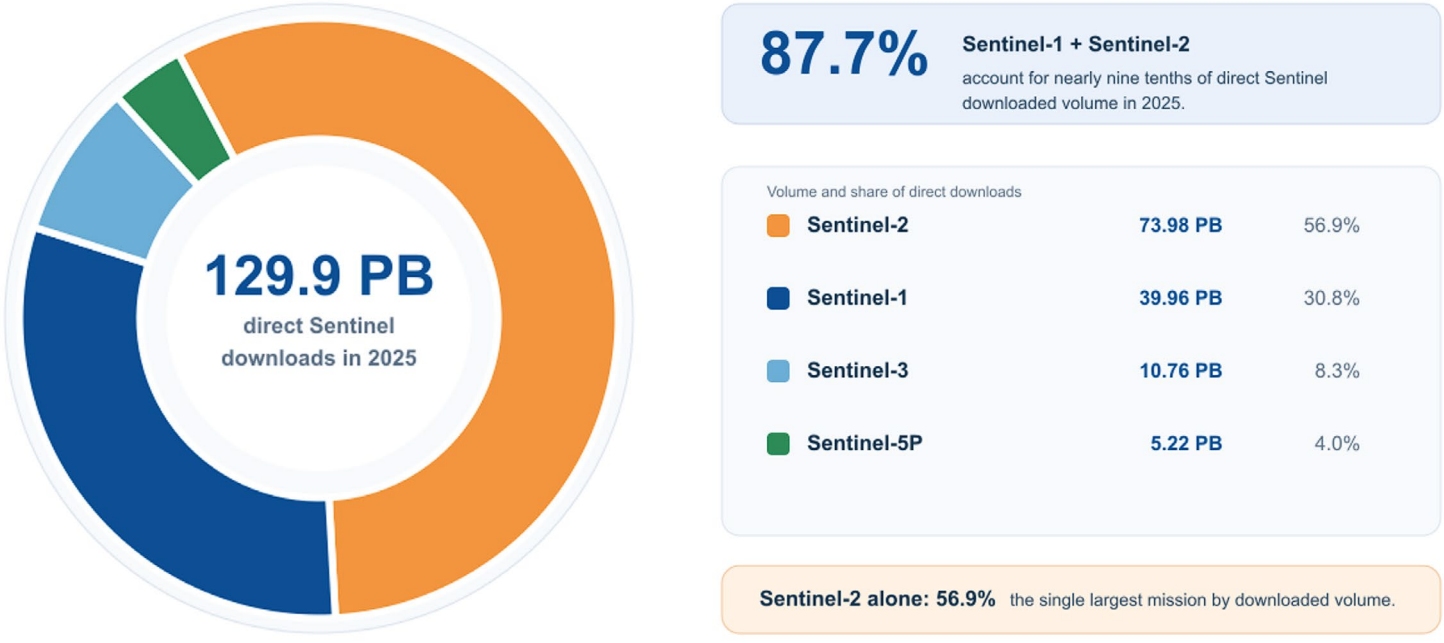


FIGURE 6: Downloads by missions.

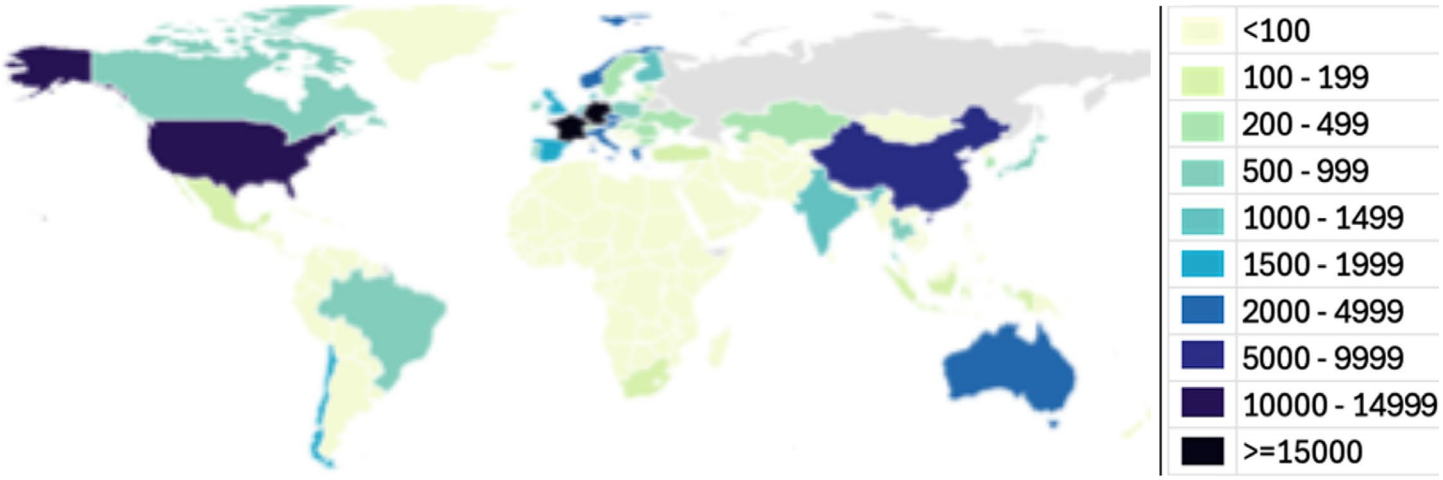


FIGURE 7: Breakdown of User Retrieval (in TB) by Country in 2025.

CDSE Platform is used by power users, national institutions and professional EO data processing center that consume a significant part of the services. However, the usage by the general users is also growing. See below the statistics of the use of the platform by users with standard quota.

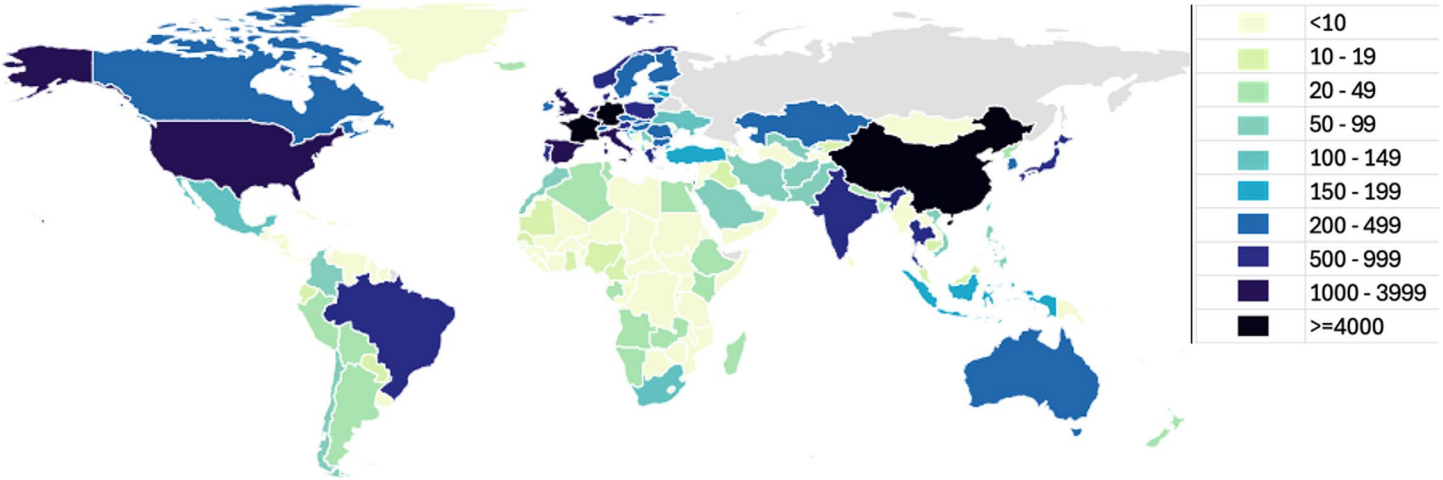


FIGURE 8: User retrieval volume (TB) by Country in 2025 – Copernicus general users only.

At the same time, the growth in streamlined data access services significantly outpaced that of direct downloads, reinforcing the shift towards more efficient, cloud-based access patterns. Together, these trends highlight that CDSE is not only expanding overall data consumption, but is increasingly enabling users to move beyond traditional download workflows towards more integrated and scalable ways of working with Earth observation data.



FIGURE 9: CDSE Streamline growth in 2025,
measured as the proportion of data volume retrieved through streamline access relative to the data volume downloaded.

Sentinel Hub

Sentinel Hub remained one of the principal engines of this transformation. In 2024 it had already processed more than 1.3 billion requests; in 2025 this rose to more than 2.5 billion requests . The report translates the 2025 result into roughly 21 million Sentinel-2 tiles processed in the cloud, more than 260 billion km² of imagery, and over 2 quadrillion pixels delivered. These comparisons are striking because they show how much analysis can now be done without moving raw data out of the platform.

Sentinel Hub also reached over 320,000 unique users in 2025, equivalent to around 60% of the overall CDSE user base. Monthly active users rose from just over 42,000 in January to more than 61,000 in December, peaking at over 70,000 in November. Usage patterns confirmed that Sentinel-2 Level-2A remained the single most requested collection at 43% of all requests, while the broader Mosaic (and others) category accounted for 45%. This category includes the Sentinel-1 and Sentinel-2 mosaics, CLMS collections and Landsat data, this is another sign that the service has become an access layer for a broad multi-dataset environment rather than a simple Sentinel retrieval tool.

Just as important was the July launch of the synchronous openEO backend within Copernicus Browser. According to the delivery chapter, this new backend rapidly came to power more than 75% of all processing volume in the browser environment and over half of all visualisation requests there. In operational terms, this means that a growing share of what users perceive as interactive browsing is already being driven by standardised server-side processing rather than pre-generated visual products.

Sentinel Hub KPI	2025 value
Total requests processed	More than 2.5 billion
Processing units consumed	10 billion PUs (~21 million Sentinel-2 tiles processed in the cloud)
Unique users	More than 320,000
Monthly active users	42,067 in January, 61,462 in December, with a peak of 70,317 in November
Browser integration	The synchronous openEO backend now powers more than 75% of the Copernicus Browser processing volume and more than 50% of visualisation requests

TABLE 2: Sentinel Hub Key Performance Indicators for 2025.

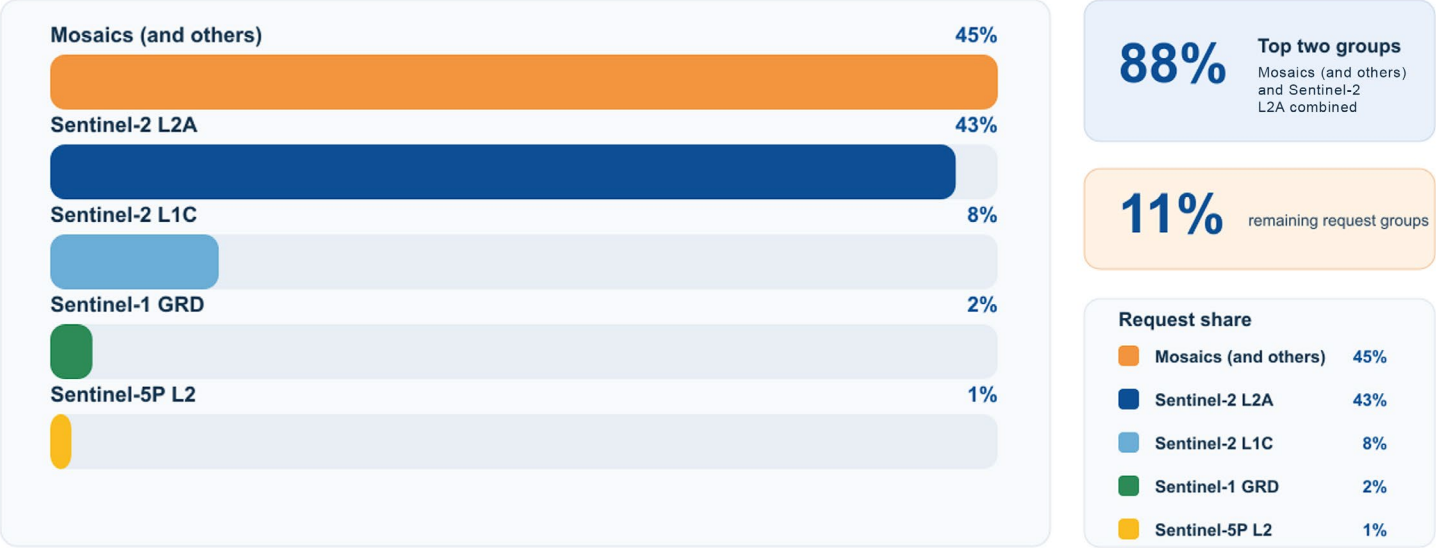


FIGURE 10: Distribution of Sentinel Hub requests by data collection in 2025

openEO

The dedicated openEO chapter shows that 2025 was a year of significant functional expansion. In 2024, openEO had already processed more than 7.3 million requests and grown to over 2,100 unique users, establishing an early but credible operational base. In 2025, the usage of the service significantly grew to 67 million user requests with 4,650 unique active users. The service continued to evolve into a full-fledged data access and processing environment, targeting both data scientists and production-oriented engineering teams. Key developments included federated access to the Terrascope backend, improved support for large-scale processing, broader machine-learning functionality, and support for very fast on-the-fly visualisation through both Sentinel Hub and a new openEO-TiTiler implementation.

Dataset coverage widened as well. New Landsat collections were added, including global bimonthly Landsat mosaics from 1997 onwards. The Sentinel-2 Level-2A collection was enhanced with snow-probability and cloud-probability bands, improving masking and quality control in user workflows. On the technical side, support for ZARR export, alignment with STAC 1.1, and more robust support for external STAC catalogues via load_stac all improved interoperability with modern geospatial analysis ecosystems.

Machine learning remained a particularly important theme. The report highlights the use of openEO in operational projects such as ESA WorldCereal, support for ONNX models, reusable inference workflows hosted as user-defined processes, Random Forest training examples, and growing interest in foundation-model integration. A webinar on machine-learning support held in February 2025 attracted nearly 200 participants, signalling both practical demand and growing community confidence in the platform's capabilities.

Scalability and operations were also strengthened. Job cost tracking was introduced in the MultiBackendJobManager, the web editor evolved further, support expanded into vector cubes and SAR coherence workflows, and a built-in sar_coherence process emerged through the Cloud InSAR project. According to the usage statistics in the dedicated chapter, openEO users consumed on average 1.6 million credits per month and submitted an average of 52,000 batch jobs per month. These are not experimental workloads; they indicate steady adoption as a serious processing environment.

openEO KPI	2025 value
User requests processed	More than 67 million
Unique active users	4,650
Average batch jobs per month	About 52,000
Average credit consumption per month	About 1.6 million credits
Monthly free allowance per user	10,000 credits
Synchronous backend scope	82 native openEO processes implemented in the Sentinel Hub-backed synchronous environment
Machine learning engagement	Nearly 200 participants in the February 2025 ML webinar

TABLE 3: openEO Key Performance Indicators for 2025.

openEO user requests	Request volume
2024 baseline	>7.3 million
2025	>67 million

TABLE 4: openEO user requests: 2024 vs. 2025.

Overall, the data delivery chapters demonstrate that the shift from a „download and process elsewhere" paradigm towards in-ecosystem access, analysis, and operational use is already well advanced. This represents a key takeaway from the 2025 report.

7. User Activity

Registered-user Growth

The registration trend remained strong throughout 2025. Monthly new registrations never fell below 14,758 users, peaked at 31,509 in November, and added 251,659 new accounts across the year. The number of countries exceeding 100 registered users also rose from 136 at the end of 2024 to 157 by the end of 2025, confirming that growth was geographically broad rather than concentrated in only a few mature markets.

Thematic declarations remained concentrated in a small number of core domains. Among registered users, the strongest declared areas were Land with 124,342 users, Research and innovation with 82,482, Climate Change with 44,651, Environmental compliance with 33,041, and Marine environment, maritime affairs and fisheries with 24,167. Together, these five themes accounted for 86.18% of all users who declared a thematic preference, showing that the platform's growth rests primarily on environmental and research-oriented communities.

Registered-user growth KPI	2025 value
Registered users at start of 2025	290,334
Registered users by December 2025	542,622
New users registered during 2025	251,659
Share of year-end user base added in 2025	46.38%
Monthly new registrations	14,758 in January to 31,509 in November
Countries with more than 100 registered users	157, up from 136 at end-2024

TABLE 5: Registered User Growth in 2025.

Registered users by continent	Dec 2024	Dec 2025	Growth
Asia	94,525	177,535	+87.82%
Europe	90,396	168,441	+86.3%
South America	43,193	82,729	+91.5%
North America	34,638	62,001	+79.0%
Africa	22,206	42,526	+91.5%
Oceania	4,494	9,141	+103.4%
Antarctica	140	244	+74.3%

TABLE 6: Registered users by continent.

Top European countries by registered users	Dec 2024	Dec 2025	Growth
Germany	10,587	19,718	86,25%
Spain	10,092	19,143	89,68%
Italy	10,150	18,544	82,70%
France	8,197	15,341	87,15%
United Kingdom	7,542	13,574	79,98%

TABLE 7: Top European countries by registered users.

Proportionally, Europe clearly stands out as the leading region in terms of CDSE registrations in 2025, reaching 168,441 registered users by December. While Asia records a slightly higher number of total registrations due to its larger population base, CDSE uptake is proportionally stronger in Europe, where users also account for the majority of platform usage. Within Europe, Germany remains the leading country in terms of registrations, while Spain has moved into second place ahead of Italy.

Active Use and Mission Uptake

Registration growth was matched by strong operational use. Copernicus Browser remained the main open entry point to the ecosystem, allowing many users to search, visualise and analyse data without signing in.

In 2025 it welcomed 5.9 million visitors and generated 22 million views, almost tripling the 8.1 million views reported for 2024. Europe supplied the highest number of Browser visitors each month, while Asia recorded the strongest broad-based increase over the course of the year. This combination matters because it shows both sustained European depth and a widening international reach.

Italy led the European active-user ranking for Sentinel-1, Sentinel-3 and Sentinel-5P, while Germany regained first place for Sentinel-2. France, Spain, the United Kingdom, Poland, Greece, Romania and the Netherlands all remained visible across the leading groups, showing that operational use is distributed across a wide range of ESA Member States and participating countries.

In 2025, 195,955 Sentinel-related user download profiles were recorded. Sentinel-2 alone accounted for 148,938 of them, equal to 76% of the total. At the heavy-use end, the Sentinel-2 group with more than 1,000 downloads reached 38,079 users, up 55% year on year. Sentinel-1 also recorded especially strong growth among intensive users, with the 1,000-plus category rising by 68.59%. These are strong indicators that CDSE is increasingly embedded in recurring institutional and production workflows, not only in exploratory or occasional access patterns.

Monthly active-user figures – at least one logging into CDSE a month - reinforce the same message. Sentinel-2 averaged just over 23,000 active users per month in 2025, up 28% on 2024. Sentinel-1 ranged from 4,181 active users in August to 10,187 in April. The April spike was the clearest operational signal of the year, coinciding with the first public availability of Sentinel-1C data from 26 March 2025, major Sentinel-3 reprocessing activity, and a broader wave of ecosystem expansion. In other words, the arrival of new mission capability translated rapidly into visible user uptake.

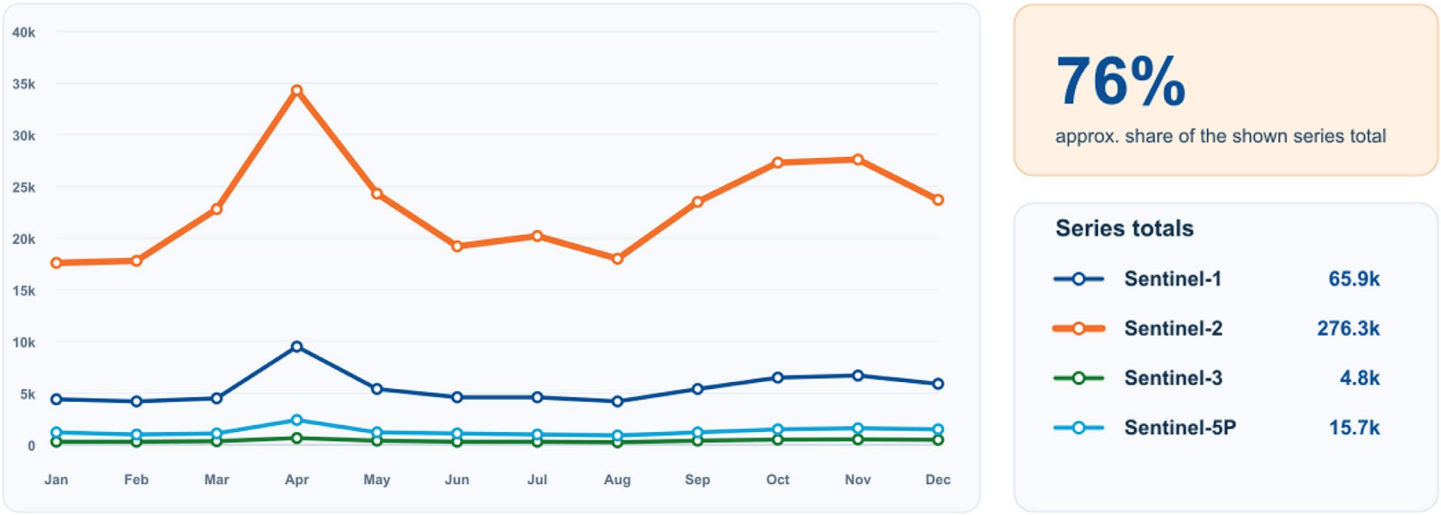


FIGURE 11: Active users per mission in 2025

The top five thematic areas remained unchanged: Land with 46,935 active users, Research and innovation with 33,291, Climate Change with 15,801, Environmental compliance with 12,775, and Marine environment, maritime affairs and fisheries with 9,783. Together they accounted for 90% of active users. Research and innovation and Land alone contributed more than 60% of all new active users added in 2025.

From a European policy perspective, this is important because it shows that CDSE growth is being driven above all by scientific capability, environmental monitoring, and sustained public-value use cases across the continent.

8. Performance, Availability and Timeliness

The performance analysis chapter highlights a platform that is both more stable and faster in operational terms than in 2024. For the purposes of a concise summary, the key message is not only the consistently high availability, but also the strong performance in publication timeliness: data is typically published with short delays. For the major operational missions, average publication latency is generally measured in hours and remains well within formal targets. This represents a clear indicator of the platform's growing operational maturity and reliability.

Mission / category	Average publication timeliness in late 2025	Interpretation
Sentinel-1 NRT	1h 45m	Low publication latency and safely within the 2–4 hour expectation
Sentinel-1 NTC	2h 56m	Very low delay for a product class with a much looser threshold
Sentinel-2	3h 42m	Well below the 24-hour threshold, with a clear year-on-year improvement
Sentinel-3 NRT	About 2h 06m to 2h 09m depending on instrument	Generally low latency, though with some months above threshold due to upstream production delays
Sentinel-3 STC	SRAL 1d 14h 53m; SYNERGY 8h 06m	Within the formal 48-hour threshold
Sentinel-5P NRT	L1B 55m; L2 1h 15m	Among the shortest delays in the system
Sentinel-5P NTC	L2 2d 10h 45m	Improved by more than 10 hours year on year

TABLE 8: Average Publication Timeliness by Copernicus Sentinel Mission in late 2025.

Sentinel-1 and Sentinel-2 are particularly strong examples of excellent timeliness performance. Sentinel-1 NRT averaged 1 hour and 45 minutes, while NTC averaged 2 hours and 56 minutes. Sentinel-2 averaged 3 hours and 42 minutes, with the annual mean improving from 6.35 hours in 2024 to 4.21 hours in 2025. These are strong outcomes for operational use, especially given the scale of the platform and the very large archive volumes involved.

Sentinel-3 performance showed a generally positive picture with some variability across the year. Near-real-time (NRT) average publication times for OLCI, SLSTR and SRAL in the final trimester were around two hours, although in some months values exceeded three hours. These exceedances were primarily driven by longer processing times in the upstream production chain before data reached CDSE. Within CDSE itself, publication latency remained consistently low, typically ranging from a few to several minutes. As a result, platform-side performance stayed stable, with observed delays largely originating outside the CDSE environment.

Sentinel-5P also performed well overall. Near-real-time Level-1B and Level-2 products remained highly consistent, with only marginal variation from 2024. For NTC data, Level-2 publication improved substantially, while Level-1B showed one notable spike in November due to a major ground-processing system deployment. Even here, the broader trend remained one of controlled and generally reliable delivery.

In summary, the performance chapter highlights a strong overall outcome: high availability, improved resilience, and consistently low publication latency across most operational products. This level of performance is a key enabler for decision-ready applications and represents an important result of the 2025 report.

9. Outreach and Engagement

A broad, multi-channel outreach strategy was executed to expand the user base and reposition the platform from a raw data repository to an integrated EO processing environment, reaching over one million unique website visits, 78,259 newsletter subscribers, and 282,000 LinkedIn impressions. The team participated in 46 conferences and 35 training events across agriculture, governance, defence and natural sciences - with the ESA Living Planet Symposium as the flagship, delivering 54 contribution.

Scientifically, 876 publications cited CDSE in 2025, including a Nature Scientific Data paper on openEO federated processing, reinforcing the platform‘s credibility in the research community. Collectively, these results confirm CDSE‘s maturation into a recognised, community-anchored EO infrastructure well positioned for broader operational adoption in 2026.

10. Outlook for 2026

The outlook for 2026 highlights a transition in CDSE towards a stronger focus on capabilities built on top of scale. This reflects a clear evolution in the platform's trajectory: beyond demonstrating its capacity to host large volumes of data, CDSE is increasingly enabling their transformation into accessible, decision-ready services that directly support user needs.

Expanding Europe's observation power

The onboarding of the new Sentinel missions is first priority, continuing to strengthen Europe's observation capacity. Sentinel-1D will reinforce all-weather monitoring once commissioning is complete.

The launch of the new Copernicus Sentinel-3C mission is currently expected in Q4 2026.It will join the Sentinel-3 family to ensure continuity of critical observations of the oceans, land, ice and atmosphere, supporting applications such as ocean forecasting, hydrology and climate monitoring. Together with Sentinel-3D, it is intended to extend the long-term continuity of Sentinel-3 measurements over the coming years.

CDSE will continue expanding its portfolio of Copernicus Land Monitoring Service datasets, further strengthening its role as a central access point for European land monitoring data. Since the beginning of 2026, new versions of vegetation properties datasets (FCOVER, FAPAR, LAI, NDVI, GDMP, DMP, NPP, GPP), soil water index and Land Surface Temperature have been onboarded, together with the high resolution Urban Atlas and Vegetated Land Cover Characteristics (HRL-VLCC). Onboarding of other key high-value products such as High Resolution Water, Snow and Ice Monitoring (HR-WSI), additional High Resolution Layer – Vegetated Land Cover Characteristics (HRL-VLCC) covering the year 2024, Urban Atlas, CLCplus Land Use, Land Use Change and Forestry (CLCplus LULUCF), and High Resolution Vegetation Phenology and Productivity (HR-VPP) are on-going.

In addition to making the data available via the OData catalogue and API, CDSE has enabled a STAC catalogue for all JRC CLMS datasets (Lot 1 and Lot 2), as well as the Land Cover and Forest Monitoring datasets. The integration of these datasets into openEO is planned for Q2 and Q3 of 2026.

These datasets and the availability in STAC and openEO will broaden CDSE coverage across water, snow and ice monitoring, vegetation characteristics, urban land use, land cover accounting, and seasonal vegetation dynamics. By making these datasets available through CDSE, the platform will improve discoverability, streamline access to analysis-ready Earth Observation resources, and support wider uptake of Copernicus data by public authorities, research organisations, industry users, and downstream service providers.

In 2026, new onboarding capabilities are expected to simplify and standardise the inclusion of additional space datasets. It is planned to onboard new Copernicus Contributing Mission data into CDSE from Category-1 European Earth observation emerging data suppliers, expanding the range of complementary data available alongside Sentinel missions. Copernicus Contributing Missions are an essential part of the Copernicus Space Component, providing additional observations needed to satisfy requirements that cannot be covered by the Sentinels alone. Bringing these datasets into CDSE is expected to strengthen European resilience and autonomy in Earth observation by broadening access to European commercial and institutional data sources. It should also reinforce Europe's industrial presence in the sector by increasing the visibility and practical use of European providers' data within the Copernicus ecosystem. In parallel, this step can create stronger outreach opportunities for specialised European companies by connecting their data more directly with public-sector, research, and professional users through a common access environment.

It is also planned to extend the presence of Landsat 8 Level-1 data in CDSE, covering the period since the start of the Copernicus programme and further strengthening the platform's multi-mission archive. A broader Landsat 8 archive in CDSE will therefore give data scientists and professional EO users better access to complementary Sentinel and Landsat observations for cross-mission analysis, long-term time series, and richer application development. Harmonized Landsat and Sentinel-2 work already shows the value of combining these datasets, including higher-frequency imagery products than either mission can provide on its own.

From data access to insight

The second priority is smarter discovery and visualisation. CDSE's STAC implementation has been introduced specifically to improve discoverability and management of Earth observation data, while standardising metadata, under ESA's guidelines, in line with the open STAC specification to increase interoperability and usability across datasets. CDSE STAC catalogue supports a complete archive of Sentinel user-level products together with additional collections such as Copernicus Contributing Missions, Landsat, MODIS and COPDEM, and an increasing set of Copernicus Land Service data which further strengthens its role as the central discovery layer. A new version of the STAC Catalogue based on OpenSearch is planned for release, providing users with enhanced features and capabilities. Compared with the current implementation, the SFEOS/OpenSearch-based catalogue will offer improved scalability for large metadata volumes, more flexible search and filtering, stronger full-text and faceted search capabilities, and better performance for complex EO data discovery scenarios.

Copernicus Browser is expected to continue evolving from a viewing environment into a lightweight computing interface, including deeper STAC integration and support for custom openEO process graph execution. In effect, the platform will move further from mere access towards direct interpretation and exploratory analytics.

It is also planned that the CDSE JupyterLab service will become increasingly popular among both general and institutional users by providing ad-hoc resources and direct access to CDSE data for small-scale prototyping, exploratory analysis, and experimentation. CDSE plans to further expand this service portfolio with a stronger focus on the needs of institutional and professional users, including AI-supported capabilities, and a more tailored user experience. In this way, JupyterLab can evolve from a convenient experimentation environment into an important entry point for applied analytical work on Copernicus data.

The growing trend towards federated data access is also expected to play an increasingly important role in the Copernicus Data Space Ecosystem. As identity and access services continue to expand across the European Union, selected systems are expected to become federated with the existing CDSE identity and access management framework, enabling simpler, more reliable, and more secure access to CDSE services. This will reduce access barriers for users of trusted European systems by allowing them to use familiar authentication mechanisms and established identity providers. In the longer term, such federation can strengthen interoperability, improve the user experience, and support broader integration of CDSE within the evolving European digital ecosystem.

AI capabilities

The third major priority is the strengthening of AI and machine-learning support in the connected cloud infrastructures using the power of Copernicus data. Following publication of fist set of Global Embeddings Dataset in CDSE in November 2025, it is planned to extend this capability and data presence at CDSE. CDSE has an ambition to be the reliable source of information and services for AI-powered processing, discovery and tooling. It is also planned to extend accessibility of existing and new coming services with AI supported functions and features to ease access and short introduction time for new users.

Significant AI-based improvements, further machine-learning support, exploration of agentic assistance for building workflows are planned. It is planned to introduce the Model Context Protocol server to support openEO workflow development, and the delivery of a dedicated MCP server for the CDSE STAC Catalogue. Together, these components will significantly enhance the availability of native AI capabilities within CDSE and make the system easier for users to adopt. They will also shorten the time needed to discover relevant data, build workflows, and achieve results.

This reinforces the idea that future value will come not only from larger archives, but from reducing the technical distance between the archive and the user's analytical question.

11. Concluding Assessment

When condensed to its essentials, the 2025 story of the Copernicus Data Space Ecosystem is one of scale, maturity, and transition. Scale is reflected in more than 500,000 registered users, over 120 million Sentinel products, around 91 PB of online data, more than 242 PB delivered across access channels, and record levels of download and processing activity. Maturity is demonstrated through high service availability, consistently low publication latency, deeper integration of services, and a stable and broad operational user base across Europe and ESA Member States. Transition is evident in the gradual shift from download-intensive usage towards cloud-proximate analysis, the rapid uptake of streamlined services, and the growing emphasis on catalogue standards, service-derived products, AI-enabled support, and reusable workflows. Across all dimensions, sustained platform development is reflected in concrete service enhancements and ongoing implementation efforts.

For Europe, this evolution is strategically significant. It demonstrates that Copernicus data are not only open and abundant, but increasingly accessible in forms that directly support operational decision-making, innovation, and downstream value creation. The introduction of Sentinel-1C, the strengthening of Sentinel-2, extensive Sentinel-3 reprocessing activities, the inclusion of external datasets such as Landsat and MODIS, the rollout of CLMS and CCM products, and the rapid adoption of cloud-native processing collectively illustrate an ecosystem that is becoming broader, more intelligent, and more impactful.

Against this backdrop, 2025 stands out as a year in which CDSE moved decisively from a highly successful data access platform towards a fully integrated Earth observation service environment.

1 INTRODUCTION

Copernicus is the Earth observation component of the European Union's Space Programme, providing accurate, timely and freely accessible information to support environmental management, climate change mitigation and adaptation, and civil security.

The Copernicus Data Space Ecosystem (CDSE) provides the entry point for all user access to the missions of the Copernicus Space Component operated by ESA, which at the end of 2025 comprises the following fleet of Sentinel satellites:

- **Sentinel-1** delivering data in the C-band Synthetic Aperture Radar domain, operating its mission through Sentinel-1A and with Sentinel-1C following the operational release of data to users on 26 March 2025. Sentinel-1D satellite was successfully launched in November 2025 and, following its data commissioning in the first half of 2026, is expected to ensure long-term continuity.
- **Sentinel-2** delivering high-resolution optical imagery for global land monitoring, with the mission objectives being covered with Sentinel-2B and a transfer of duty from Sentinel-2A to Sentinel-2C on 21 January 2025. An exceptional one-year campaign to further enhance the observation scenario by extending the operations of Sentinel-2A was started on 13 March 2025.
- **Sentinel-3A** and Sentinel-3B operating together to provide comprehensive ocean and land observations, including ocean colour, sea-surface temperature, altimetry and land measurements.
- **Sentinel-5P** providing data on air quality and atmospheric trace gases.

To complement the data provided by the dedicated Sentinel fleet, the programme integrates the **Copernicus Contributing Missions (CCM)**. These consist of satellites operated by ESA, Member States, and commercial providers, which offer high-resolution imagery and specialized data - such as Very High Resolution (VHR) optical and radar data -that are essential for tasks requiring granular detail not covered by the Sentinels alone.

Furthermore, this wealth of data is transformed into actionable insights through services like **Copernicus Land Monitoring Service (CLMS)**. The CLMS provides critical geographical information on land cover and its changes, land use, vegetation state, and the water cycle. By supporting applications in urban planning, forest management, and biodiversity protection at local, European, and global scales, it ensures that satellite observations translate into effective environmental policy and sustainable development.

The Copernicus Data Space Ecosystem (CDSE) began operations in July 2023, fully replacing the Sentinel Data Access Service from 1 November 2023. It comprises multiple satellite types equipped with complementary sensors to monitor land, oceans and the atmosphere. Together with contributing missions from ESA, EUMETSAT and other partners, Copernicus has already generated more than 87 petabytes of data, making it one of the largest civilian Earth observation programmes in the world. The data archive continues to expand rapidly, positioning Copernicus as one of the most significant open Earth observation data sources globally. Ongoing development is focused on enhancing data accessibility and usability of the data for users**.**

While data form the core of the ecosystem, the CDSE delivers far more than simple data access by providing integrated cloud computing, analytical tools, APIs, development environments, and collaborative services within a unified open ecosystem. Figure 12 illustrates the ecosystem, highlighting the applications available to users as well as the federated services.

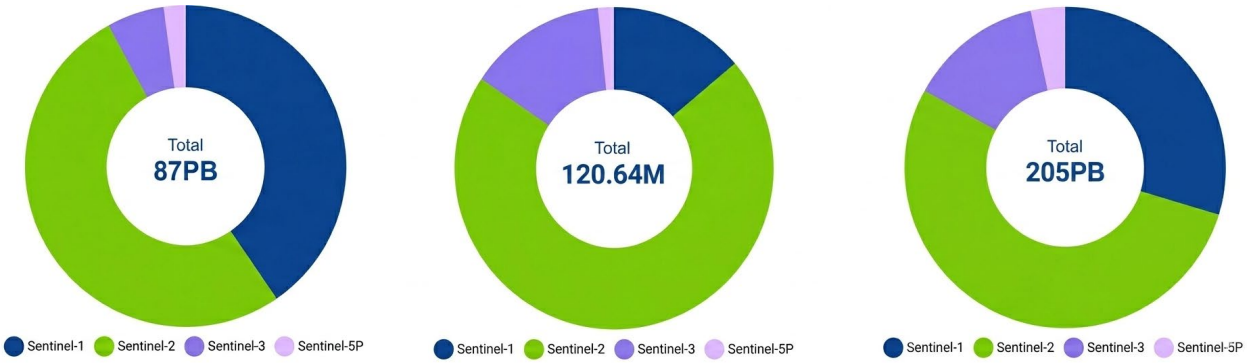


FIGURE 12: CDSE Public and Commercial Service Offering.

Although the provision of multiple applications reduces the need for straightforward data downloads, the CDSE continues to guarantee fast and efficient access to Earth observation (EO) data. Each month, petabytes of Sentinel data are accessed and downloaded. The number of products available to users is steadily increasing, more than 120 million Sentinel products published by the end of 2025. This report presents statistics on both the number and volume of data downloads.

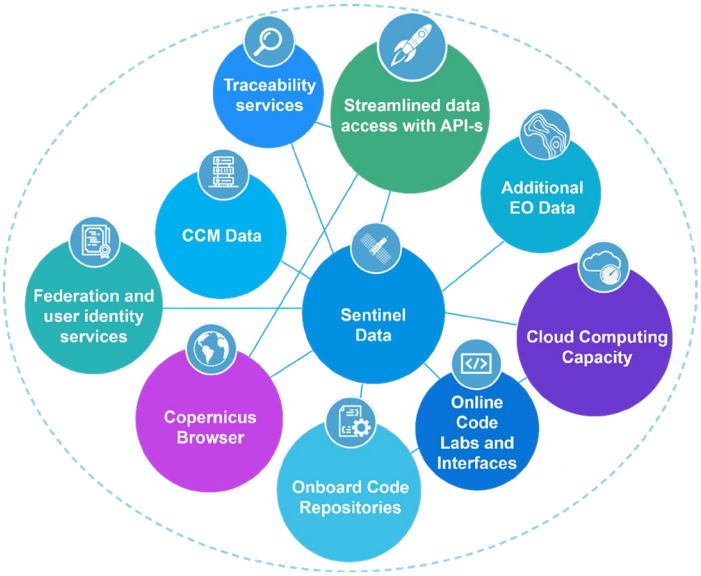


FIGURE 13: Copernicus Data Space Ecosystem in a nutshell.

It should be noted that the download statistics do not include data processed and delivered through Sentinel Hub and openEO, nor data accessed via connected cloud infrastructures such as CloudFerro's cloud and T-Systems' Open Telekom Cloud, or commercial data services provided through CREODIAS. In 2025, approximately 240 petabytes of Earth observation (EO) data were delivered to users through cloud infrastructures connected to the EO data repository, supporting commercial EO-based services.

This highlights the core potential of the CDSE: data can be accessed and processed immediately, without the need for local download. Through streamlined data access services - notably Sentinel Hub and openEO processing services - users benefit from serverless processing capabilities and ready-to-use insights built directly on top of raw data. These services can also be seamlessly integrated into any EO service that relies on Copernicus data. In 2025 alone, Sentinel Hub processed more than 2.5 billion requests, corresponding to over 3,000 times the total land surface area of the Earth. In parallel, openEO processed more than 67 million user requests. The growing popularity of these services is clearly reflected in their increasing usage.

This CDSE Annual Report was compiled by a consortium led by T-Systems as prime contractor for the CDSE. Data services are delivered by several service providers: CloudFerro is responsible for EO data discovery, access and retrieval across the data space as well as the overall system operations across all used cloud systems; Sinergise operates Sentinel Hub; VITO manages openEO; Starion manages Copernicus Contributing Missions, DLR operates on-demand production service for Sentinel-1 and Deferred Access Data, ACRI-ST operates on-demand production service for Sentinel-2 and Sentinel-3 and CloudFlight that delivers the Traceability service.

1 Registered active means at least one login to the service.

2 SYSTEM OVERVIEW

The Copernicus Data Space Ecosystem (CDSE) provides users with free, open, and immediate access to the complete data repository of the Copernicus Sentinel missions managed by ESA. The services are designed to meet a wide range of needs, from newcomers to the Earth Observation (EO) field to commercial organisations and academic researchers. The system aims to offer individuals and organisations a platform through which they can quickly search, access, and process EO data in order to generate actionable insights for decision-makers.

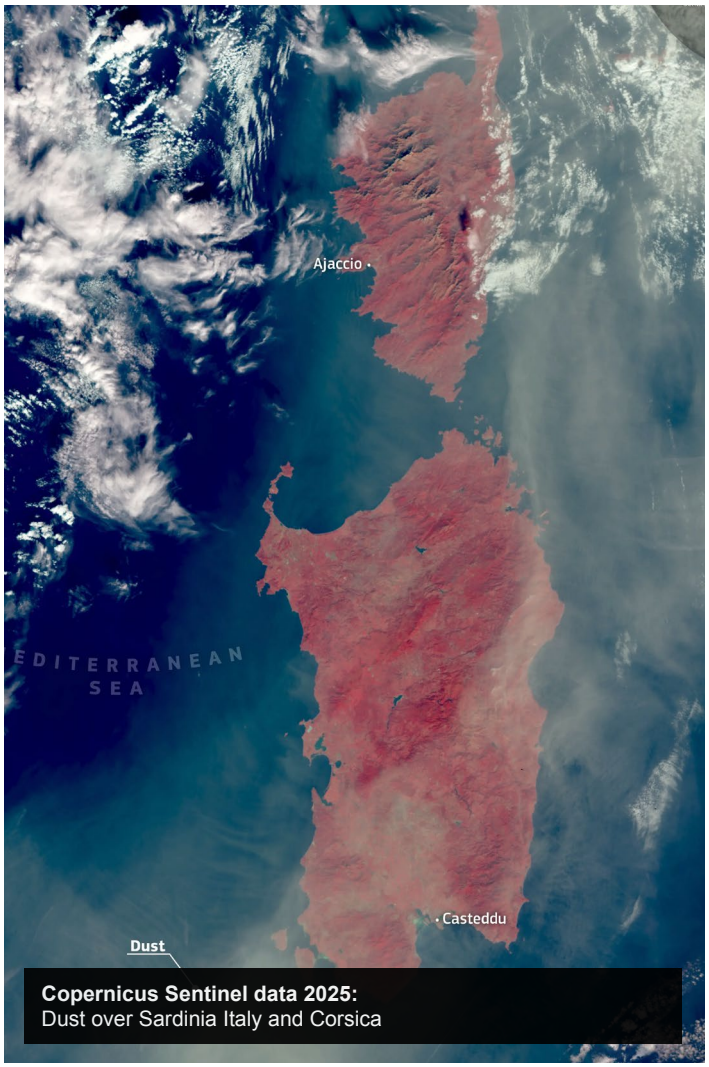
CDSE serves as the primary access point for Sentinel data, which is typically made available within approximately 30 minutes of processing within production services (and within a few hours of acquisition). Importantly, access to user-level data is unrestricted.

While the system supports traditional data downloads, CDSE is far more than a simple data distribution service. It is a comprehensive ecosystem of applications, featuring graphical user interfaces (GUIs) and application programming interfaces (APIs) for accessing, visualizing, and processing Copernicus data. Its mission is to simplify data processing, increase uptake, and foster a European ecosystem for EO data exploitation. By removing much of the technical complexity associated with accessing and processing data, CDSE enables users to focus on application development and analysis.

The system operates within a multi-cloud environment, incorporating both CloudFerro Cloud and T-Cloud Public (formerly known as Open Telekom Cloud (OTC)). The EO data repositories and associated applications are distributed across infrastructure in Warsaw and Amsterdam, ensuring redundancy and high availability of both data and services.

The product lifecycle within CDSE begins with data acquisition from multiple sources within the ESA Ground Segment, followed by validation of the input data. Once validated, the data are stored in EO data repositories located in multiple sites (Warsaw and Amsterdam), either in packaged or unpackaged form in accordance with defined storage policies. Product metadata are subsequently published in a unified catalogue, and all stored products are registered in the Traceability Service to confirm data origin.

Following publication, products can be discovered and accessed by users via a range of applications and interfaces. As illustrated in Figure 14, CDSE retrieves data from mission-specific production services, stores them in a redundant online repository in line with data policies, and disseminates them to users through multiple access channels. While users may download the data, a key advantage of CDSE lies in its ability to support on-the-fly processing through streamlined data access and serverless applications such as Sentinel Hub, openEO, and JupyterHub, as well as on-demand production and cloud-based processing.



Copernicus Sentinel data 2025:
Dust over Sardinia Italy and Corsica

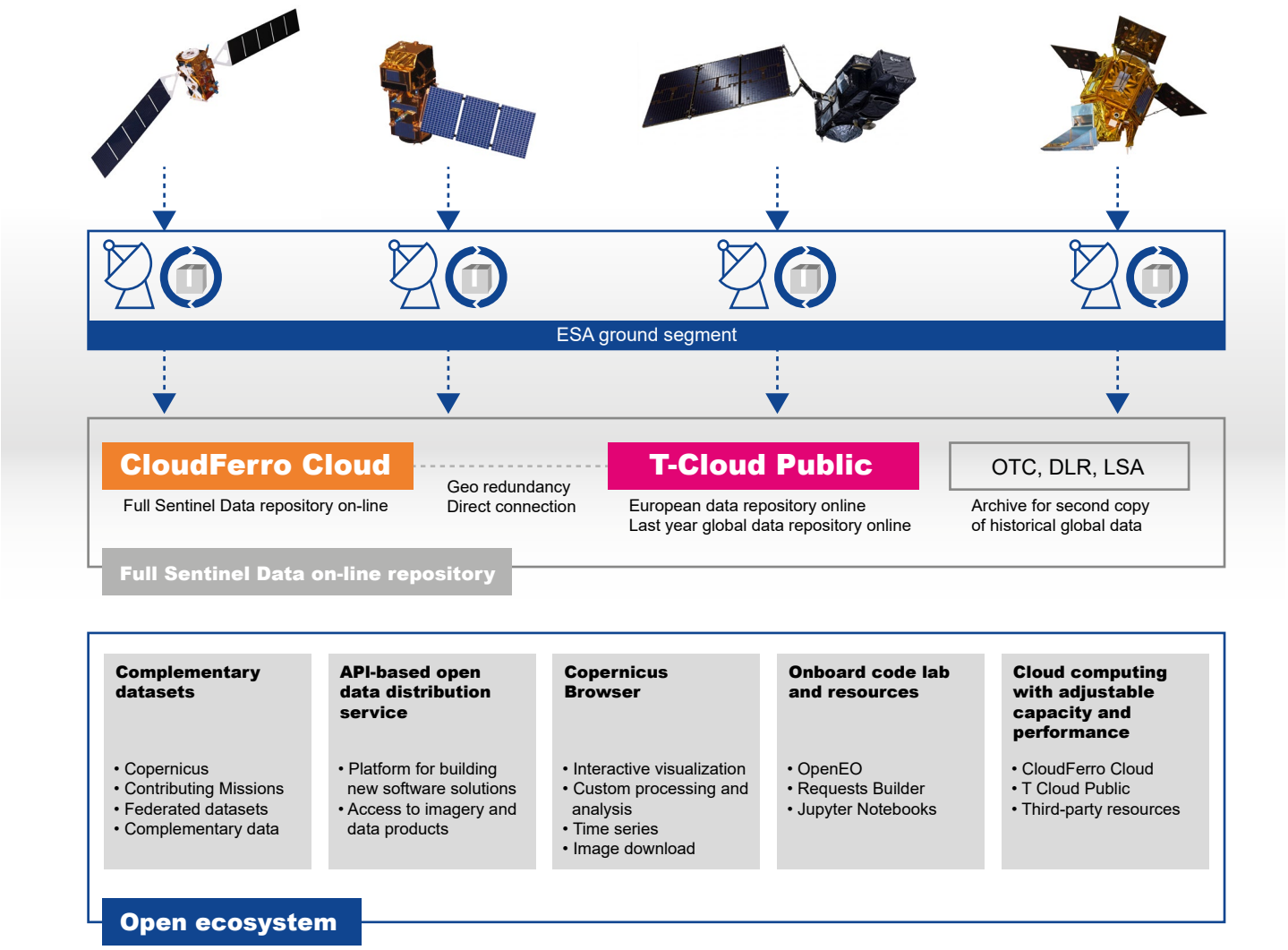


FIGURE 14: The high-level architecture of the CDSE.

Figure 15 outlines the various methods available for accessing data within CDSE. Once stored in the EO data repository, Sentinel data can be searched and accessed via GUI or API. In addition to retrieving packaged (zipped) products through a zipper service—as was the case with previous Data Access Services—users can now directly access entire files or subsets of data via the S3 interface, which is native to cloud-based applications.

Furthermore, users can take advantage of integrated applications such as Sentinel Hub, openEO, and JupyterHub, which enable efficient data access and provide powerful processing capabilities. These tools allow users to work with specific subsets of data rather than entire files. The choice of access method ultimately depends on user requirements, while the underlying complexity of data handling is managed entirely in the background.

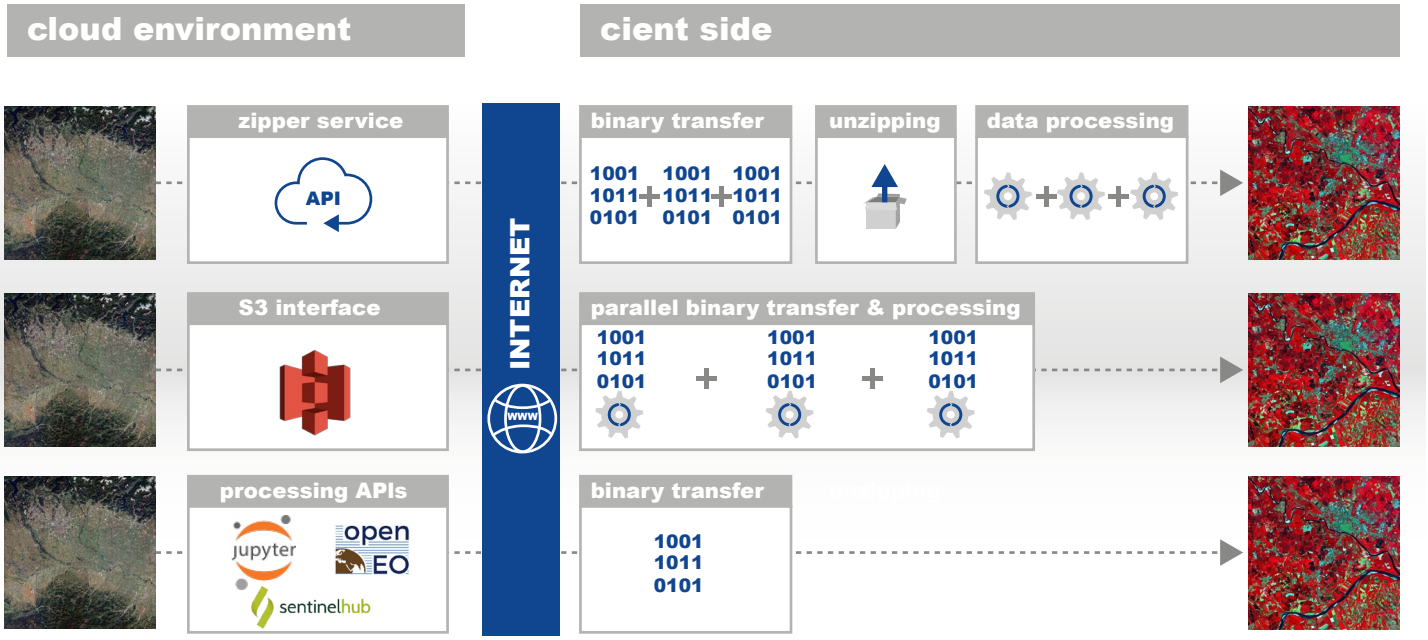


FIGURE 15: Multiple data access and processing scenarios enabled in CDSE.

It is important to emphasise that the Copernicus Data Space Ecosystem is open to all users. Both public and commercial datasets (such as very high-resolution imagery) and services (including applications and cloud computing providers) can participate in the ecosystem. Interoperability is ensured through the adoption of open standards such as STAC, OData, OpenSearch, and S3. External developers are also able to utilise APIs associated with services such as Sentinel Hub and openEO to build innovative solutions using CDSE data and resources. All services may be used for both commercial and non-commercial purposes.

The inclusion of additional entities, including third-party providers, is both anticipated and encouraged. Their participation enriches the ecosystem by introducing a diverse range of services, both free and commercial. CREODIAS is the first such provider to join CDSE, enabling users to scale their usage beyond standard service limits through commercial offerings. This supports the development of large-scale commercial applications requiring enhanced processing capacity. The relationship between CDSE and commercial services is illustrated in Figure 16.

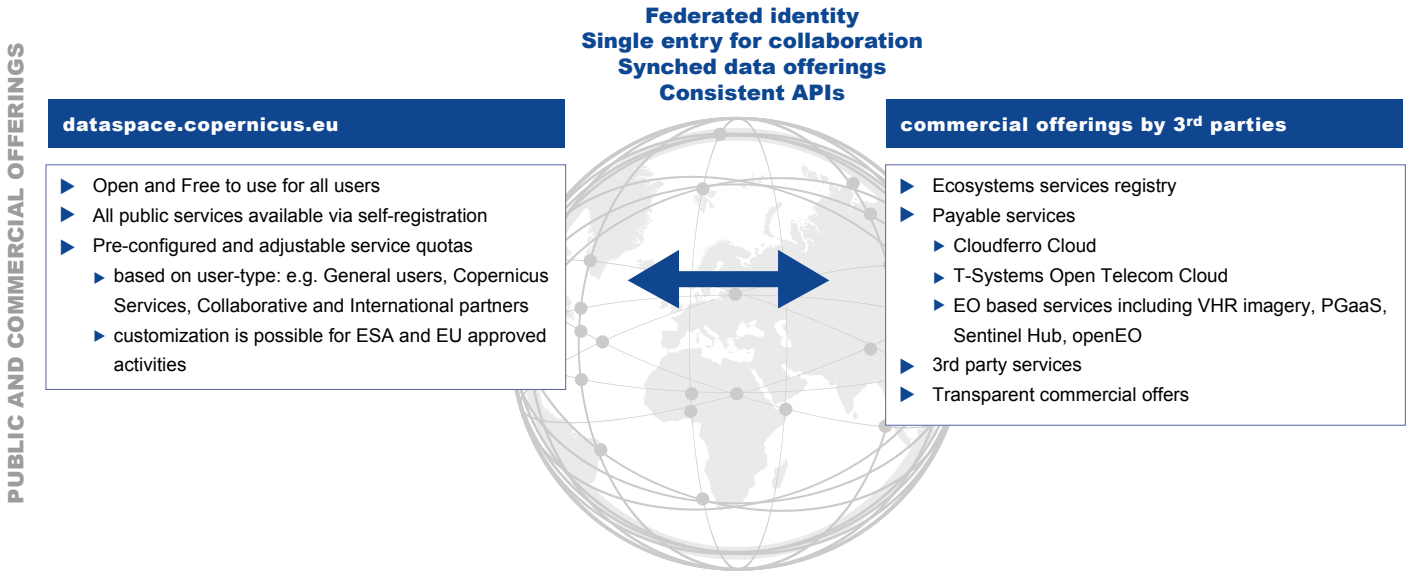


FIGURE 16: CDSE Public and Commercial Service Offerings.

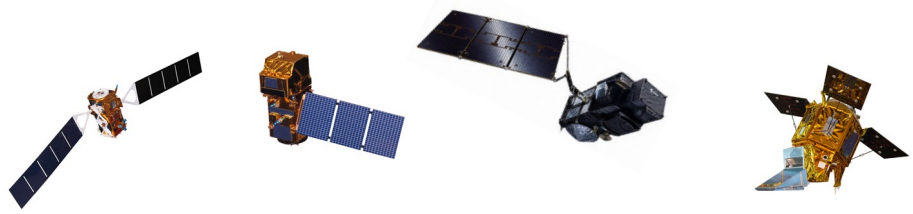
The Copernicus Data Space Ecosystem includes all necessary elements enabling growth of the ecosystem, including:

- Multiple cloud computing options provided by leading European cloud providers
- A helpdesk supported by tutorials and a user forum
- EO-specific functionalities such as catalogue services, data ingestion, and data access
- Identity and user management
- Unified billing services
- Proactive outreach initiatives and both online and in-person events to promote adoption and engagement

Together, these elements contribute to strengthening user engagement and advancing European capabilities in EO data processing.

An overview of the core, integrated, and third-party services within the ecosystem is presented in Figure 17.

User feedback is strongly encouraged, and satisfaction surveys are conducted regularly to support continuous improvement and ensure that the Copernicus Data Space Ecosystem remains a valuable resource for all users.



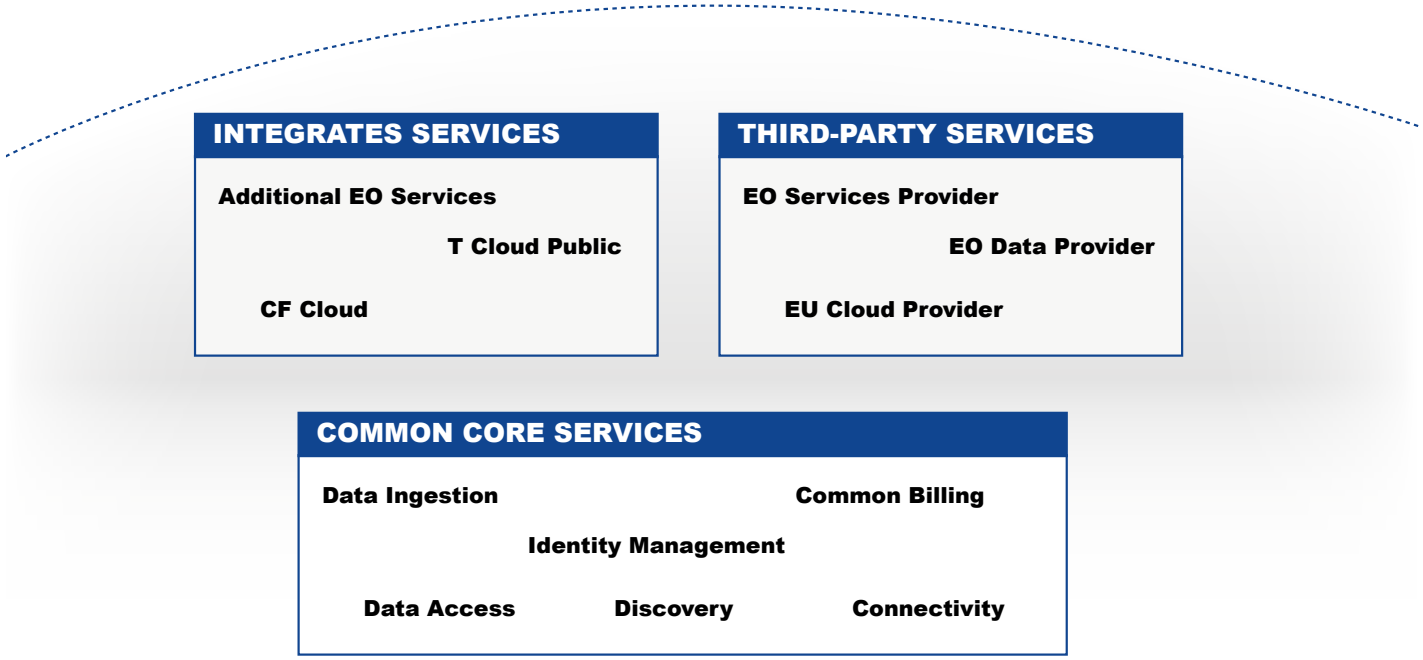


FIGURE 17: Copernicus Data Space Ecosystem services overview.

3 MAIN EVOLUTION MILESTONES OF THE DATA ACCESS SYSTEM IN 2025

2025 was a year with a significant expansion of the product portfolio within the Copernicus Data Space Ecosystem and also of intensive infrastructure development and enhancements for data access tools. The evolutions portfolio outlined below comprises service improvements and new offerings for users, alongside further enrichment of Earth Observation (EO) data products. In parallel, the system infrastructure was reinforced to lay the foundations for continued growth in ecosystem usage and to ensure readiness for the integration of additional satellite data in 2026 and the years ahead.

Data Ingestion and New Missions

Sentinel-1:

- Dissemination of data from the new Sentinel-1C mission commenced on 26 March 2025, bringing the Sentinel-1 mission data back to the 6-day revisit coverage objective. Starting 19 May 2025, Sentinel-1C SAR products have been fully calibrated and meet the Sentinel-1 mission data quality specifications. As a result, Sentinel-1C products are now part of the CDSE data offering, helping to restore the full Sentinel-1 constellation capacity and providing users with high-quality, reliable SAR data on a global scale. The Sentinel-1C products are considered fit for purpose for most applications, including interferometric analysis (InSAR).

- Further to this, and in support to the commissioning of Sentinel-1D following it's launch on 4th November 2025, the CDSE provides access to the calibration and validation teams to the Sentinel-1D data acquired and processed during the commissioning phase. Sentinel-1D products are scheduled for release to users in April 2026.

- Additional auxiliary data aimed at improving the near real time processing of geolocation for Sentinel-1 - AUX_MOEORB and AUX_INS, were introduced in April 2025 This new product significantly reduces timeliness compared to previously existing AUX_POEORB, which can take several weeks to be released, while maintaining a similarly high level of orbit accuracy. This directly benefits users who require faster daily orbit solutions. Furthermore, these files follow the standard EOF format, ensuring seamless compatibility with existing workflows and alignment with the rest of the Sentinel-1 orbit products.

- New ETAD (Extended Timing Annotations Dataset) processor version 3.0, along with the updated product specifications (document issue 1.12), was released in June 2025. The release introduced enhanced correction layers, improved tropospheric delay modelling, and support for high-accuracy MOE orbits, reducing ETAD product timelines from 20 to 14 days with potential for further future reductions. Additionally, new lossy compression decreased product size while maintaining 1 mm accuracy, providing users with faster, lighter, and more accurate ETAD products.

- The Sentinel-1C ETAD reprocessing campaign was released in September 2025, providing a consistent SETAP 3.0-based dataset for the sensing period from 18 March to 4 June 2025. By applying the SETAP 3.0 processing baseline deployed in June 2025, the campaign ensured full continuity and geometric calibration of S1C ETAD products from March 2025 onward, with the reprocessed data made available on the CDSE.

- The Sentinel-1 processing baseline has been upgraded to version 4.0.0, bringing substantial refinements across L1 and L2 products, including the removal of long-standing focusing artefacts, improved range compression, and additional parameters that enhance data calibration and characterization. The update also strengthens L2 OCN retrievals through machine-learning-based sea state inference, better quality flagging, TOPS cross-spectra availability, and multiple geophysical corrections, ensuring users benefit from more reliable, accurate, and better-annotated ocean and radar measurements.

Sentinel-2:

- Reprocessing of Collection 1 Phase 2 (baselines N0500, N0510, and N0511) was completed in September 2025, fully replacing earlier product versions. The overall processing campaign lasted three years and delivered over 70 million end-user products.
- Data dissemination for the Sentinel-2A mission was resumed in February 2025.
- The Sentinel-2A extended campaign began on 13 March 2025, temporarily complementing the nominal operations of Sentinel-2B and Sentinel-2C. The campaign enhanced the global revisit frequency of the Sentinel-2 constellation, ensured consistent observations over Europe across all three units, and improved coverage over cloud-prone tropical regions in Africa and South America.
- Sentinel-2 Nighttime Imaging Campaign in December 2025 was carried out to collect a set of Level-1B nighttime images during the ascending part of its orbit, targeting selected areas relevant for gas flares, bright lights, wildfires, and marine activities. The campaign provided Expert Users with short-term-access nighttime data via CDSE and delivered valuable insights for the upcoming Sentinel-2 Next Generation mission, demonstrating the potential benefits of integrating low-light imaging capabilities into future observations

Sentinel-3:

- The full mission reprocessing campaign for Sentinel-3 OLCI Level-2 Land products (Baseline Collection 003) began in March 2025, covering the OL_2_LFR and OL_2_LRR datasets for Sentinel-3A (6 April 2016–9 October 2024) and Sentinel-3B (9 May 2018–9 October 2024). The campaign applied the Level-2 processing baseline introduced in October 2024 and benefited from the reprocessed Level-1 dataset deployed in May 2024. The new baseline together with the reprocessed Level-1 dataset, provided users with more accurate, better-calibrated, and radiometrically consistent products. Reprocessed Level-2 products became gradually available on the Copernicus Data Space Ecosystem from 10 March 2025, with the entire reprocessing campaign completed on 13 October 2025, and a transitional period allowed temporary coexistence of both the previous and new baseline collections to support users.
- A new processing baseline for Sentinel-3 OLCI L1, SLSTR L2 FRP, SLSTR L2 LST, SYN L2 SDR, and SLSTR L1 was deployed on 7 April 2025 for S3A and S3B, introducing several improvements to product quality. The update mainly covered: OLCI L1 updated radiometric and geometric calibration auxiliary files, SLSTR L1 fixes reducing the number of degraded products, SLSTR L2 LST increased number of processed biomes and revised coefficients, SLSTR L2 FRP improved anomaly and saturation flagging and removal of twilight period false alarms.
- The full mission reprocessing of Sentinel-3 OLCI Level-1 products (Baseline Collection 004) was launched in March 2025, covering OL_1_EFR and OL_1_ERR datasets for Sentinel-3A (6 April 2016 - 6 May 2024) and Sentinel-3B (9 May 2018 - 6 May 2024), applying the Level-1 processing baseline 3.28 deployed in May 2024. The reprocessed products, published progressively from March 2025 and completed by July 2025, provided a consistent, high-quality time series from mission start to 2024, incorporating improvements such as the updated TSIS-1 HRSR 2021 solar irradiance spectrum, enhanced radiance uncertainty parameters, and refined radiometric and geometric calibration, with a temporary transition period ensuring user access to previous baseline collections (002 and 003).
- By September 2025, the update of the Sentinel-3 OLCI and SLSTR Level-1 and Level-2 Water products with reprocessed data was completed, including OL_2_WFR, OL_2_WRR, SL_2_WST, and SR_2_WAT datasets. With the publication of these updated baseline collections (BC003 for OL_2_WFR, OL_2_WRR, SL_2_WST and BC005 for SR_2_WAT), users gained access to more accurate and consistent Sentinel-3 products supporting improved environmental monitoring and analysis, while older baseline versions were removed to ensure availability of the most up-to-date data within the CDSE Catalogue.
- Sentinel-3 OLCI nighttime acquisitions in May 2025 was performed to assess the radiometric performance of the OLCI instrument on Sentinel-3 during night-time, with Sentinel-3A collecting data on 5 and 9 May over the Persian Gulf during the eclipse part of its orbit. The resulting datasets were made available on the CDSE, enabling users to explore low-illumination observation conditions and support the development of nighttime applications.

- In May 2025, Sentinel-3 SYN Level-2 data became available for visualization in the Copernicus Browser and for API access, providing users with combined OLCI–SLSTR products including 21 spectral bands, atmospheric parameters, angular information, and NDVI, True Color and False Color outputs. The release enabled access to daily and 10-day vegetation index mosaics, supporting applications such as global carbon cycle analysis, land-cover mapping, and regional agricultural monitoring, with availability through Sentinel Hub APIs and openEO allowing scalable processing and integration into machine-learning workflows.

- The Sentinel-3 Altimeter Processing Baseline 3.32 was deployed in January and February 2025 for Sentinel-3A and Sentinel-3B, introducing several corrections that improved the quality and reliability of the altimetry products. The update enhanced Land Ice Thematic Products through better handling of surface topography and POCA coordinate retrievals, corrected warnings and parameter issues in Sea-Ice and Land-Ice products, and overall provided users with more accurate and consistent datasets for ice-related applications.

Sentinel-5P:

- In March 2025, the Sentinel-5P operational ground-processing system was updated with a new **UPAS processor** (v02.07.01) for Formaldehyde (HCHO), Sulphur Dioxide (SO2), Cloud Fraction/albedo/top pressure (CLOUD), Ozone Total Column (O3) and Ozone Tropospheric Column (O3_TCL) products, introducing mainly an internal hotfix for the O3_TCL retrieval. The update ensured continued improvements in product stability and quality.

- The **full-mission SO2 reprocessing** for Sentinel-5P, completed in June 2025, applied the COBRA algorithm, originally introduced operationally in November 2024, to the entire 2018–2024 data record. This update delivered a fully harmonised, low-noise and bias-corrected SO2 dataset with consistently available layer-height information, enabling clearer identification of both volcanic and anthropogenic emission sources worldwide and replacing all previous SO2 reprocessing and operational product versions.

- The update to the Copernicus Sentinel-5P operational ground-processing system, deployed in late November 2025, introduced new processor versions for Level-1B and **Level-2** products, bringing multiple improvements across key atmospheric variables. The release delivered user benefits such as enhanced straylight and background correction in L1B, added land-fraction output across NL-L2 products, improved algorithms for aerosol, methane, NO2, sulphur dioxide, formaldehyde and ozone retrievals, and new machine-learning-based features including a fallback cloud mask for AER_LH and a quality-assessment module for CH4, providing more accurate, reliable and consistent S5P datasets.

Sentinel-6

- A complete refresh of the Sentinel-6 data baseline available within the CDSE to align with the latest processing available from EUMETSAT, with reprocessed Sentinel-6 products released in September 2025 as part of **Baseline Collection** 008. The updated MW_2_AMR, P4_1B_LR and P4_2_LR datasets provided users with the most accurate and consistent Sentinel-6 measurements for improved analysis, monitoring and research, while older baseline versions were removed to ensure access to the most up-to-date products.

Non-Copernicus missions:

- Systematic ingestion of **Landsat-8** and **Landsat-9** Collection 2 Level-1 data (from 2021 onwards) was established in September 2025, alongside the integration of MODIS data, providing CDSE users with a richer multi-mission archive for cross-sensor analysis, enabling the combined use of Sentinel and Landsat optical data.

Catalogue Evolution (STAC & OData)

Over the course of the year, substantial progress was achieved in modernising product discovery:

- The new STAC Product Catalogue prototype was released in February, initially covering Sentinel-1 and Sentinel-2, and subsequently extended to include all remaining Sentinel missions. The STAC specification is rapidly becoming the de-facto standard for discovery of GeoSpatial EO data and is well adapted to the needs of CDSE.

- A technological Proof of Concept (PoC) for a STAC catalogue based on OpenSearch technology was successfully developed. This solution is planned to be made available to all users in Q2 2026.

- The new data collections were integrated into both STAC and OData catalogues, including Landsat Level-1 data (2021 onwards), Landsat bi-monthly mosaics, **MODIS**, and CLMS data.

Enhanced Services and Tools

- **Download Service:**
  - The deployment of Zipper 2.0 in May 2025 delivered significant performance improvements for OData and HTTPS users, including enhanced concurrency handling, reduced response times, and support for asynchronous downloads of small files.

- **openEO:**
  - Support was added for exports to **STAC APIs** and object storage, large-area processing tools were enhanced, and an **openEO by TiTiler** implementation was introduced to enable lightweight processing.
  - The openEO client and platform were upgraded, with improvements focused on robustness, performance optimisation, and more mature support for workspaces, thereby enhancing user processing workflows.
  - A synchronous version of openEO API was introduced, to allow users to seamlessly migrate between prototyping in Copernicus Browser and to the batch facilities

- **JupyterLab:**
  - The environment was enhanced with the addition of the Julia kernel and the JupyterGIS extension.
  - Security was reinforced through eBPF-based filtering (blocking SSH, apt, and wget) and the introduction of one-time manual account verification prior to first use.
  - User data in the mystorage area is kept for 30 days, previously it was kept for 12 days.

  - Copernicus Browser and Workspace:
  - User interface improvements were implemented alongside deeper integration between the Browser and Workspace, enabling the selection of multiple products for batch processing.
  - Throughout the year, 77 new versions of the Copernicus Browser were released. These updates brought continuous improvements, including faster loading times and new datasets, such as visualizations of Sentinel-3 Synergy L2.
  - Copernicus Browser has switched to openEO as the main visualisation back-end, favouring to a common API for processing graph descriptions.
  - Integration with STAC catalogue has been releases for several collections, marking a migration towards new standardised catalogue interface with view to simplifying the onboarding of new collections in coming years.

- **On-Demand Production:**
  - New Sentinel-2 Workflows L0-S2MSI1A and L0-S2MSI1B were added. These workflows accept any product level (L1A, L1B, L1C, or L2A) as a reference. The full_datastrip option now defaults to false, returning only granules intersecting the input product. These workflows are available to expert users.
  - Baselines for Sentinel-2 and Sentinel-3 workflows now include defined start and end dates for validity. Orders for products incompatible with the applicable baselines are automatically prevented. Workflow option descriptions were improved, and the Baseline Collection option was removed for Sentinel-2 workflows, as it is now incorporated within the baseline description.
  - Integration of the refresh token flow and corresponding API updates was completed to support these enhancements.

Copernicus Land Monitoring Service (CLMS)

- The **CLMS** service was initially **launched on CDSE in May 2025** with 18 product types and 58 datasets, positioning CDSE as the central access point for the global CLMS portfolio.

- By the end of 2025, the **CLMS Global** offer had grown to 26 product types and 112 datasets (62 Global, 44 Europe, 6 covering other regional scopes), including river and lake water level, river and lake ice extent, snow cover extent, snow water equivalent, soil water index, surface soil moisture, top-of-canopy reflectances, vegetation indices, vegetation phenology, burnt areas, lake surface water temperature, lake water quality, net/gross primary production, dry/gross dry matter productivity, dynamic land cover, evapotranspiration, land surface temperature, water bodies, and the new Vegetated Land Cover Characteristics (VLCC) suite for Europe.

- **New LCFM** Product Suite for **Global Land and Forest Monitoring** was introduced, providing high-resolution, regularly updated datasets to support land cover and forest change analysis worldwide.

- Ingestion of **HR-WSI** (Water Snow Ice) commenced and will continue throughout 2026.

Copernicus Contributing Missions (CCM)

- **Very High Resolution (VHR)** image mosaics from 2018, 2021 and 2024 were released
- The rollout of the VHR 2024 dataset progressed smoothly, with most products already available; remaining products will be delivered in the first quarter of 2026.
- In July 2025, the **COP DEM 10m** datasets (COP-DEM_EEA-10-DGED and COP-DEM_EEA-10-INSP) became available for download to Public Authorities, providing high-resolution elevation data through both OData access and the Copernicus Browser. This release enabled authorised users to work with detailed 10 m DEM layers to support applications requiring precise terrain information.
- All three VHR datasets (2018, 2021, 2024) are available in Copernicus Browser for visualisation.

Technical upgrades

- Major system upgrades were successfully completed, strengthening security and improving overall service reliability.
- The updated CDSE Web Portal was launched, offering a redesigned, user-friendly interface with improved navigation, accessibility, and visual identity to better serve a growing global community of Earth Observation (EO) data users.

CDSE Ecosystem growth

- In late June 2025 - pleasantly coinciding with ESA's Living Planet Symposium in Vienna, the **number of registered users surpassed 400,000.**
- The ecosystem expanded with the addition of **EOPF ZARR and EOxHub Workspaces.**
- **Ecosystem Services Registry** was introduced, enabling users to access and contribute tools and services, fostering broader collaboration and custom applications within the CDSE community.

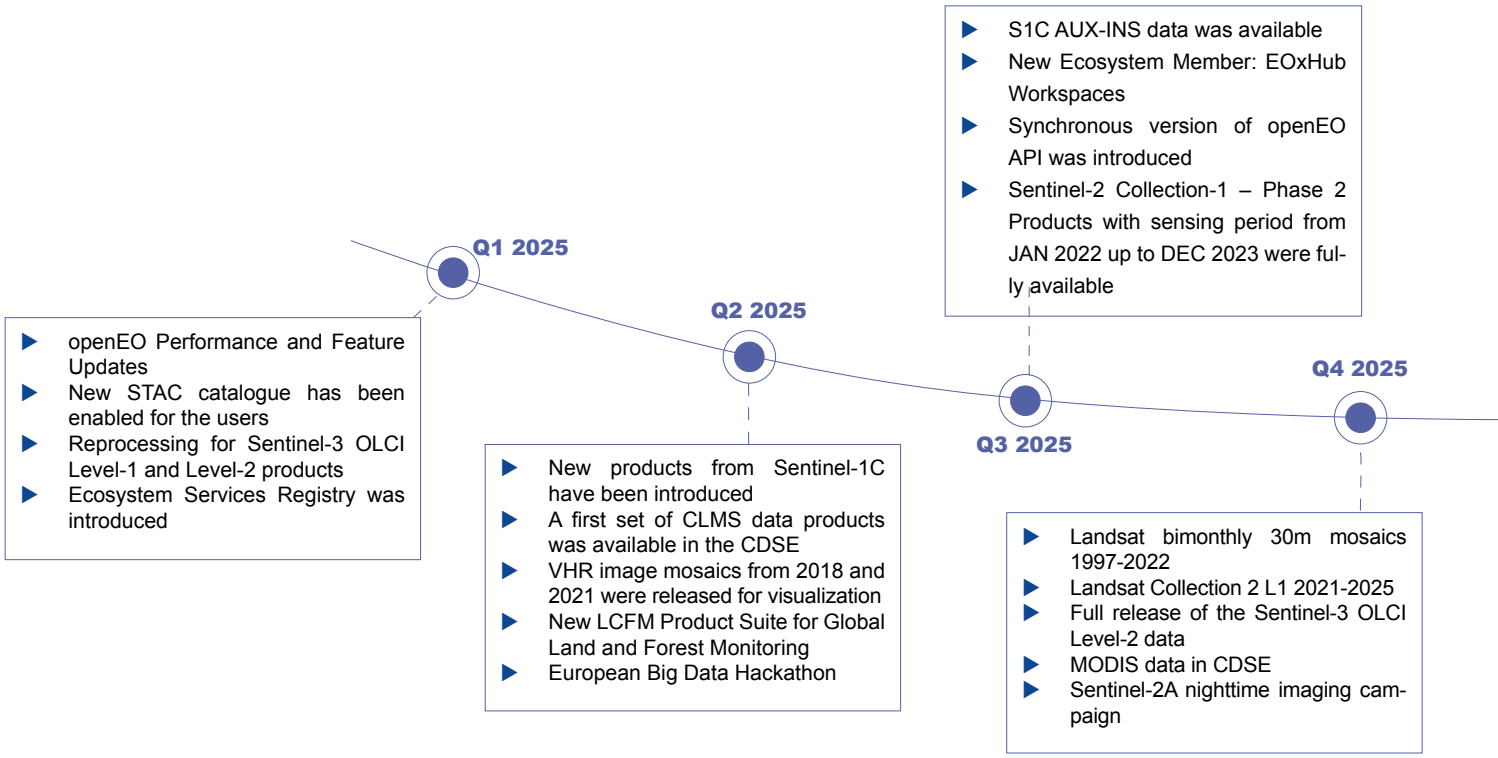


FIGURE 18: Main evolution milestones of the Copernicus Data Space Ecosystem in 2025.

4. OUTLOOK OF THE DATA ACCESS SYSTEM FOR 2026

From Scale to Capability: CDSE Enters Its Next Phase
Building on the strong momentum of recent years, the roadmap of Copernicus Data Space Ecosystem focuses on turning Europe's Earth Observation assets into faster insights, richer services, and easier-to-use tools, supporting policy, science, business, and society at large. Here some of the key objectives for 2026.

1. Expanding Europe's Observation Power: New and Enriched Data Streams

Sentinel-1D: Strengthening All-Weather Monitoring
The introduction of **Sentinel-1D mission** data marks a major milestone for Europe's radar observation capacity. This evolution safeguards one of Copernicus' most operationally critical capabilities at a time of growing environmental and security challenges.

Sentinel-3C: Continuity of operational ocean, land, ice and atmospheric observations
The next Copernicus Sentinel-3 satellite is scheduled for launch in late 2026. Its instruments will support sea-surface topography, surface temperature, and ocean and land colour products for NRT forecasting and long-term environmental monitoring.

Completion of Global Sentinel Mosaics (Sentinel-1 & Sentinel-2)
The remaining historical global mosa**ics** for both Sentinel-1 and Sentinel-2 will be completed at the beginning of 2026, with fresh data being made available regularly. This transforms decades of observations into ready-to-use global and up-to-date reference layers, ideal for AI and other applications, accelerating science and policy analysis alike.

New Data Sources: MODIS and Landsat Time Series
The onboarding of MODIS data and bi-monthly Landsat 30 m mosaics (1997–2022) significantly extends Copernicus' historical depth, enabling research and analysis on satellite-derived products across a very long historical time span and supporting the study of long-term temporal developments.

Landsat-8 for the years 2015-2020
The existing Landsat 8 Collection 2 Level 1 dataset in CDSE will be extended to cover the years 2015–2020, providing data scientists with new capabilities by enabling access to both Landsat and Sentinel products spanning the last 11 years.

2. From Data Access to Insight: Smarter Discovery and Visualisation

New advances in STAC
A new version of the STAC Catalogue based on OpenSearch is planned for release, providing users with enhanced features and capabilities. Compared with the current implementation, the SFEOS/OpenSearch-based catalogue will offer improved scalability for large metadata volumes, more flexible search and filtering, stronger full-text and faceted search capabilities, and better performance for complex EO data discovery scenarios. This evolution is foreseen to support the integration of additional Sentinel and Copernicus Contributing Mission and other complementary datasets and further improve the user experience when searching and accessing EO products in CDSE.

Copernicus Services Integrated via STAC
In parallel, new data collections will be substantially added to the STAC Catalogue, including Copernicus Marine Service datasets as well as new products from the Copernicus Land Monitoring Service (CLMS). This will further enrich the catalogue and improve cross-domain data discovery by enabling users to search and access marine, oceanographic, land monitoring, and Earth Observation datasets through a common STAC-based interface.

3. A More Powerful Copernicus Browser: From Viewing to Computing

STAC Integration and Advanced Workflows
The Copernicus Browser evolves from a visual exploration tool into a lightweight processing and analysis interface. Key 2026 milestones include:

- First integration with the CDSE STAC catalogue to take advantage of the improved catalogue performances and capabilities
- Support for custom openEO process graph execution

Powering the Browser towards an interactive gateway for scalable EO analytics, not just visualisation.

4. openEO Expands as an Operational Processing Backbone

openEO QGIS Plugin: Bringing Cloud Processing to the Desktop
The release of a new openEO QGIS plugin connects cloud-native processing directly to one of the most widely used GIS tools.

Containerised Processing via Docker and CWL
Support for Docker-based processes via CWL / OGC Application Packages represents a major step toward industrial-grade EO processing. This evolution positions openEO as a core infrastructure for next-generation Earth observation services.

5. New Thematic Capabilities: Land and Water at Higher Resolution

CLMS HR-WSI: High-Resolution Water & Snow Information
New High-Resolution Water and Snow Indicators (HR-WSI) from the Copernicus Land Monitoring Service enrich thematic offerings. This will support water resource management, flood risk, and climate adaptation analysis.

Evapotranspiration and productivity support accurate modelling of carbon balance and agricultural processes and added detail for water bodies brings accurate monitoring into the public domain for main European waters.

6. AI-Enhanced Cloud Capabilities: Intelligent Processing and Analytics

AI Integration across Supporting Cloud Services (OTC & CloudFerro Cloud)
Expanding its analytical power through the integration of advanced Artificial Intelligence (AI) and Machine Learning (ML) capabilities within the supporting cloud infrastructures provided by Open Telekom Cloud (OTC) and CloudFerro Cloud. These enhancements enable users to move beyond data access toward scalable, on-demand intelligent processing directly within the platform environment.

New GPU-enabled environments, managed AI workspaces, and containerized ML frameworks allow users to train, fine-tune, and deploy models close to the data. This reduces data movement, accelerates processing workflows, and supports operational use cases such as automated feature extraction, change detection, classification, and predictive analytics.



Copernicus Sentinel data 2025: Cluj-Napoca in Romania

7. AI support for CDSE users

Sovereign AI models in JupyterLab
It is planned to introduce open-source and sovereign AI models to support development and data science work using CDSE data, APIs, and tools, including extended support within the JupyterLab environment.

Model Context Protocols to CDSE applications
Additional extensions are being considered for CDSE to strengthen chatbot-based Earth Observation workflows: the introduction of a Model Context Protocol servers to support openEO workflow development, and other access mechanism will significantly enhance the availability of native AI capabilities within CDSE and make the system easier for users to adopt. They will also shorten the time needed to discover relevant data, build workflows, and achieve results.

8. New Space Data Onboarding

Space Data Onboarding: Easier Discovery, Faster Use
New space data onboarding capabilities focus on discovery and visualisation. CDSE will continue to simplify and standardise the onboarding of new space datasets, making them easier to discover, visualise, and use, lowering entry barriers, accelerating time to insight, and expanding access beyond traditional EO experts. This evolution reflects a shift from „data availability“ to data intelligibility.

It is planned to enrich the EO data repository in CDSE by adding data collections from leading and innovative European satellite operators.

9. Identity Federation

Identity Federation between CDSE and Copernicus Services Providers

Users of leading Copernicus Services will benefit from the planned identity federation with CDSE. This federation will allow users to access CDSE using their existing credentials from Copernicus Services platforms, or through national digital identity systems integrated via EU Login. As a result, users will be able to create or access their CDSE accounts more easily, without the need to manage separate credentials for each platform.

This approach will reduce onboarding barriers, simplify access to CDSE resources, and improve the overall user experience across the European Earth Observation ecosystem. It will also support stronger interoperability between CDSE, Copernicus Services, and EU national systems, making it easier for users to move between platforms and combine data, tools, and services. In addition, identity federation will improve trust, security, and compliance by relying on established authentication mechanisms and recognised European identity frameworks.

10. Ecosystem Expansion: Integration of Third-Party Services and

Growing the CDSE Services Registry with External Value-Added Services
CDSE will focus to broaden its ecosystem by onboarding new third-party services into the CDSE Services Registry. This strategic expansion enhances the diversity of tools and applications directly accessible from the platform and strengthens collaboration across the European Earth observation community.

Looking Ahead: Copernicus in 2026

The 2026 roadmap confirms a clear evolution of the CDSE for the Copernicus Programme:

- From data volumes to decision-ready information
- From specialist platforms to accessible, interoperable services
- From isolated tools to a coherent, federated ecosystem

By strengthening its observation capacity, simplifying access, and enabling advanced processing, the CDSE is positioning itself as a cornerstone of Europe’s digital, environmental, and climate ambitions — delivering value not only to experts, but to society as a whole.

5 USER GROWTH

5.1. Registered Users

This chapter provides an overview of the growth of the CDSE user community in 2025, analyzing changes in the size, structure, and geographic distribution of registered users. It looks at how users have grown across different roles, thematic preferences, countries and continents, and highlights important trends and patterns in the continued adoption of the platform.

It is recalled that none of the user accounts from the former Sentinel Data Access Service (the open access data hub etc.) were migrated to the CDSE due to considerations connected to the EU General Data Protection Regulation (GDPR). It is also recalled that this is the 3rd year of operations for the CDSE.

The graphic below illustrates the trend in user registrations on the CDSE platform in 2025, showing both the number of newly registered users per month and the cumulative total by the end of the year. Throughout the course of 2025, user registrations remained consistently high, with monthly new registrations ranging from 14,758 (January) to a peak of 31,509 (November) users. As a result, the total number of registered users increased steadily from 290,334 at the beginning of the year to 542,622 by December 2025. A total of 251,659 new users registered on the platform in 2025, accounting for 46.38% of the entire CDSE user base at the end of the year. (Figure 19)

The sustained and evenly distributed monthly registration levels observed throughout the year underline the continued strong interest in the platform and confirm CDSE's role as a key access point for Copernicus Sentinel data, supporting the systematic expansion of its global user community.



FIGURE 19: Registered users per month and total for 2025.

The user management system organizes users into specific roles, each with defined access rights and performance levels, such as the monthly download volume available from the free quota system which is funded by public resources. On registration, users are automatically assigned the 'Copernicus General Users' role. Additional roles can be granted to eligible users following approval by ESA.

As of the end of 2025, the overall structure of user roles remains unchanged, with the great majority of registered accounts still classified as Copernicus General Users. However, the total number of registered users has increased substantially across the platform compared to the previous year. In particular, there was a sharp increase in the number of Copernicus General Users, reaching 541,935 accounts by 31 December 2025, compared to 289,080 at the end of 2024, representing an increase of nearly 88%. The number of users in the remaining three categories also increased, reaching 370 for Copernicus Service Users, 22 for Copernicus Collaborative Partners, and 17 for Copernicus International Partners. (Figure 20)



FIGURE 20: Registered users per role (as of 2025.12.31).

During the registration process, users are invited to indicate their thematic activity preferences from a predefined list, although providing such information is optional. As shown in Figure 21, thematic preferences in 2025 continue to be concentrated in a small number of key areas. The most frequently selected themes were Land (124,342 users), Research and innovation (82,482), Climate Change (44,651), Environmental compliance (33,041), and Marine environment, maritime affairs and fisheries (24,167). Users who selected „Other" as their thematic domain, type of user, or purpose of data use are excluded from the analysis in Figure 21.

Collectively, these five thematic categories represent 86.18% of all users who have declared a thematic preference, thereby confirming a high level of thematic concentration within the CDSE user community. When compared to 2024, the overall ranking of the top thematic areas has remained consistent. However, there has been a substantial increase in absolute user numbers across all major domains, reflecting the significant growth of the platform's user base.

Minor shifts are observed among less popular themes, although some categories recorded notably dynamic growth. For example: International development and cooperation moved up by three positions, registering the highest relative increase in user base across all thematic categories (+141.49%). Tourism and Arctic policy and polar areas also advanced by two positions each, with user numbers growing by 140.73% and 138.54% respectively. By contrast, Security declined by three positions, with absolute user numbers increasing by only 18.11%. The Health category recorded the lowest growth, with an increase of only 5.90%, consequently dropping by two positions in the ranking. (Figure 21)

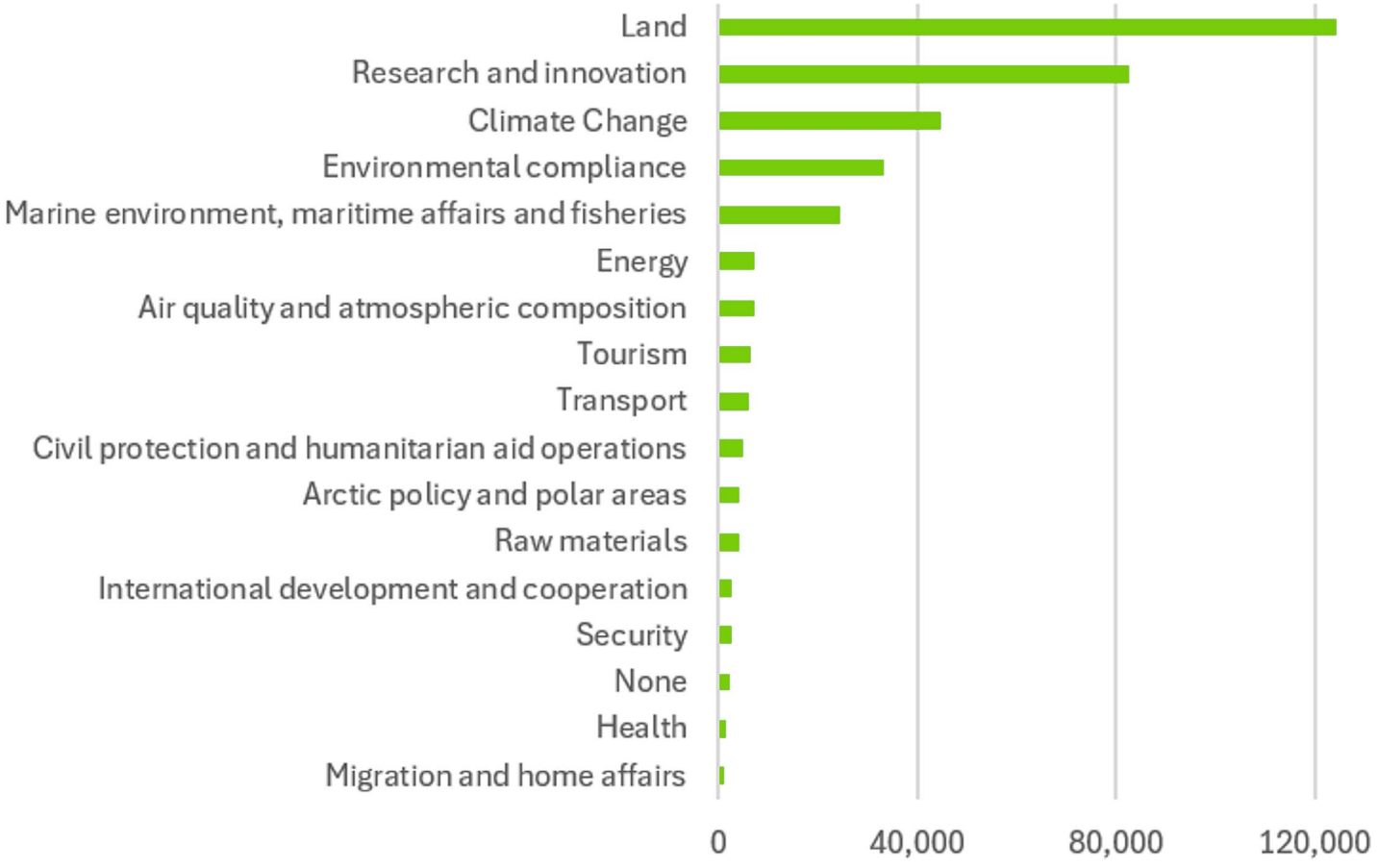


FIGURE 21: Registered users per thematic activity.

Figure 22 shows the number of registered users per continent at the end of December 2025. The analysis is based on information provided by users during the registration process, without any additional verification of geographic location (e.g. IP address checks). By the end of 2025, the number of registered users had increased across all continents compared to the previous year, confirming the continued global expansion of the CDSE user base. Asia and Europe remained the regions with the largest user bases, with 177,535 and 168,441 users respectively. South America followed with 82,729 users, while North America reached 62,001 users. Africa recorded 42,526 users, Oceania 9,141, and Antarctica 244.

In relative terms, consistent user growth was observed across all continents, with particularly strong percentage increases in Oceania (+103.4%), South America (+91.5%) and Africa (+91.5%). Asia and Europe recorded growth rates of 87.82% and 86.3% respectively, while growth in North America was 79.0%. Starting from a very low base, Antarctica increased by 74.3%. While the absolute number of registered users in Asia remains just ahead of Europe, the uptake of the CDSE platform is proportionally more prominent in Europe when population size is considered, with European users still accounting for the majority of platform usage. Overall, this pattern confirms the strong presence and value of CDSE within the European user community – a key indicator for ESA – while also reflecting the platform's growing adoption across other regions worldwide.

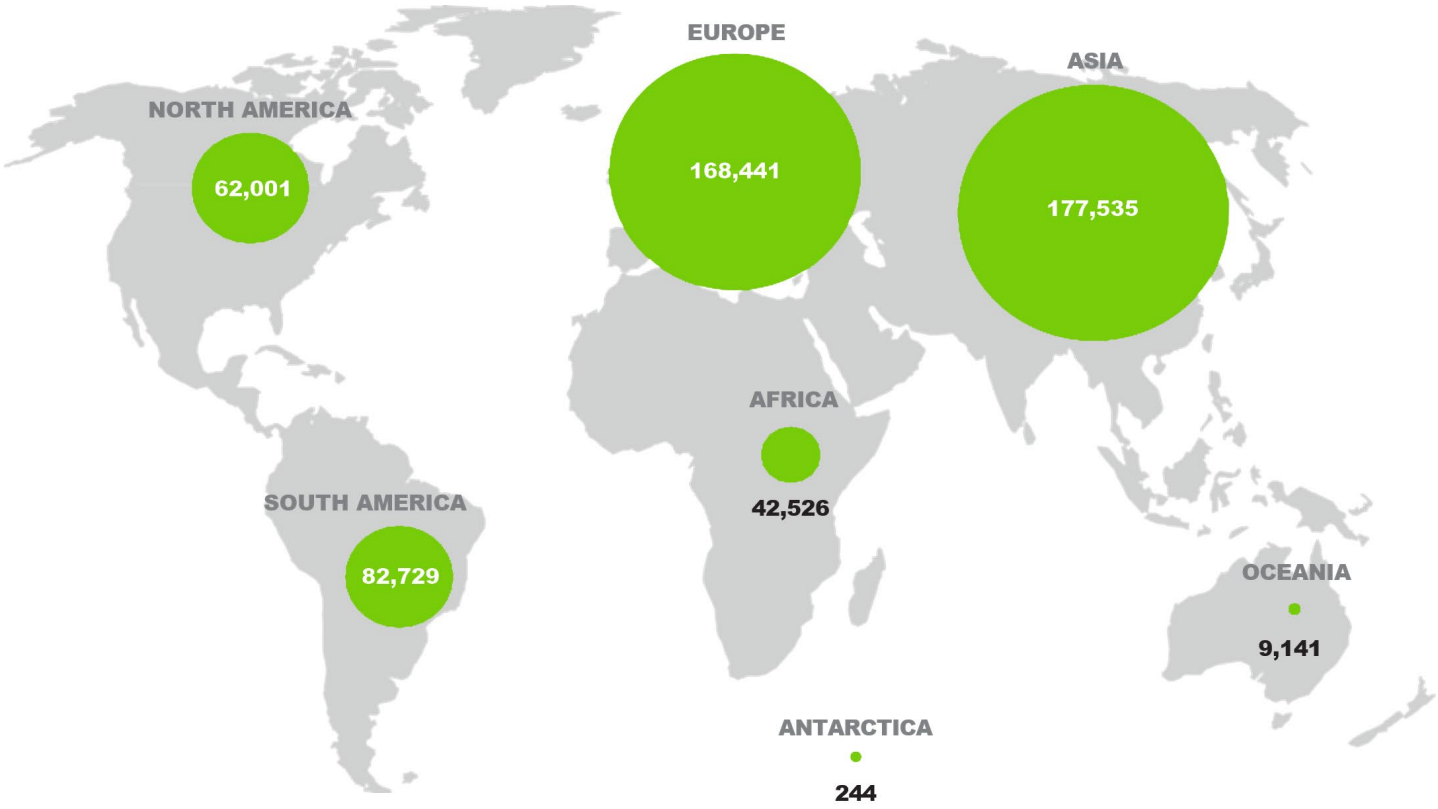


FIGURE 22: Number of registered users per continent as of Dec 2025.

An alternative view of the global use of the CDSE platform can be gained by looking at the number of countries with over 100 registered users. Figure 23 shows the monthly increase in the number of countries exceeding this threshold in 2025. Starting from 136 countries at the end of 2024, this number increased steadily by 1–4 countries per month throughout the year, reaching 157 countries by the end of 2025. A total of 21 additional countries surpassed the threshold of 100 registered users, representing a 15.44% increase compared to the number of qualifying countries at the end of 2024.

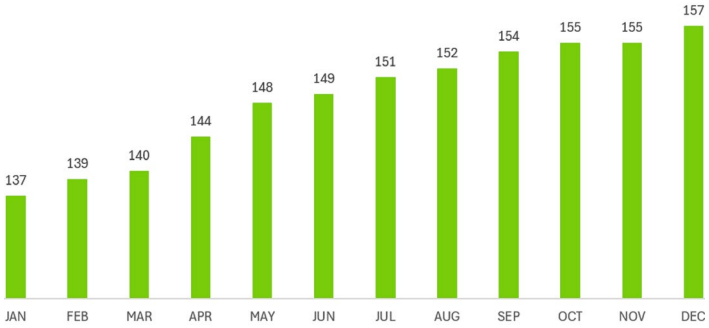


FIGURE 23: Number of countries exceeding 100 users in 2025.



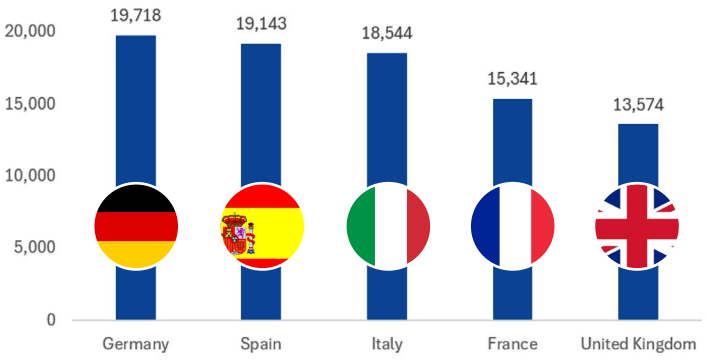


Figure 24 presents the European countries with the highest numbers of registered CDSE users as of the end of December 2025. Germany remains the leading country with 19,718 registered users, followed closely by Spain (19,143), Italy (18,544), France (15,341), and the United Kingdom (13,574). While the overall ranking of the top five countries remains largely stable, Spain and Italy have exchanged positions, with Spain moving into second place and Italy ranking third. All five countries recorded strong and broadly comparable growth in 2025, with an average increase of 85.15%, highlighting sustained high engagement from Europe's major CDSE user communities.

FIGURE 24: Five EU and ESA member states with the highest number of registered users (Dec 2025).

5.2. Anonymous users and visitors

CDSE is also providing significant value to users who do not register. The Copernicus Browser allows users to search, interactively visualise and analyse data without signing in, for almost all collections and up to full resolution. Only specific features and downloading require users to be registered.

A deeper look at the user access across the various services of the CDSE is reported and analysed in Chapter 8 (User Activity).

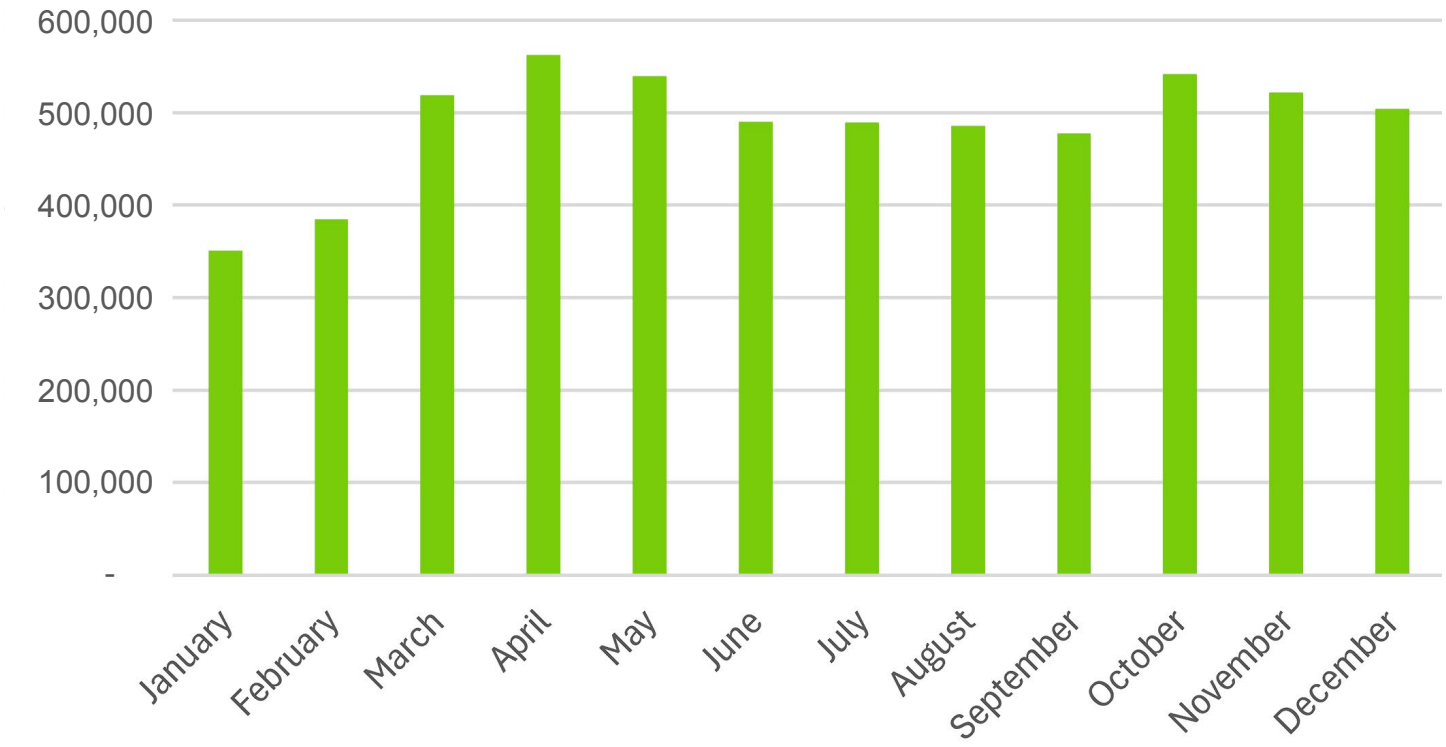


FIGURE 25: The number of visitors using the Copernicus Browser (both registered and anonymous) varied between 350,000 and 560,000 per month, totalling 5.8 million over the course of 2025. While this annual figure includes returning users across different months, it highlights the sustained and widespread engagement with the platform throughout the year.



Copernicus Sentinel data 2025: Daugavpils in Latvia

[1] A visitor is defined as a unique individual who visits the Copernicus Browser within a 24-hour period. To prioritize user privacy, the analytics service resets visitor identification daily.

6 CDSE DATA OFFER OVERVIEW

6.1. Copernicus Sentinel Data Offer

This section presents statistics on the volume of data available in the CDSE from the core Copernicus data offering: Sentinel-1, Sentinel-2, Sentinel-3, and Sentinel-5P.

The Copernicus Sentinel-1 mission consists of polar-orbiting satellites designed for all-weather, day-and-night radar imaging using C-band synthetic aperture radar (SAR). These satellites acquire images in four operational modes, offering spatial resolutions down to 5 meters and coverage areas up to 400 km. The mission supports dual polarization, short revisit intervals, and rapid product delivery, with each observation accompanied by precise spacecraft position and attitude data. A significant milestone for the mission was reached in December 2024 with the launch of Sentinel-1C. Its data became available on CDSE on 26 March 2025, with fully calibrated products meeting mission quality specifications becoming available on 19 May 2025. This restored the constellation's objective of 6-day global revisit coverage, which had been affected since Sentinel-1B end of mission in 2021. The mission's continuity was further secured with the launch of Sentinel-1D on 4 November 2025, which is currently undergoing commissioning and its products are scheduled for release to users in Q2 2026.

The Copernicus Sentinel-2 mission provides wide-swath, high-resolution, multi-spectral optical imaging. In 2025, the constellation exceptionally continued to operate with three satellites - Sentinel-2A, Sentinel-2B, and Sentinel-2C - with transfer of duty from Sentinel-2A to Sentinel-2C completed on 21 January 2025 following the completion of the S2A-S2C tandem campaign, allowing to maximise the consistency of the data products generated by both satellites. The Sentinel-2A extended campaign, which began on 13 March 2025, temporarily complemented the nominal operations of Sentinel-2B and Sentinel-2C, enhancing global revisit frequency, ensuring consistent observations over Europe across all three satellites, and improving coverage over cloud-prone tropical regions in Africa and South America. The CDSE offers standard Level-1C (top-of-atmosphere reflectance) and Level-2A (bottom-of-atmosphere reflectance) products (S2 STRD), as well as the Sentinel-2 Collection-1 (S2 RPRO) products. The S2 RPRO is a harmonized, reprocessed archive with consistent calibration and improved geometric performance covering data from 2015 onwards. The Collection-1 Phase 2 reprocessing was completed in September 2025, delivering over 70 million end-user products and concluding a three-year processing campaign.



Copernicus Sentinel data 2025: Ouarkziz crater in Algeria

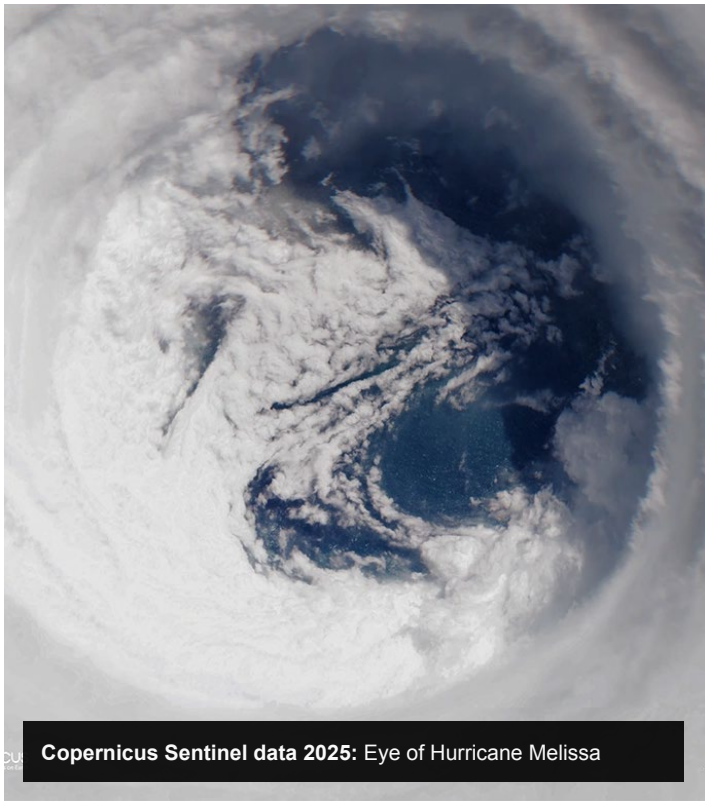
The Copernicus Sentinel-3 mission is focused on measuring sea surface topography, sea and land surface temperature, and ocean and land surface color with high accuracy and reliability. Operated jointly by ESA and EUMETSAT, Sentinel-3 uses two satellites - Sentinel-3A and Sentinel-3B - each carrying four main instruments: the Ocean and Land Colour Instrument (OLCI), the Sea and Land Surface Temperature Radiometer (SLSTR), the SAR Radar Altimeter (SRAL), and the Microwave Radiometer (MWR). The mission delivers operational ocean and land observation services, supporting ocean forecasting, environmental monitoring, and climate studies. The CDSE provides access to all Sentinel-3 Level-1 and Level-2 products, including reprocessed baselines. In 2025, the product portfolio was significantly updated through a series of reprocessing campaigns. The full mission reprocessing of OLCI Level-2 land products (Baseline Collection 003) was completed in October, following the reprocessing of OLCI Level-1 products (Baseline Collection 004) in July, and the update of OLCI and SLSTR Level-1 and Level-2 water products in September. These campaigns collectively ensure that users have access to the most accurate and better-calibrated Sentinel-3 datasets to date, with improved internal consistency.

The Copernicus Sentinel-5 Precursor (Sentinel-5P) mission is dedicated to atmospheric monitoring, providing high-resolution measurements essential for air quality assessment, ozone and UV monitoring, and climate forecasting. The mission's TROPOMI instrument produces a range of data products at various processing levels. The CDSE provides access to Level-1B (calibrated radiances) and Level-2 (retrieved geophysical parameters) products, supporting a wide array of atmospheric research and operational applications. In 2025, the Sentinel-5P product portfolio was enhanced through several processor updates. Most notably, full-mission SO_2 reprocessing was completed in June 2025, applying the COBRA algorithm to the entire 2018-2024 data set. This delivered a harmonized, low-noise, bias-corrected dataset, enabling clearer identification of volcanic and anthropogenic emission sources. A further comprehensive update to the ground-processing system, deployed in late November 2025, brought improvements to the retrieval of multiple atmospheric variables, including aerosols, methane, NO_2, SO_2, formaldehyde and ozone, as well as enhancing straylight and background correction at Level 1B. Based on the data offer outlined above, the following tables offer detailed information on publications, deletions and daily averages for 2025.

Mission	No. of user-level data published		% for 2025 of total number published on CDSE	Volume of user-level data published [TB]		% for 2025 of total volume published on CDSE
	2025	Since project start (Dec 2022)	2025 vs project start	2025	Since project start (Dec 2022)	2025 vs project start
S1	2,038,954	7,292,549	28%	4,117.98	11,948.59	34%
S2 STRD	10,240,570	19,251,783	53%	5,831.18	10,955.30	53%
S2 RPRO	13,253,874	55,539,850	24%	7,625.47	31,917.54	24%
S3 STRD	2,164,836	5,638,935	38%	591.14	1,361.87	43%
S3 RPRO	3,619,585	4,058,450	89%	1,366.37	1,436.46	95%
S5P	151,877	892,251	17%	189.97	1,119.70	17%
ALL	**31,469,696**	**92,673,818**	**34%**	**19,722.12**	**58,739.47**	**34%**

TABLE 9:
Overall number and volume of published user-level data on the CDSE in 2025 compared to data published since the start of the CDSE service in Dec 2022.

STRD: Stands for standard user-level data only; refers to products published continuously as part of ongoing Sentinel mission operations.
RPRO: Stands for reprocessed user-level data only, i.e. products that are recomputed using improved calibration or processing algorithms after their initial publication.



Copernicus Sentinel data 2025: Eye of Hurricane Melissa

From the launch of the CDSE Service in December 2022 until the end of 2025, a total of 92,673,818 Copernicus Sentinel user-level data products were published, equating to a cumulative data volume of 58,739.47 TB (Table 9). In 2025 alone, over 31.4 million user-level products were published, with a total data volume of approximately 19.7 PB - representing 34% of the total number of products and 34% of the total volume published since the launch of the CDSE Service. Sentinel-2 accounted for the largest share once again, with over 23.4 million products (75% of the 2025 total count) and approximately 13.5 PB (68% of the 2025 total volume) (Table 9).

Table 10 provides broader context, comparing the number and volume of user-level data published in 2025 to the entire Sentinel catalogue since the beginning of each mission. The data published in 2025 represented 30% of all Sentinel user-level data packages and 24% of the total data volume made available since the start of Sentinel operations. Sentinel-3 made the most significant contribution relative to historical mission output, with 37% of all products ever produced and 42% of the total mission data volume being published in 2025. This is largely associated with the full-mission reprocessing campaigns for Sentinel-3 OLCI Level-1 and Level-2 products.

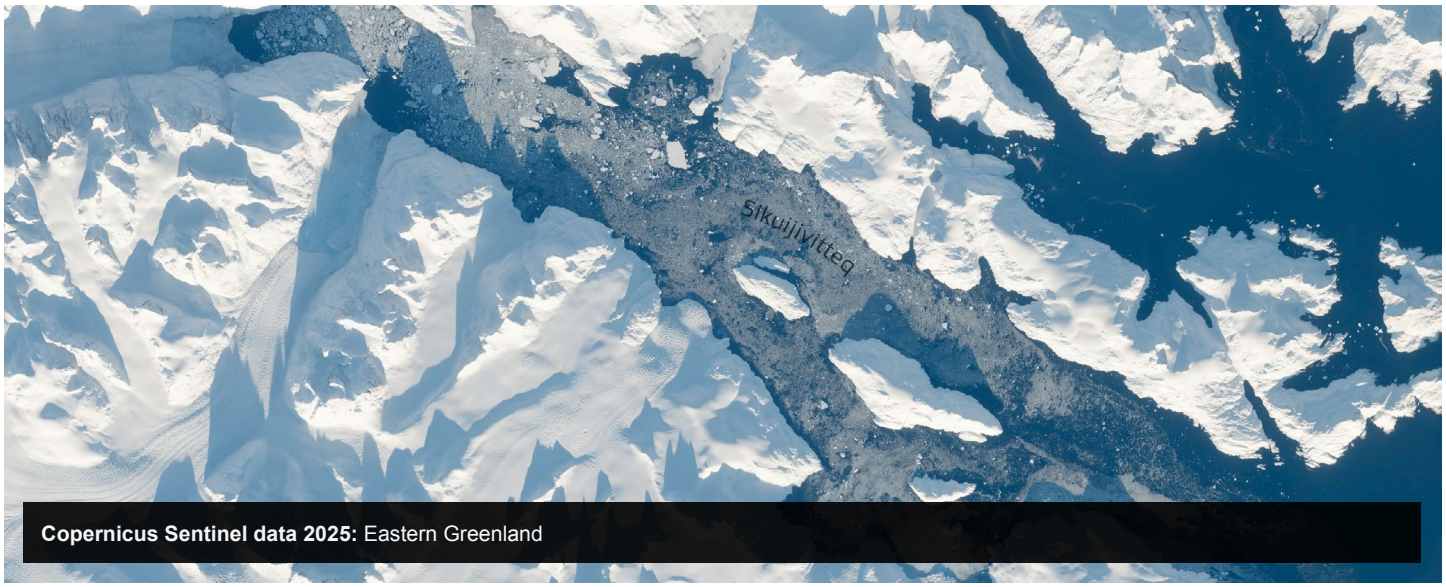
Mission	No. of user-level data published		% for 2025 of total number published since mission start	Volume of user-level data published [TB]		% for 2025 of total volume published since CDSE mission start
	2025	Total - since Sentinels operations start in 2014	2025 vs total	2025	Total - since Sentinels operations start in 2014	2025 vs total
S1	2,038,954	13,988,818	15%	4,117.98	32,773.07	13%
S2	23,494,444	74,807,786	31%	13,456.65	42,874.42	31%
S3	5,784,421	15,597,059	37%	1,957.51	4,619.09	42%
S5P	151,877	1,385,855	11%	189.97	1,759.46	11%
ALL	**31,469,696**	**105,779,518**	**30%**	**19,722.12**	**82,026.04**	**24%**

TABLE 10: The total number and volume of Sentinel products published in the CDSE in 2025 compared to the cumulative number and volume of products since the start of Sentinels' operations.

Table 11 shows how many Sentinel user-level data products were deleted from the CDSE in 2025 and how much data this represented. A total of 38,612,635 products (10,077 TB) were deleted - a 18.66% decrease in the number of products removed but a 65.27% increase in volume, compared to 2024. Sentinel-2 accounted for the largest proportion of deletions (19,075,715 products), although this was almost half the number removed in 2024. This reflects the completion of the phase-out of older baselines, which followed intensive data reprocessing activity in previous years. The number of Sentinel-3 products deleted increased sharply by 95% and the volume by 64%, driven by the removal of previous baseline collections as part of extensive OLCI and SLSTR reprocessing campaigns completed throughout 2025. Sentinel-5P deletions also increased (+24% in count, +40% in volume), consistent with the ground-processing system updates and the full-mission SO_2 reprocessing completed in June 2025.

Mission	No. of user-level data deleted in 2025	
	Count	TB
S1	55,740	22.82
S2	19,075,715	6,409.17
S3	14,396,155	2,893.76
S5P	5,085,025	751.05
ALL	**38,612,635**	**10,077**

TABLE 11:
The total number and volume of Sentinel products deleted in the CDSE in 2025.

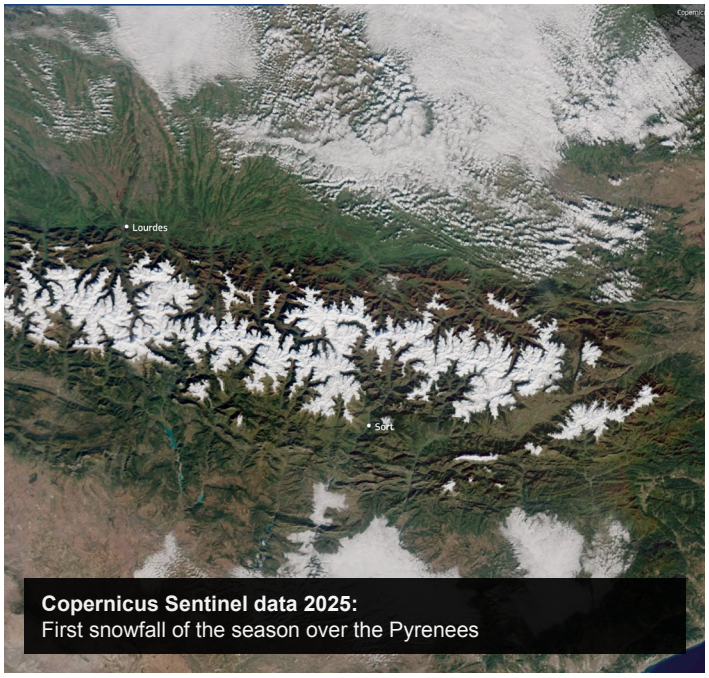


Copernicus Sentinel data 2025: Eastern Greenland

Looking at the daily publication averages, the overall daily output across all missions declined slightly by 8% in product count (86,218 in 2025 vs. 93,416 in 2024) and by 4% in volume (54.03 TB vs. 56.49 TB) (Table 12). This minor decrease is, however, linked to the completion of the Sentinel-2 Collection-1 Phase 2 reprocessing campaign in September. Nevertheless, this aggregate figure conceals some significant shifts at the mission level.

Sentinel-1, for example, saw a strong improvement, with daily average publication rising 62% in product count (5,586 vs. 3,449) and 60% in volume (11.28 TB vs. 7.06 TB), directly reflecting the start of the Sentinel-1C user data dissemination from 26 March 2025, which restored the constellation's nominal 6-day revisit cycle and brought a significant volume of new SAR data into regular production. For Sentinel-2, the trend was mixed: S2 STRD daily averages grew by 19% in both count and volume, consistent with the addition of Sentinel-2A observations during the extended campaign that began in March 2025. In contrast, S2 RPRO daily averages fell by 39% (36,312 vs. 59,698 products per day), due to ending of reprocessing campaign. (Table 12)

Sentinel-3 STRD daily averages remained generally consistent compared to 2024, with a modest decline of 6% in product count (5,931 vs. 6,324 per day) and a slight increase of 11% in volume (1.62 TB vs. 1.46 TB per day). These minor fluctuations fall well within the normal range of operational variability and do not indicate any significant change in data production. The slight increase in volume, despite the modest decrease in product count, could be possibly linked to the new processing baseline that was deployed on 7 April 2025 for Sentinel-3A and Sentinel-3B. This baseline introduced several improvements to product quality and may have resulted in slightly larger product sizes. Additionally, the S3 RPRO category was populated in the 2025 statistics, with an average of 9,917 products and a volume of 3.74 TB per day. These products were generated as part of several Sentinel-3 reprocessing campaigns carried out during the year, including OLCI Level-1, OLCI Level-2 Land and updated Water products (Table 12). Sentinel-5P daily averages grew modestly, by 35% in count (416 vs. 308) and 14% in volume (0.52 TB vs. 0.46 TB), in line with the operational processing updates deployed in March and November 2025. (Table 12)



Copernicus Sentinel data 2025:
First snowfall of the season over the Pyrenees

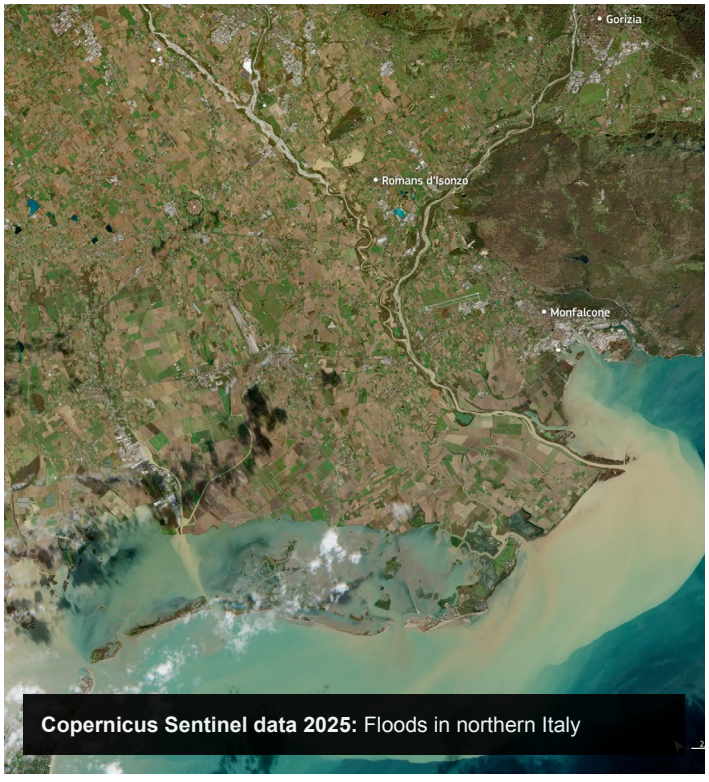
Mission	Daily average number published in 2025		% of difference	Daily average volume published in 2025 [TB]		% of difference
	2025	2024	2025 vs 2024	2025	2024	2025 vs 2024
S1	5,586	3,449	62%	11.28	7.06	60%
S2 STRD	28,056	23,637	19%	15.98	13.45	19%
S2 RPRO	36,312	59,698	-39%	20.89	34.06	-39%
S3 STRD	5,931	6,324	-6%	1.62	1.46	11%
S3 RPRO	9,917	-	-	3.74	-	-
S5P	416	308	35%	0.52	0.46	14%
ALL	**86,218**	**93,416**	**-8%**	**54.03**	**56.49**	**-4%**

TABLE 12: Average number and volume of user-level data published per day in 2024 and 2025, with percentage splits per Sentinel mission. The percentages indicate the difference between data published in 2024 and 2025.

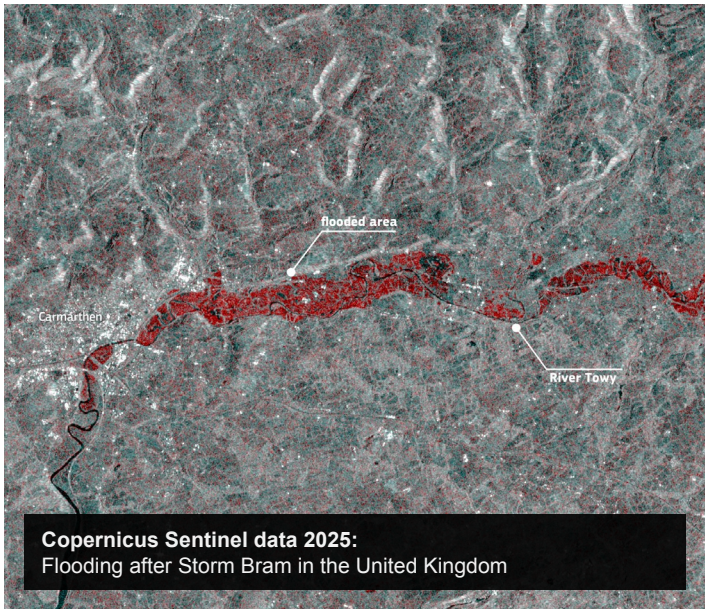
Table 13 shows the number of user-level data published and the total volume of this data for each Sentinel mission in 2025. The accompanying charts illustrate how these values developed throughout the year (Figure 26 to Figure 29). These monthly statistics provide the clearest insight into the trends and changes observed for each mission during the year.

Over 31.4 million products were published in 2025, corresponding to approximately 19.7 PB (19,722 TB) of data - a decrease of around 8% in product count and 5% in volume compared to 2024. As in previous years, Sentinel-2 dominated in both categories, accounting for 75% of all published products and 68% of the total data volume across all missions. (Table 13)

A distinct upward trend is visible for Sentinel-1 from April onwards. Monthly product counts rose from around 100,000-120,000 in the first quarter, to consistently exceed 190,000 from July to December. Monthly volumes also climbed, from approximately 210-250 TB to almost 400 TB. This shift directly reflects the opening of Sentinel-1C user data on CDSE from 26 March 2025, which practically doubled the monthly product output and brought the Sentinel-1 mission back to its operational 6-day revisit coverage objective. (Table 13 and Figure 26)



Copernicus Sentinel data 2025: Floods in northern Italy



Copernicus Sentinel data 2025:
Flooding after Storm Bram in the United Kingdom

Sentinel-2's monthly figures illustrate the progress of the Collection-1 Phase 2 reprocessing campaign. Product counts peaked in March at 4.8 million and remained high in April at 4.0 million, with corresponding data volumes exceeding 2,300-2,800 TB - well above the operational baseline. From May onwards, a clear downward trend set in as reprocessing activity decreased, and by September - when the campaign was formally completed - monthly counts had fallen to under 1 million products and volumes to around 530 TB, reflecting a return to regular operational production levels. (Table 13 and Figure 27)

Sentinel-3 shows a markedly different pattern, with a pronounced spike in product counts and volumes between April and August. Monthly counts increased from approximately 140,000-250,000 in the first quarter to almost 800,000 in April and over 1 million in May and June. Data volumes peaked at 646 TB in May, compared to the usual 40-55 TB. This period of greater output reflects the concurrent execution of several reprocessing campaigns, including the full mission reprocessing of OLCI Level-1 and Level-2 Land, as well as the updating of OLCI and SLSTR Level-1 and Level-2 Water products. By October, all reprocessing activities had been successfully completed, with publication returning to its regular operational level of around 160,000-180,000 products per month. A notable increase is visible in December, when product counts rose to 365,489 and data volumes reached 94 TB as a batch of products that had not previously been available in the catalogue were published to restore complete data coverage. (Table 13 and Figure 28)

For Sentinel-5P, the monthly figures remained fairly consistent throughout the year, averaging approximately 10,106 products and 13.04 TB per month, excluding April and May. These two months were the clear exception, with product counts jumping to 18,980 and 31,837, and volumes reaching 23.75 and 35.87 TB, respectively. This spike was directly connected to the full-mission SO_2 reprocessing campaign using the COBRA algorithm, which was completed in June 2025 and applied to the entire 2018-2024 data archive. (Table 13 and Figure 29)

Overall, publication activity in 2025 reflects the ongoing operational data combined with targeted reprocessing campaigns aimed at enhancing the quality and consistency of data across mission archives. Although the large-scale ingestion of historical archives that characterised the early CDSE years has concluded, the platform continues to grow by integrating newly processed datasets, updated baselines and data from newly operational satellites, such as Sentinel-1C and Sentinel-2C. In addition, the recently launched Sentinel-1D in November 2025, and currently in its commissioning phase, is expected to further strengthen the radar constellation, ensuring a comprehensive and up-to-date data offering for the global Earth observation community.

Month	S1		S2		S3		S5P	
	count	TB	count	TB	count	TB	count	TB
January	112,221	227.88	2,599,863	1,455.36	160,160	44.65	9,457	13.15
February	103,107	211.19	2,953,329	1,705.95	140,389	39.63	8,485	11.75
March	121,267	246.23	4,791,460	2,796.15	253,476	55.48	9,359	12.77
April	173,737	364.54	4,032,635	2,317.75	795,386	416.76	18,980	23.75
May	169,838	370.70	2,280,499	1,278.53	1,096,757	646.35	31,837	35.87
June	174,547	363.66	1,410,793	802.84	1,030,325	261.38	10,949	14.39
July	195,142	376.72	1,086,518	618.46	910,845	176.31	8,899	11.61
August	205,966	397.12	1,065,924	605.79	470,062	77.67	9,393	12.87
September	190,407	381.62	925,808	530.53	218,490	52.35	9,091	12.39
October	200,238	404.09	880,805	505.14	179,987	48.69	15,834	15.55
November	194,182	378.35	707,484	407.72	163,055	43.80	9,759	12.70
December	198,302	395.86	759,326	432.44	365,489	94.44	9,834	13.17
Total	**2,038,954**	**4,117.98**	**23,494,444**	**13,456.65**	**5,784,421**	**1,957.51**	**151,877**	**189.97**

TABLE 13: Monthly number and volume of published user-level data per Sentinel mission in 2025.

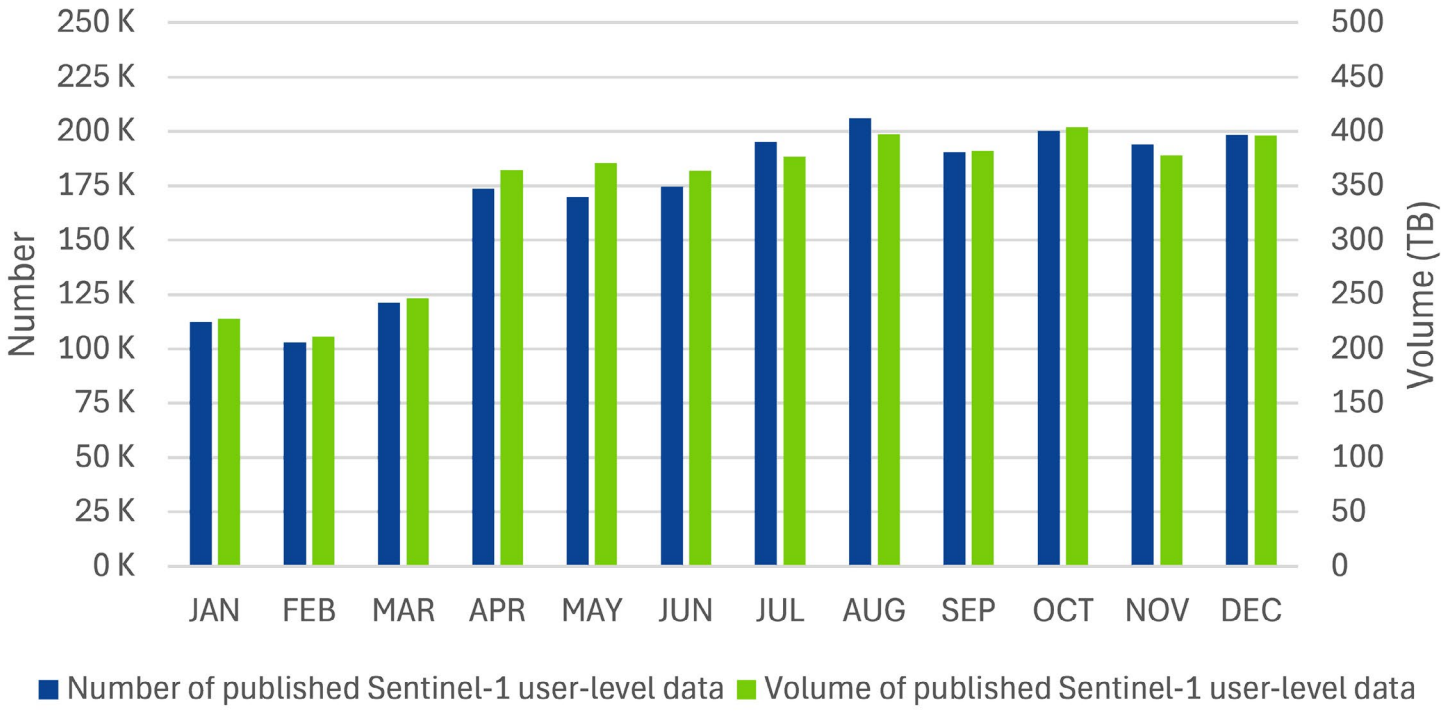


FIGURE 26: Development of the monthly number and volume of published Sentinel-1 products in 2025.
'K' signifies thousands of products.

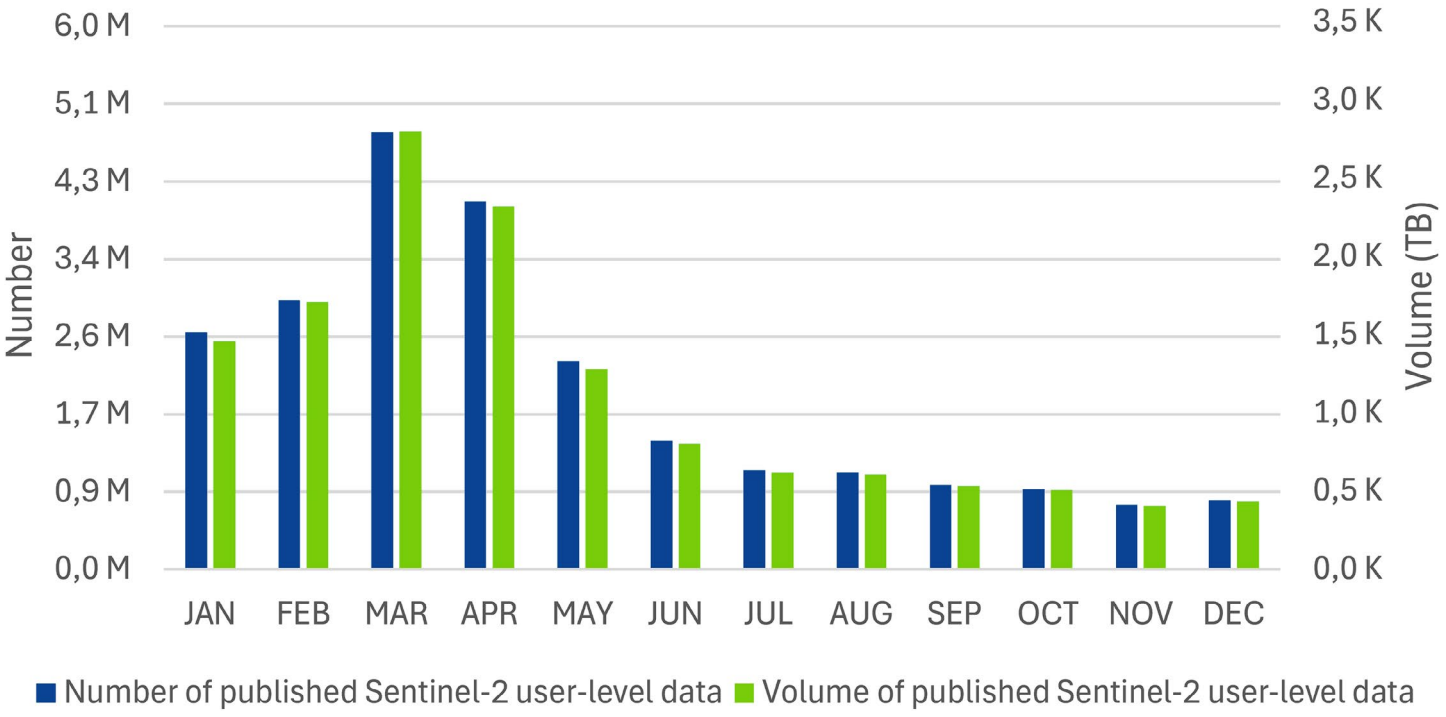


FIGURE 27: Development of the monthly number and volume of published Sentinel-2 products in 2025.
'K' signifies thousands and 'M' signifies millions.

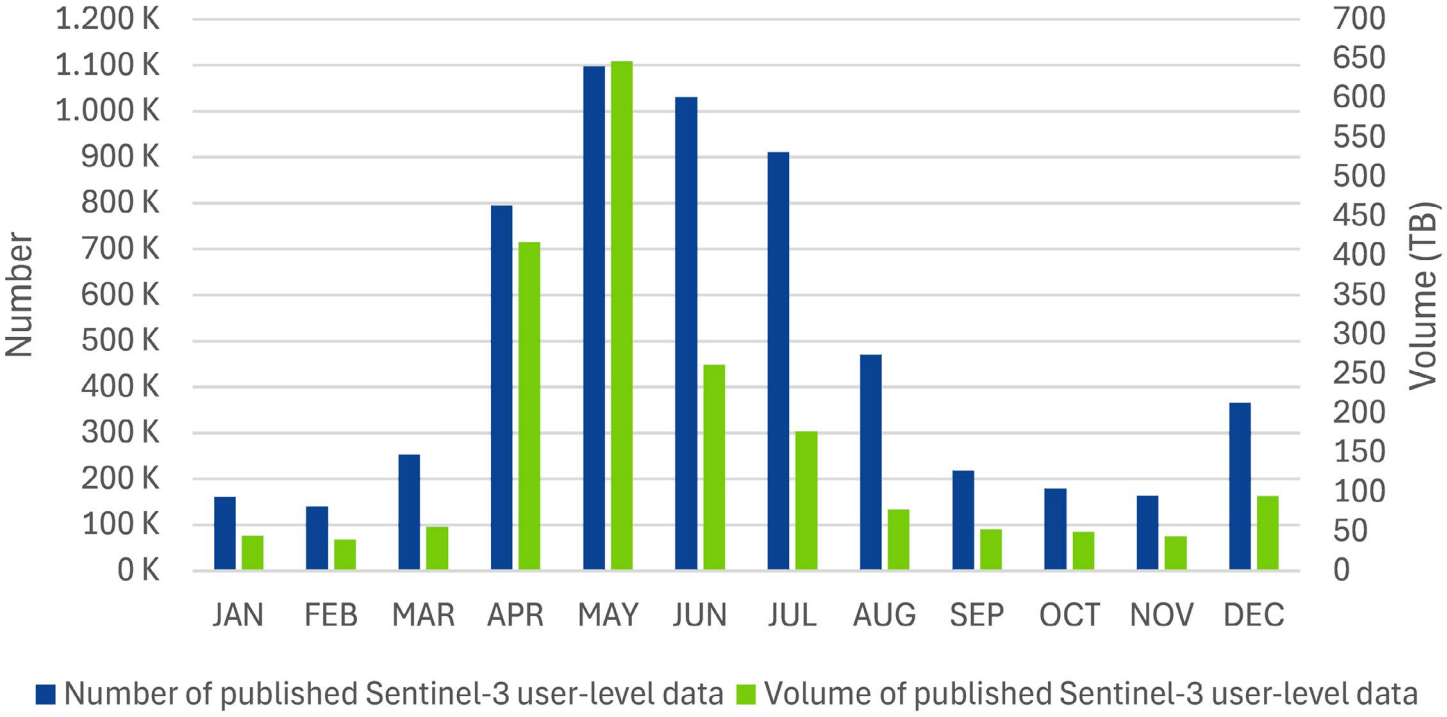


FIGURE 28: Development of the monthly number and volume of published Sentinel-3 products in 2025.
'K' signifies thousands of products.

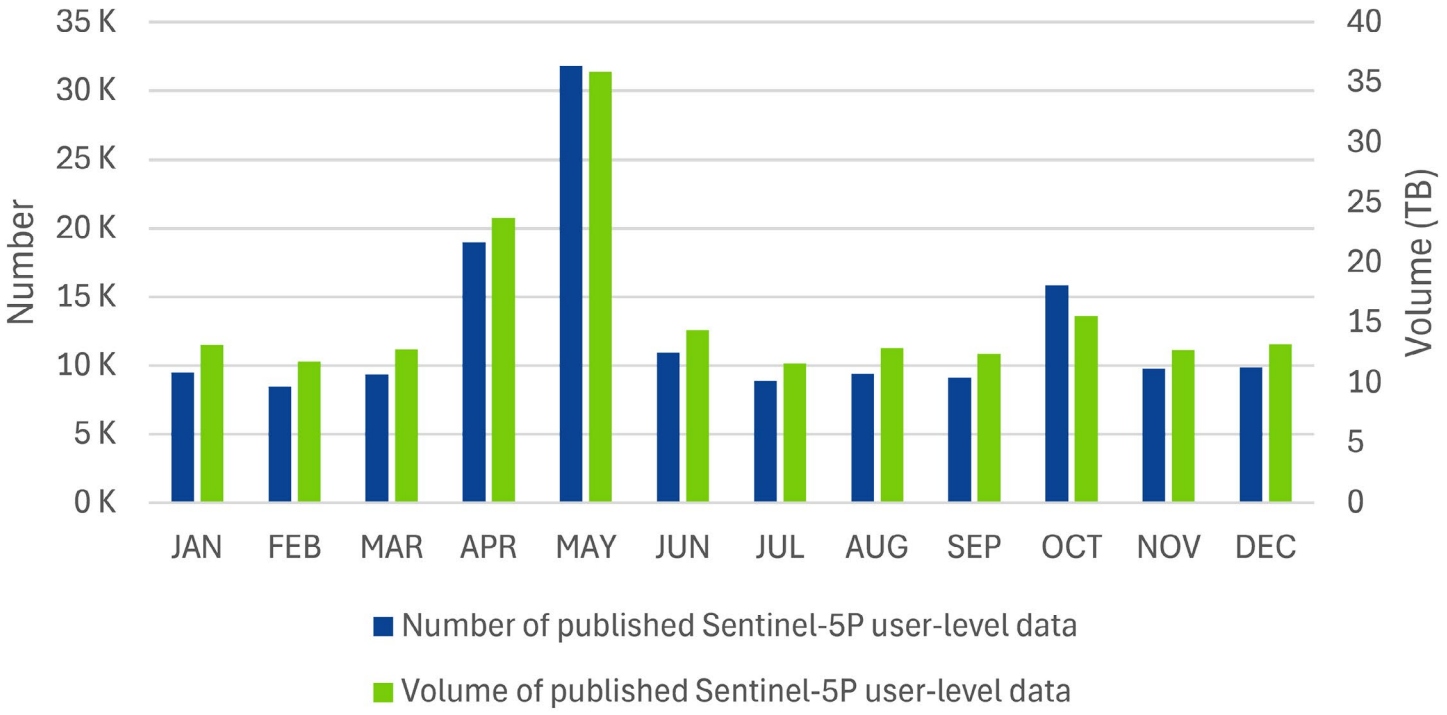


FIGURE 29: Development of the monthly number and volume of published Sentinel-5P products in 2025.
'K' signifies thousands of products.

Tables and figures below highlight monthly publication trends for each Sentinel mission in terms of product counts and data volumes on Copernicus Data Space Ecosystem.

Sentinel-1:

Throughout 2025, the monthly publication of Sentinel-1 user-level products followed a distinct two-phase pattern. In the first quarter, output remained basically similar to that in 2024, averaging around 112,000 products per month. From April afterward, following the release of Sentinel-1C user data on the CDSE platform, the number of products published per month increased sharply and stabilized at a new, higher level, averaging approximately 190,000 products per month for the rest of the year. Corresponding monthly data volumes remained consistently above 360 TB. (Table 14)

A total of over 2 million Sentinel-1 products were published in 2025, amounting to 4,118 TB of data - a significant increase compared to the approximately 1.26 million products and 2,584 TB recorded in 2024. Of the total for 2025, 373,263 products (18% of all Sentinel-1 products) were delivered in the COG (Cloud-Optimised GeoTIFF) format, corresponding to 349.6 TB. Unlike in 2024, when the COG share fluctuated more noticeably (including a spike to 30% in September), the 2025 figures remained consistent throughout the year, holding within a narrow range of 17-20%. This stability suggests that COG delivery has become a well-established and predictable part of the Sentinel-1 operational dissemination workflow within CDSE. (Table 14 and Figure 30)

Table 14 presents the number and volume of published Sentinel-1 products, along with the share of those provided in the Cloud Optimized GeoTIFF (COG) format. Monthly trends in product count (line chart) and data volume (bar chart) for Sentinel-1 in 2025 are illustrated in Figure 30.

Month	S1		S1 COG		% of COGs to all S1 products
	count	TB	count	TB	(count)
January	112,221	227.88	20,418	19.57	18%
February	103,107	211.19	18,636	18.04	18%
March	121,267	246.23	22,040	21.12	18%
April	173,737	364.54	33,449	30.89	19%
May	169,838	370.70	33,178	31.28	20%
June	174,547	363.66	32,116	30.58	18%
July	195,142	376.72	33,755	31.70	17%
August	205,966	397.12	36,127	33.65	18%
September	190,407	381.62	35,551	32.89	19%
October	200,238	404.09	37,346	34.55	19%
November	194,182	378.35	34,365	31.88	18%
December	198,302	395.86	36,282	33.46	18%
Total	**2,038,954**	**4,117.98**	**373,263**	**349.60**	**18%**

TABLE 14:
Monthly number and volume of user-level Sentinel-1 data published in 2025, showing totals for all products and those specifically in COG format.

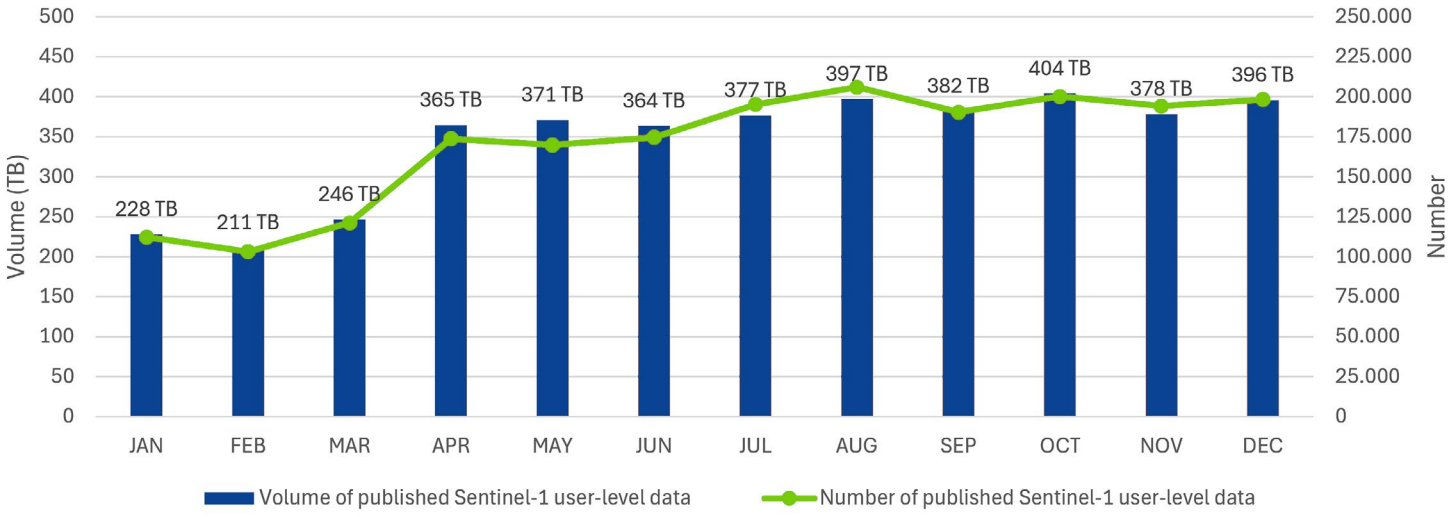


FIGURE 30: Monthly publication trends for the number and volume of Sentinel-1 in 2025.



Copernicus Sentinel data 2025: Fog over the Austrian alpine valleys

Sentinel-2:

In 2025, more than 23.4 million Sentinel-2 products were published on the CDSE platform, corresponding to a total data volume of approximately 13,457 TB. Of these, 13.25 million products (56%) were reprocessed (RPRO) data, representing around 7,625 TB, while 10.24 million standard (STRD) products accounted for the remaining 5,831 TB. This high reprocessing share was linked to an extensive campaign covering the reprocessing of historical data from January 2022 to December 2023. (Table 15)

Considering the combined STRD and RPRO publication trend, the highest levels of activity were observed during the first half of the year. Peak monthly publication occurred in March, with 4.79 million products (2,796 TB), and remained high in April, with over 4 million products. From May onwards, the total number of published products decreased gradually throughout the summer and autumn. This pattern is primarily linked to the Sentinel-2 Collection-1 Phase 2 reprocessing campaign, which dominated publication activity in the early part of the year. The proportion of RPRO products peaked in February and March (79% and 82%) before declining steadily as the campaign progressed and was completed. By September 2025, the reprocessing campaign had concluded, and no additional RPRO products were published. (Table 15 and Figure 31)

The trend for standard (STRD) data only remains generally stable throughout the year. Monthly STRD publication ranged from approximately 626,000 products in February to just over 1 million in August, with corresponding data volumes between 355 TB and 590 TB. A visible increase from March onwards is the result of the temporary extension campaign for Sentinel-2A, complementing the nominal Sentinel-2B/Sentinel-2C constellation and increasing the observation frequency. After peaking in the summer months, publication levels steadily reduced towards the end of the year. A higher number of Sentinel-2 user-level data are generated during the summer months, when daylight hours are longer in the Northern Hemisphere, which has a larger land mass and accounts for the majority of imaging. Overall, the trend reflects the stable operational acquisition of new Sentinel-2 observations throughout 2025, regardless of the parallel reprocessing activities. (Table 15 and Figure 32)

Figure 31 illustrates the total volume and number of all published Sentinel-2 products, encompassing both standard and reprocessed datasets, whereas Figure 32 focuses exclusively on standard user-level data.

Month	S2 STRD		S2 RPRO		% of reprocessed products to non-reprocessed (count)
	count	TB	count	TB	
January	686,719	387.77	1,913,144	1,067.58	74%
February	625,789	354.74	2,327,540	1,351.21	79%
March	858,389	486.77	3,933,071	2,309.38	82%
April	925,733	525.41	3,106,902	1,792.34	77%
May	960,272	541.93	1,320,227	736.60	58%
June	917,220	522.34	493,573	280.50	35%
July	959,329	547.29	127,189	71.17	12%
August	1,035,148	589.92	30,776	15.86	3%
September	924,357	529.69	1,451	0.84	0%
October	880,805	505.14	0	0.00	0%
November	707,484	407.72	0	0.00	0%
December	759,325	432.44	1	0.00	0%
Total	**10,240,570**	**5,831.18**	**13,253,874**	**7,625.47**	**56%**

TABLE 15: Monthly number and volume of published user-level Sentinel-2 data differentiated between reprocessed and standard products.

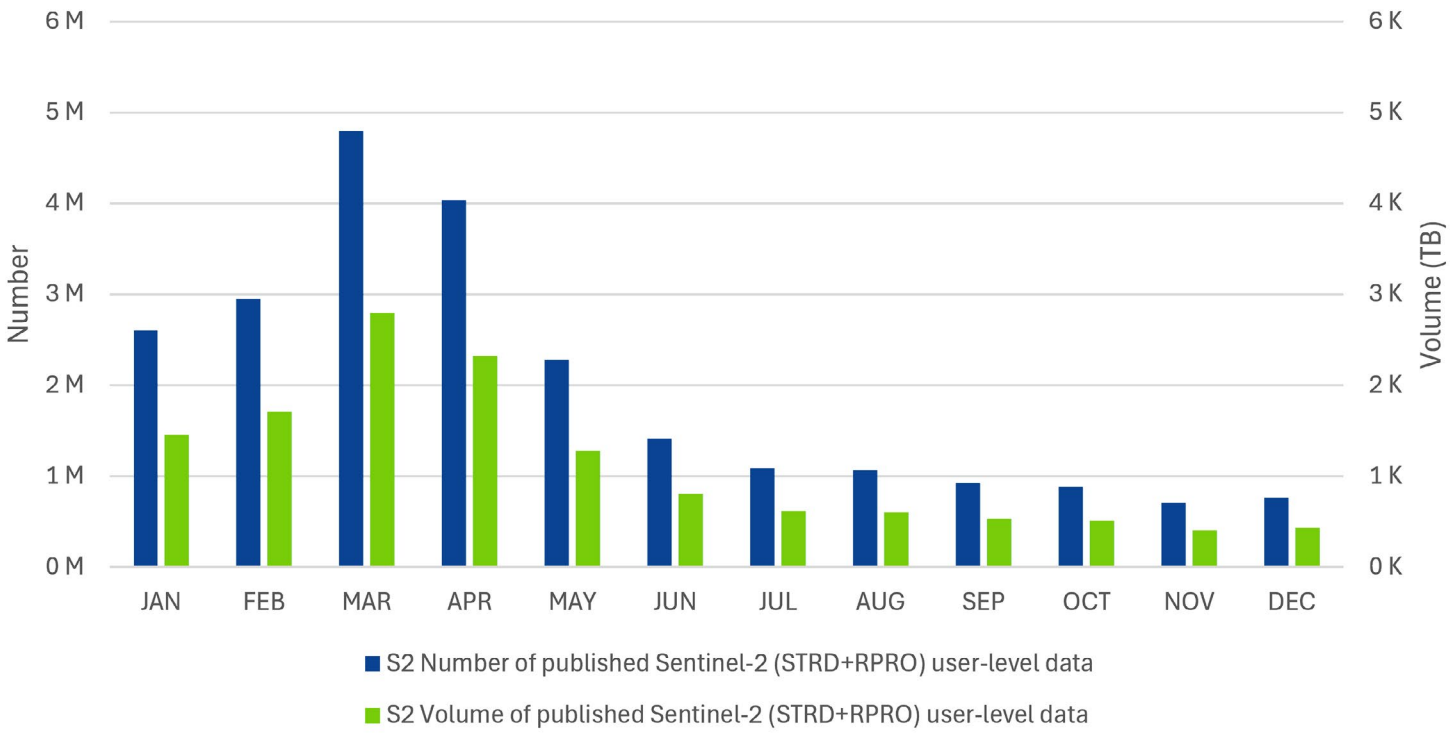


FIGURE 31: Monthly number and volume publication trend for combined standard and reprocessed Sentinel-2 data in 2025.

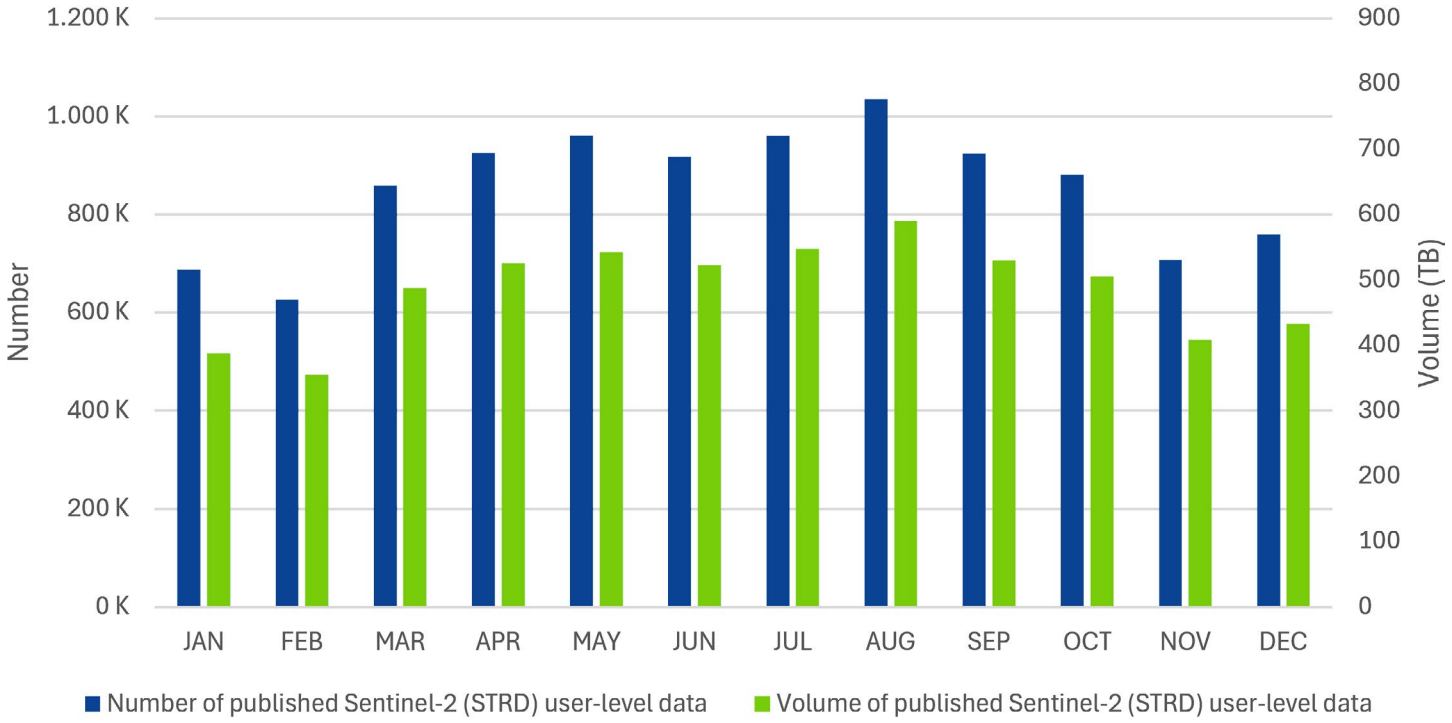


FIGURE 32: Monthly number and volume publication trend for Sentinel-2 standard data in 2025 (user-level data).

Sentinel-3:

Figure 33 shows the monthly statistics for the combined publication of standard and reprocessed Sentinel-3 data in 2025, in terms of both product count and data volume. A total of 5,784,421 Sentinel-3 products were published, which amounts to around 1,957 TB of data. Unlike in 2024, when no reprocessed data were published, 2025 saw the introduction of S3 RPRO products, resulting from several major reprocessing campaigns that occurred in parallel throughout the year. Reprocessed products accounted for 3,619,585 items (63% of the annual total) and 1,366 TB, which significantly shaped the monthly publication pattern.

The combined STRD and RPRO trend (Figure 33) indicates a clear and pronounced peak between April and August, directly reflecting the concurrent execution of the OLCI Level-1 (Baseline Collection 004), OLCI Level-2 Land (Baseline Collection 003), and OLCI and SLSTR Level-1 and Level-2 Water reprocessing campaigns. Monthly counts climbed from around 253,000 in March - when the first RPRO products began appearing - to nearly 1.1 million in May, with corresponding data volumes peaking at 646 TB that month, compared to a typical operational baseline of around 40-55 TB. The RPRO share of total monthly output reached its highest levels between April and July, ranging from 80% to 86%, before declining steadily as campaigns concluded. By October, reprocessed product publication had ceased entirely, with the last RPRO products published in September. (Table 16 and Figure 33)

Figure 33 focuses exclusively on standard Sentinel-3 data and gives a different perspective. STRD product counts remained remarkably stable throughout the year, generally ranging between 140,000 and 180,000 products per month, with consistent data volumes of around 40-50 TB - a pattern consistent with regular operational production. The one clear exception is December, when the product count jumped to 365,489 and the volume reached 94 TB - nearly double the typical monthly output. This spike reflects the publication of a batch of products that were not previously available in the catalogue and were released to restore complete data coverage.

The sensor-level breakdown of monthly STRD volumes (Table 17) is fully consistent with the overall publication trend. OLCI contributed the largest share of volume each month, typically ranging between 16 and 20 TB, followed by SLSTR at 14-19 TB, with SRAL and SYNERGY each contributing a stable 4-5 TB per month. December spike was clearly driven by OLCI, whose monthly volume surged to 62.72 TB - more than three times its typical level - while SLSTR, SRAL and SYNERGY remained close to their usual ranges. This confirms that the catch-up publication in December was concentrated within the OLCI product family. (Table 17 and Figure 34)

Month	S3 STRD		S3 RPRO		% of reprocessed products to non-reprocessed (count)
	count	TB	count	TB	
January	160,160	44.65	0	0.00	-
February	140,389	39.63	0	0.00	-
March	162,133	44.83	91,343	10.66	36%
April	159,178	44.34	636,208	372.43	80%
May	156,678	44.11	940,079	602.24	86%
June	173,195	47.43	857,130	213.95	83%
July	169,007	46.53	741,838	129.78	81%
August	162,276	45.35	307,786	32.32	65%
September	173,289	47.34	45,201	5.00	21%
October	179,987	48.69	0	0.00	-
November	163,055	43.80	0	0.00	-
December	365,489	94.44	0	0.00	-
Total	**2,164,836**	**591.14**	**3,619,585**	**1,366.37**	**63%**

TABLE 16: Monthly number and volume of published user-level Sentinel-3 data differentiated between reprocessed and standard products.

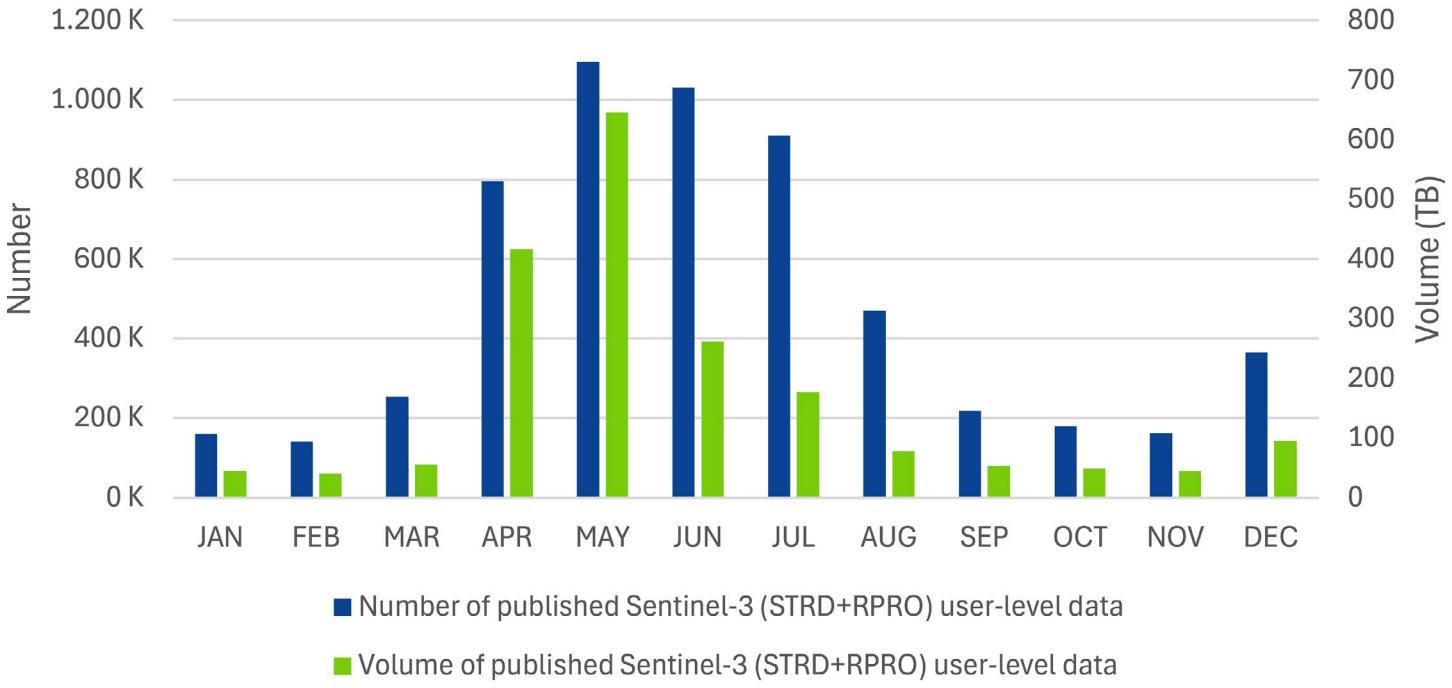


FIGURE 33:
Monthly number and volume publication trend for combined standard and reprocessed Sentinel-3 data in 2025.

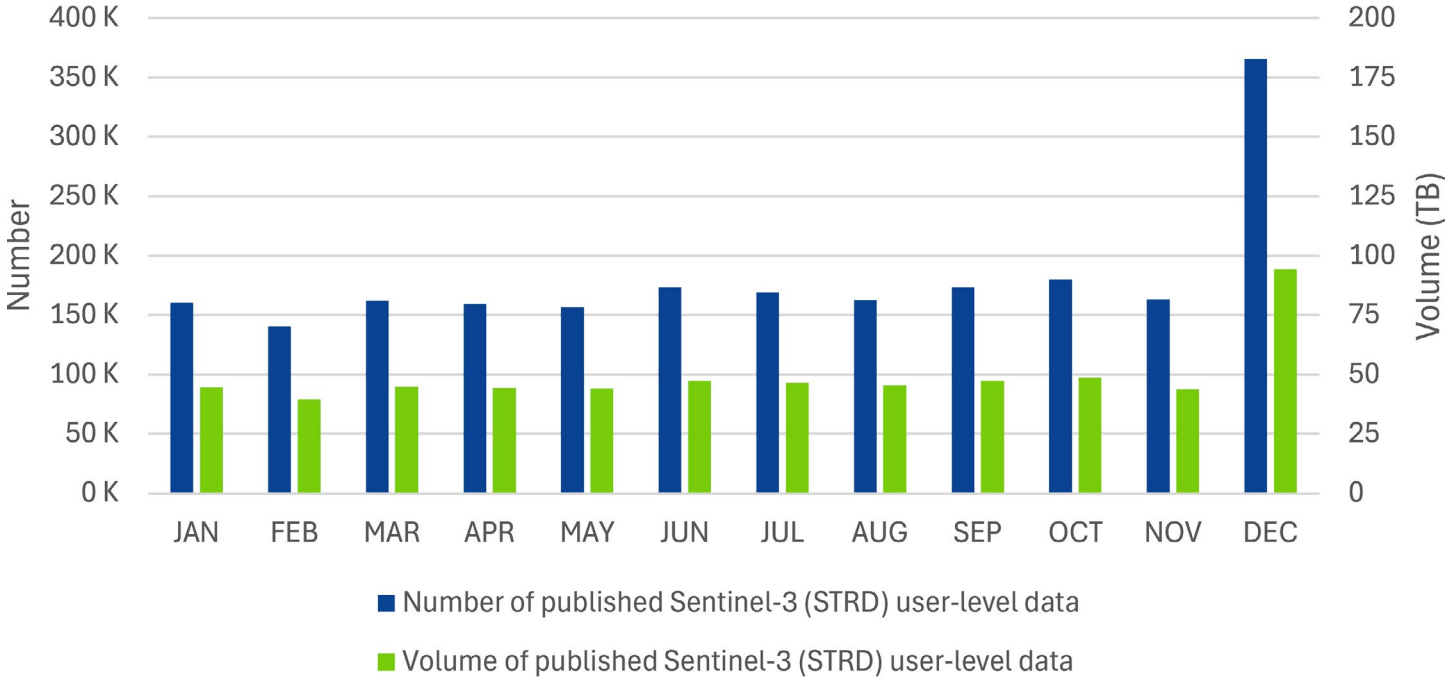


FIGURE 34:
Monthly number and volume publication trend for Sentinel-3 standard data in 2025 (user-level data).

Month	TB			
	S-3 OLCI	S-3 SLSTR	S-3 SRAL	S-3 SYNERGY
January	18.82	16.53	4.47	4.82
February	16.71	14.44	4.23	4.24
March	17.94	17.25	4.71	4.92
April	18.65	16.27	4.56	4.85
May	18.41	16.04	4.80	4.86
June	19.00	18.52	4.52	5.39
July	18.73	18.01	4.68	5.12
August	18.67	17.04	4.69	4.94
September	18.50	19.45	4.56	4.83
October	19.99	18.12	5.24	5.33
November	17.79	16.22	4.60	5.19
December	62.72	22.07	4.78	4.87

TABLE 17: Monthly volume publication trend for Sentinel-3 standard per product source (e.g. sensor) in 2025 (in TB).

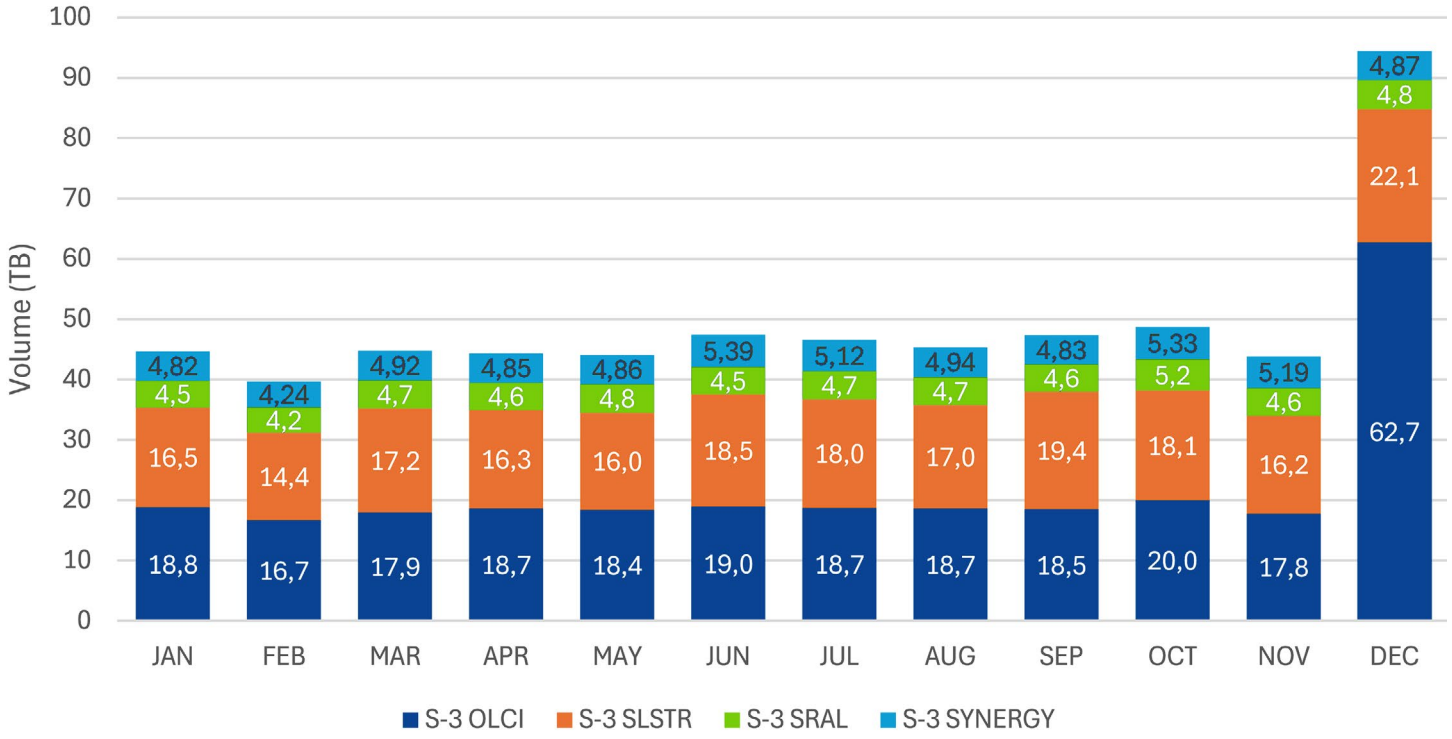


FIGURE 35:
Monthly volume publication trend per Sentinel-3 standard user-level data source (e.g. sensor) in 2025 (in TB).

Mission / Data provider	No. of user-level data published		% for 2025 of total number published on CDSE	Volume of user-level data published [TB]		% for 2025 of total volume published on CDSE
	2025	Since project start (Dec 2022)	2025 vs project start	2025	Since project start (Dec 2022)	2025 vs project start
S3 ESA	4,307,225	7,794,121	55%	1,643.39	2,360.95	70%
S3 EUMETSAT	1,477,196	1,903,264	78%	314.12	437.38	72%
ALL	**5,784,421**	**9,697,385**	**60%**	**1,957.51**	**2,798.34**	**70%**

TABLE 18: Overall number and volume of user-level data published for Sentinel-3 in 2025 and since the start of the CDSE service in Dec 2022, broken down by data managed by ESA and EUMETSAT. Product types managed by EUMETSAT include: OL_2_WFR___, OL_2_WRR___, SL_2_AOD___, SL_2_WST___, SR_2_WAT___, and SL_2_FRP___ (NRT timeliness only).

The above table presents the breakdown of Sentinel-3 data volumes published in 2025 and since the beginning of the CDSE service in December 2022, split by managing agency. In 2025, ESA-managed data accounted for 1,643 TB (84% of the total annual Sentinel-3 volume), while EUMETSAT-managed data contributed 314 TB (16%). When viewed against the cumulative totals since the start of the project, 2025 alone represented 70% of the total ESA data volume and 72% of the total EUMETSAT data volume ever published on CDSE. This confirms that 2025 was an exceptionally productive year for both components of the Sentinel-3 data offer. (Table 18)



Copernicus Sentinel data 2025: Geneva from Above

Sentinel-5P:

In 2025, a total of 151,877 Sentinel-5P user-level data products were published on the CDSE, corresponding to a data volume of approximately 190 TB - an increase of 35% in product count and 14% in volume compared to 2024. The monthly distribution was generally stable for most of the year, typically ranging between 8,485 and 10,949 products and 11.6 to 14.4 TB per month, consistent with the regular operational production of Sentinel-5P data. (Figure 36)

The clear exceptions were April and May, when monthly product counts jumped to 18,980 and 31,837 respectively, with corresponding volumes of 23.75 TB and 35.87 TB. This spike was directly generated by the full-mission SO_2 reprocessing campaign using the COBRA algorithm, which covered the entire 2018-2024 Sentinel-5P archive. The campaign was completed in June, after which publication returned to its regular operational level. (Figure 36)

The yearly distribution of published Sentinel-5P data, both in terms of product count and volume, is visualized in Figure 36, highlighting the overall stability with clearly identifiable peaks during targeted reprocessing and data enrichment periods.

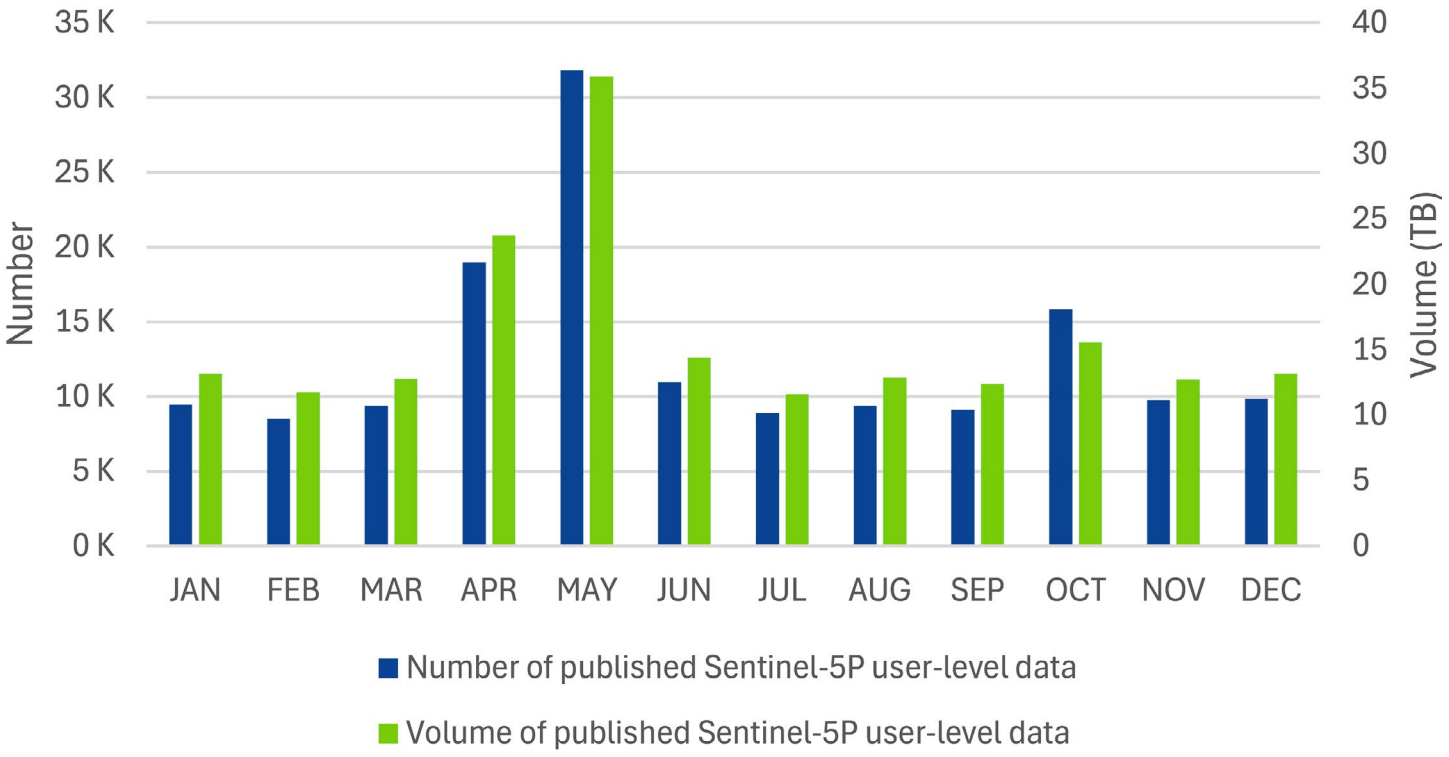


FIGURE 36: Monthly number and volume publication trend for Sentinel-5P in 2025.

Table 19 provides a detailed overview of the published products by mission and product type, including their absolute numbers and volumes, as well as their respective percentages of the mission-wide totals. Figure 37 and Figure 38 offer a visual comparison of the distribution by number and by volume across missions and product types, further illustrating this information.

Mission	Type	Count	% of total count per mission	Volume [TB]	% of total volume per mission
S1	AUX	7,961	0.4%	0.01	0.0%
	ETA	330,624	16%	22.39	1%
	GRD	744,270	37%	908.19	22%
	OCN	231,508	11%	7.90	0%
	RAW	371,574	18%	556.71	14%
	SLC	353,017	17%	2,622.78	64%
	S1 Total	**2,038,954**		**4,117.98**	
S2	AUX	2,762	0.0%	0.01	0.0%
	L1C	11,743,748	50%	5,781.86	43%
	L2A	11,747,934	50%	7,674.79	57%
	S2 Total	**23,494,444**		**13,456.65**	
S3	AUX	10,409	0.2%	0.03	0.0%
	OLCI	4,180,245	72%	1,620.62	83%
	SLSTR	1,169,072	20%	216.40	11%
	SRAL	228,539	4%	61.09	3%
	SYNERGY	196,156	3%	59.37	3%
	S3 Total	**5,784,421**		**1,957.51**	
S5P	AUX	945	1%	5.46	3%
	L1	45,033	30%	122.76	65%
	L2	105,899	70%	61.75	33%
	S5P Total	**151,877**		**189.97**	
ALL		**31,469,696**		**19,722.12**	

TABLE 19: Percentage published number and volume of user-level data per Sentinel mission and data type during 2025.

Sentinel-2 accounted for the largest share of both the number and volume of published products, with over 23.4 million products (75% of the total) and approximately 13.5 PB (68% of the total). As in 2024, the data were almost equally divided between Level-1C and Level-2A products in terms of number (50% each), although Level-2A products accounted for a notably larger proportion of the volume (57% versus 43%), reflecting the larger data footprint of atmospherically corrected products. (Table 19)

Sentinel-1 contributed over 2 million products (a 61.54% year-on-year increase) with a total volume of approximately 4.1 PB (a 59.36% year-on-year increase). This growth compared to 2024 was mainly driven by the addition of Sentinel-1C data from March onwards. The distribution of products remained consistent with previous years. SLC products accounted for 64% of the volume and 17% of the total number of products. GRD products represented 37% of the total number of products and 22% of the total volume. ETAD and RAW products contributed 16% and 18% of the total number of products, respectively, with 1% and 14% of the total volume. (Table 19)

Over 5.7 million Sentinel-3 products were published, totalling approximately 1,958 TB - a substantial increase on the 2.3 million products and 534 TB recorded in 2024. This is mainly due to the extensive reprocessing campaigns carried out throughout the year. A notable shift in type distribution is also evident: OLCI products now account for 72% of the total number of products and 83% of the total volume, compared to 36% and 41%, respectively, in 2024. This is because the multiple OLCI reprocessing campaigns added a large number of high-volume products to the archive. SLSTR's share has consequently declined from 64% to 20%. (Table 19)

Approximately 152,000 Sentinel-5P products were published, corresponding to 190 TB. Compared to 2024, the proportion of Level-1 and Level-2 products changed slightly: Level-2 now accounts for 70% of the total (up from 63% in 2024), while Level-1, despite representing only 30% of the total, still dominates in terms of volume at 65%, highlighting its larger data storage requirements. (Table 19)

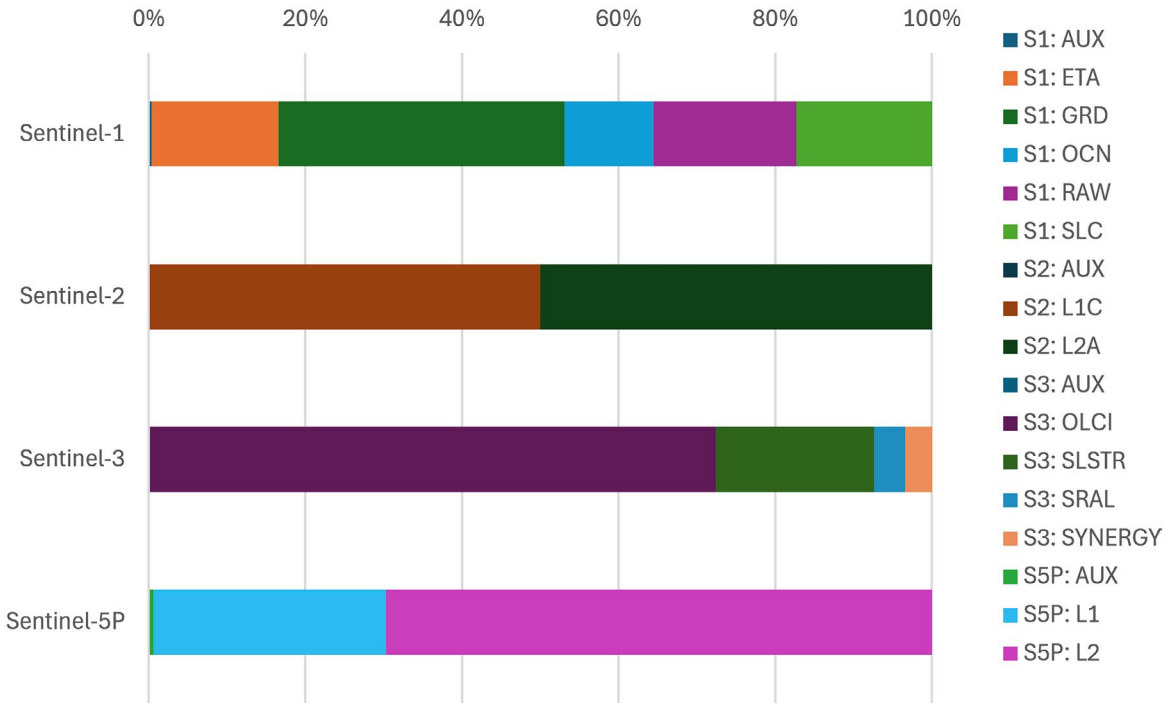


FIGURE 37: Percentage published number of user-level data per Sentinel mission and user-level data type during 2025.

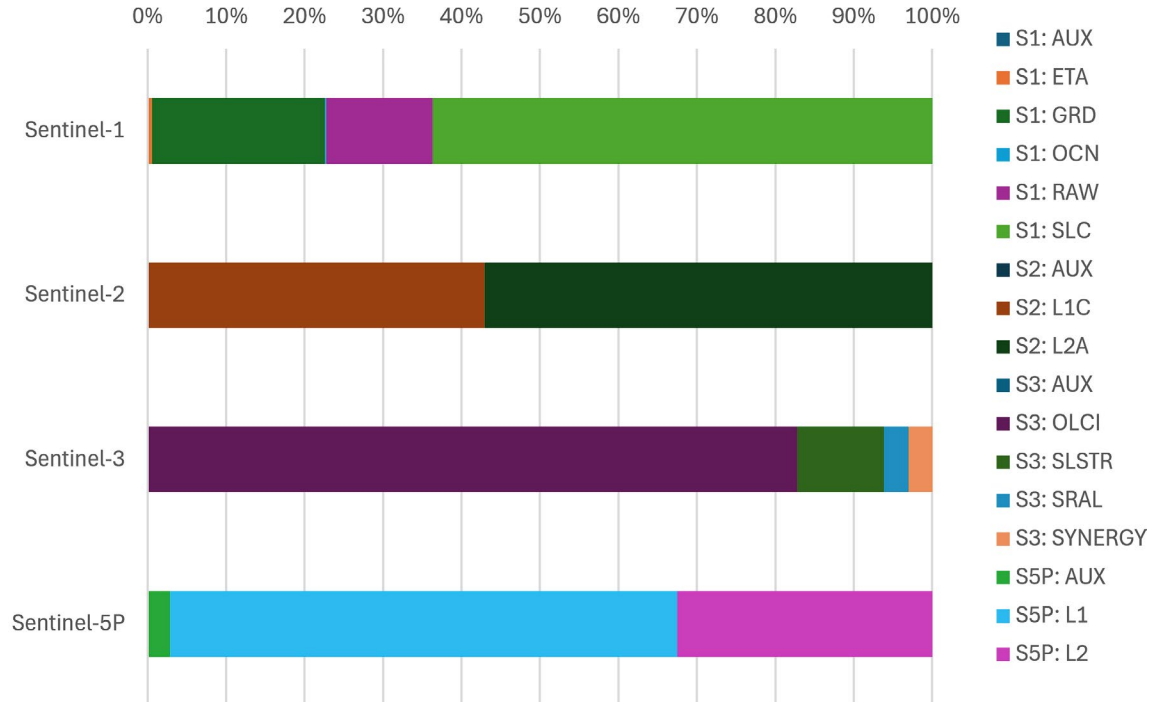
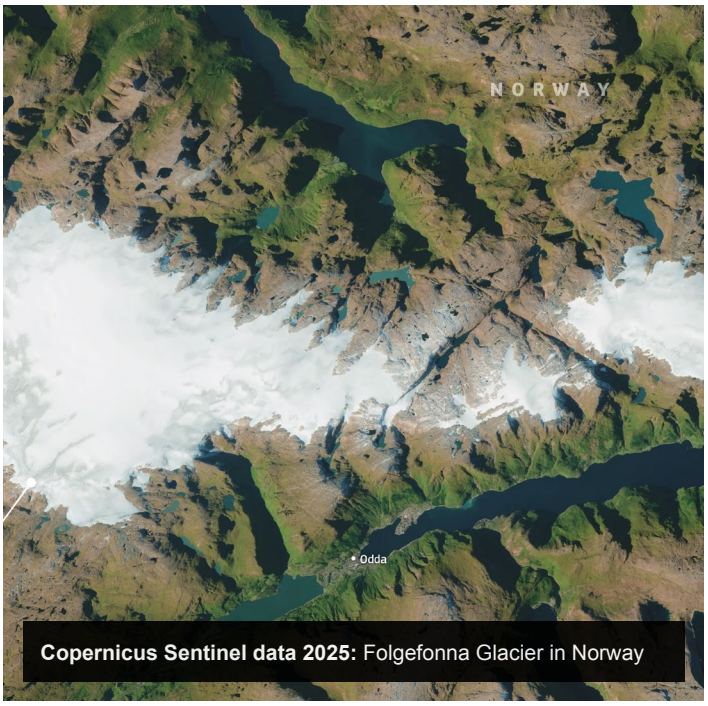


FIGURE 38: Percentage published volume of user-level data per Sentinel mission and user-level data type during 2025.

6.2. Copernicus Contributing Missions Data Offer

The Copernicus Contributing Missions (CCM) provide complementary Earth observation data to the Copernicus Sentinel missions, including high- and very-high-resolution optical imagery, radar observations, and digital elevation models. Operated by ESA, its Member States and international partners, CCM datasets support a wide range of Copernicus services and user applications requiring higher spatial resolution, specialized coverage or monitoring.

Following the migration of systematic CCM collections from the PRISM archive to the CDSE in 2024, the CDSE became the central platform for discovering, accessing, and distributing CCM datasets in the long term. This process was finalized in June 2024 when all systematic CCM collections, including optical, SAR, and DEM datasets, became accessible via the platform through OData interfaces and the Copernicus Browser. By the end of 2025, the number of registered users eligible to access CCM data had increased to 81,765, marking a 121% surge from approximately 37,000 users at the end of 2024. This substantial growth reflects the increasing interest in high-resolution complementary datasets following the migration of CCM collections to the CDSE platform.



Copernicus Sentinel data 2025: Folgefonna Glacier in Norway

In 2025, a total of 224,226 CCM products were published on the platform, equivalent to a total volume of 43.5 TB. Optical products took over the dataset portfolio, accounting for over 99% of the product count (222,356 products) and more than 99% of the total volume (43.1 TB). Radar datasets represented a comparatively small proportion, with 1,870 products equating to 0.33 TB of data. A significant proportion of the published optical data consisted Very High Resolution (VHR) image mosaics covering multiple reference years, including 2015, 2018, 2021, and 2024. These datasets represented around 54% of the total number of CCM products published in 2025 and approximately 31% of the total volume. The progressive rollout of the VHR 2024 dataset continued throughout the year, with the majority of products already available on the platform, with the remaining acquisitions expected to be delivered in early 2026.



Copernicus Sentinel data 2025: Gothenburg in Sweden

A noticeable increase in product publications in February 2025 (Figure 40) was driven by the release of new COG datasets, improving data accessibility and enabling more efficient cloud-based processing workflows. Overall, COG products accounted for around 75% of all CCM products and nearly 49% of the total data volume published in 2025, reflecting the growing adoption of cloud-native data formats within the platform (Figure 39). In addition to optical imagery, the CCM portfolio also includes digital elevation models such as the Copernicus DEM datasets. In July 2025, the COP-DEM EEA-10 m datasets became available for download to authorized public authorities via CDSE, providing high-resolution elevation data through both OData access and the Copernicus Browser. These datasets support applications requiring detailed terrain information, such as environmental monitoring, infrastructure planning, and disaster management.

Figure 40 and Figure 41 illustrate the cumulative growth of CCM data publication since the migration to CDSE, showing the monthly evolution of the number of published products and the total archived data volume. Following the large-scale migration and ingestion of historical datasets in 2024, the cumulative total number of products reached 1,525,191 by the end of 2025. Total archive size exceeded 574 TB, providing users with access to an extensive catalogue of complementary, high-resolution Earth observation datasets.

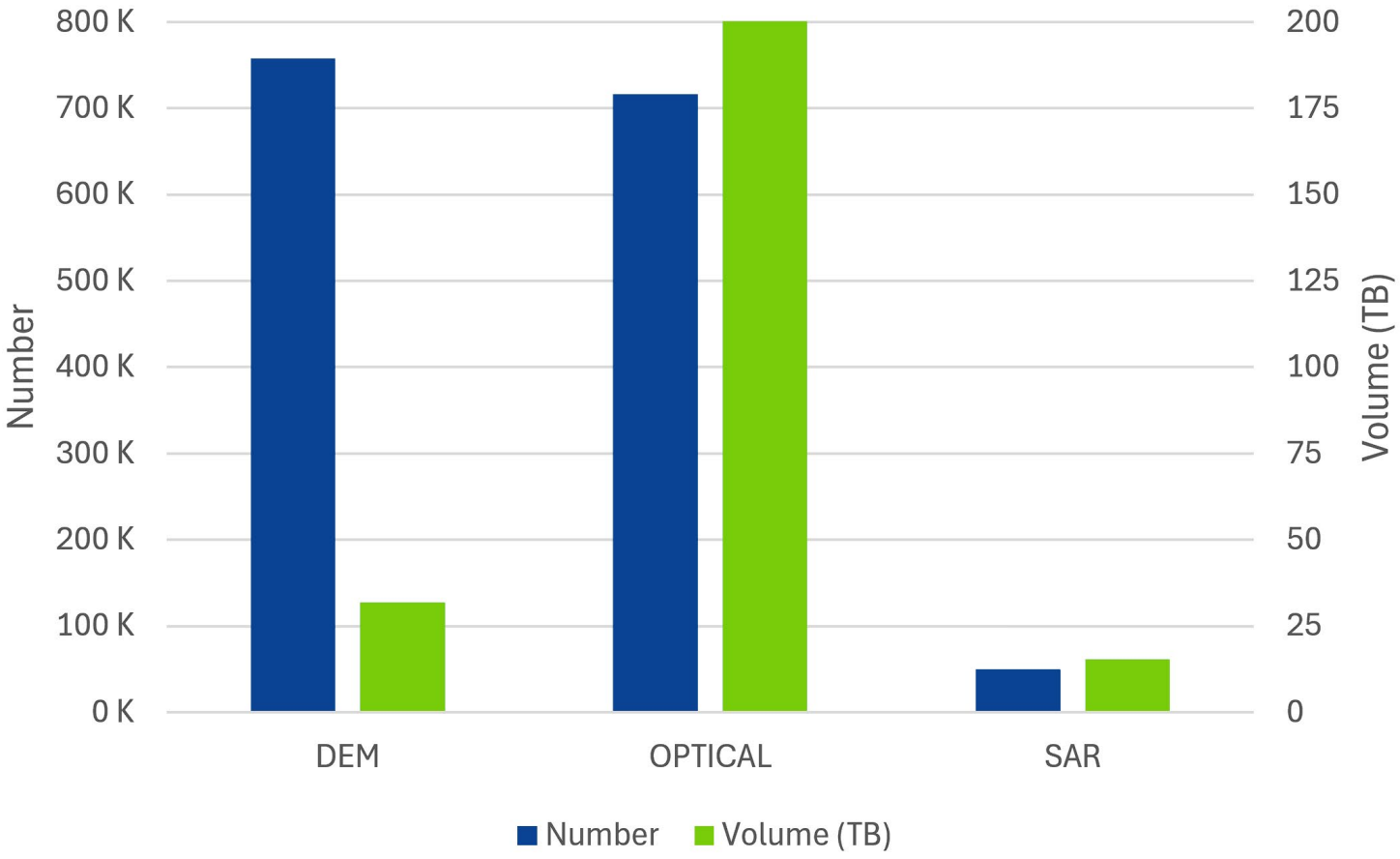


FIGURE 39:
Number and volume of published Copernicus Contributing Missions at the end of 2025, broken down by data type: optical, digital elevation model and radar.



Copernicus Sentinel data 2025: Gulf of Morbihan in France

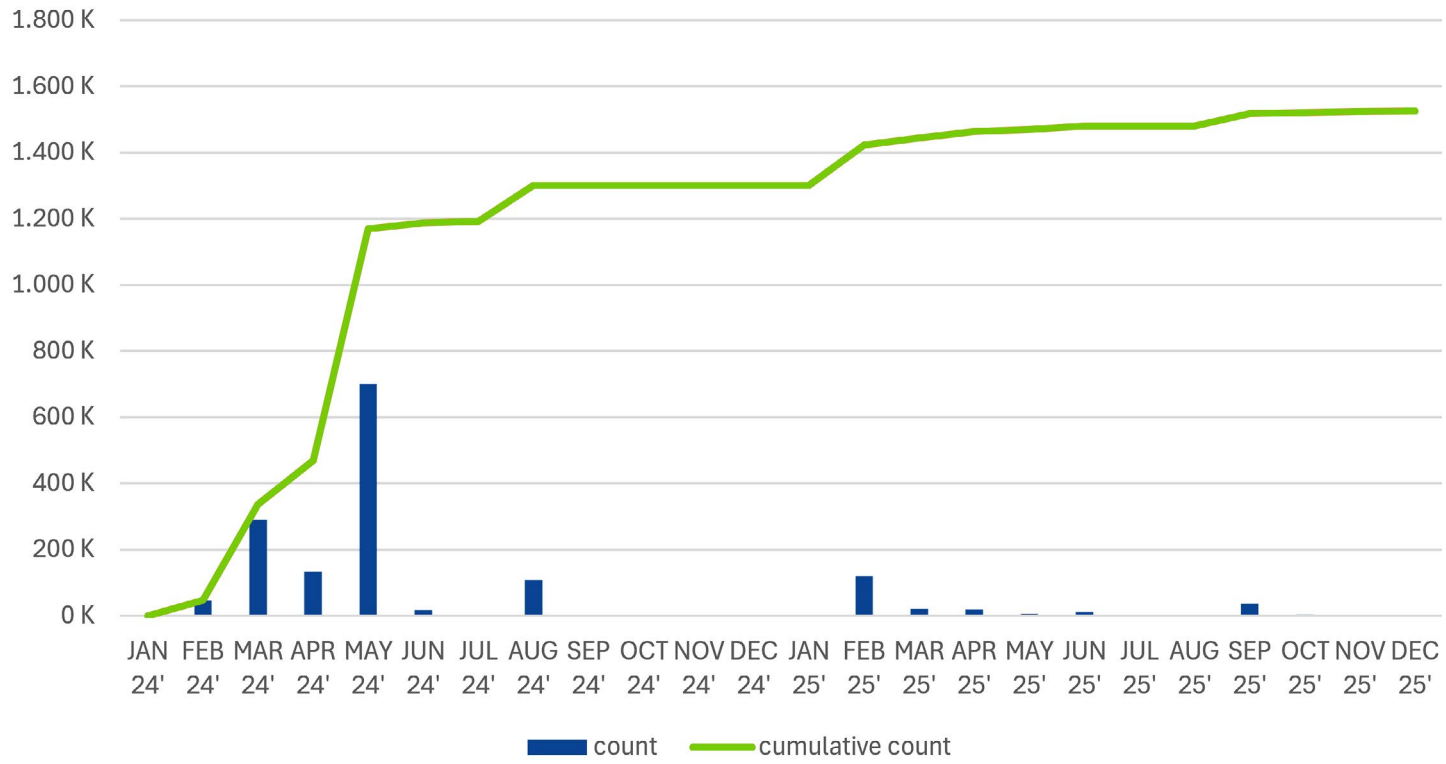


FIGURE 40: Number of published Copernicus Contributing Missions during 2024 and 2025.

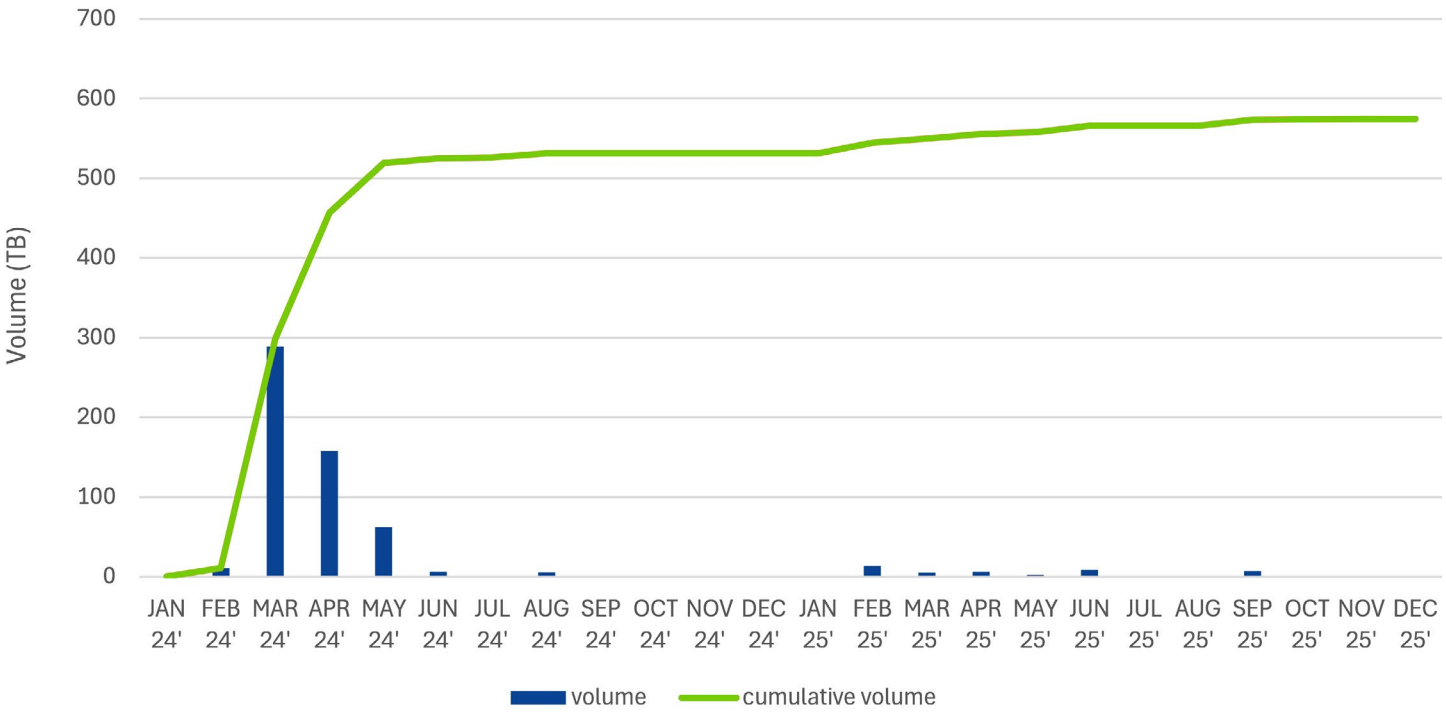


FIGURE 41: Volume of published Copernicus Contributing Missions during 2024 and 2025.

6.3. Copernicus Services Data Offer

This section presents the datasets made available in the Copernicus Data Space Ecosystem (CDSE) originating from the Copernicus Services, including the Land, Marine, Atmosphere, and Emergency Management domains. These services offer high-quality, and continuously updated Earth observation products that support a broad range of applications related to environmental monitoring, disaster response, air quality management, and research applications. Through the CDSE, users can access both near real-time and historical data collections via standard interfaces such as S3 or NFS, making it possible to develop applications that cover local and global scales.

The Copernicus Land Monitoring Service (CLMS) provides extensive data sets that describe the state and evolution of terrestrial environments. The service provides three main categories of data: Global, Pan-European, and Local components, complemented by Imagery and Reference Data (IAR). These datasets support activities in land use assessment, vegetation monitoring, soil management, and water resource evaluation. Therefore, users can exploit archival and near real-time environmental information for scientific, commercial, and policy-driven applications. A significant milestone was reached in May 2025 with the launch of the CLMS global portfolio on CDSE, establishing the platform as the primary access point for this data. At launch, 18 product types covering 58 datasets were introduced, including information on river and lake water levels, ice extent on rivers and lakes, snow cover extent, snow water equivalent, soil water index, surface soil moisture, top of canopy reflectance, vegetation indices, vegetation phenology, burnt areas, lake surface water temperature, lake water quality, and net and gross primary production. New product types and datasets were onboarded progressively to the CLMS offer on CDSE throughout the remainder of the year. By the end of 2025, this offer had expanded to include 26 product types, covering a total of 112 datasets: 62 at global scope, 44 at European scope, and 6 covering other regional scopes (the Northern Hemisphere, the Baltic region, and pantropical areas). The global-scope additions introduced new product types for dry and gross dry matter productivity, dynamic land cover, evapotranspiration, land surface temperature, vegetation properties, and water bodies. The Europe-scope additions were delivered through the new Vegetated Land Cover Characteristics (VLCC) suite, which covers cropping patterns, crop types, dominant leaf type, forest type, grassland and herbaceous cover, grassland mowing events, and tree cover density. Additionally, a new Land Cover and Forest Monitoring (LCFM) product suite was introduced, offering regularly updated, high-resolution data to support the analysis of land cover and forest changes worldwide. Ingestion of HR-WSI (High Resolution Water, Snow and Ice) products commenced in 2025 and will continue throughout 2026. All CLMS data collections were integrated into the STAC and OData catalogues to ensure consistent discoverability and access across platform interfaces.

The Copernicus Emergency Management Service (CEMS) provides rapid, reliable, geospatially detailed information to support emergency response and disaster risk management efforts. CEMS continuously monitors Europe and the rest of the world for potential or ongoing natural and human-induced hazards, producing data derived from satellite, in-situ, and modelled sources. A key component of the service is Rapid Mapping, which delivers geospatial products within hours or days after an event activation. These products include shapefiles dataset describing phenomena such as flood extent, fire scar, storm impact, or damage assessment, organized by event type (e.g. floods, wildfires, earthquakes, volcanic activity, industrial accidents, humanitarian crises).

The Copernicus Atmosphere Monitoring Service (CAMS), which is operated by the European Centre for Medium-Range Weather Forecasts (ECMWF), offers consistent and continuous information about the composition of the atmosphere. CAMS products describe the current state of the atmosphere, provide forecasts, and offer long-term reanalysis datasets. Within the CDSE, CAMS data collections include the Global Fire Assimilation System (GFAS), Global Atmospheric Composition Forecasts (GLOBAL) with associated analysis and forecast data on vertical levels, Global Additional (GLOBAL_ADDITIONAL), and WMO Essential datasets, which contain essential parameters related to atmospheric dynamics and cyclone activity. More information on the Copernicus Services Data Offer can be found at:

https://dataspace.copernicus.eu/copernicus-services

6.4. Copernicus Federated Data Sets Offer

The CDSE expands its data offer through a federated access model, which enables integration of additional datasets hosted by external European providers. This approach broadens the scope of available Earth observation data beyond the Copernicus core missions, providing users with complementary long-term and thematic datasets within the same environment.

The following federated datasets are currently integrated into the CDSE: SPOT-VEGETATION and PROBA-V.

The SPOT-VEGETATION mission was designed to deliver daily global observations for monitoring vegetation and land surface dynamics. Operating at medium spatial resolution, it enabled consistent mapping of biophysical parameters, agricultural productivity, forest cover, and the condition of natural ecosystems.

The PROBA-V mission (Project for On-Board Autonomy-Vegetation) built upon the legacy of SPOT-VEGETATION, providing daily global observations at spatial resolutions of 1 km, 300 m, and 100 m. Observations obtained from this mission are used to map surface parameters, monitor agricultural, pastoral, and forest production, and study the processes and dynamics of the terrestrial biosphere.

More information on the Copernicus Federated Data Sets Offer can be found at:

https://dataspace.copernicus.eu/data-collections/federated-data-sets



Copernicus Sentinel data 2025: Istrian Peninsula

6.5. Copernicus Complementary Data Offer

The CDSE also provides access to a set of complementary datasets that extend the core and federated data offerings. These datasets originate from ESA missions and other external entities and contain valuable observations that support land, ocean, and atmospheric research, as well as model validation and long-term environmental analysis. This section provides a brief overview of the available complementary data.

The Soil Moisture and Ocean Salinity (SMOS) mission, launched in 2009 as part of ESA's Earth Explorer programme, measures soil moisture and sea surface salinity using the Microwave Imaging Radiometer with Aperture Synthesis (MIRAS) instrument. MIRAS operates in the L-band (1.413 GHz) and provides dual and full-polarisation measurements across a swath of approximately 1000 km. SMOS Level-1 products contain calibrated instrument data, while Level-2 products provide geolocated estimates of soil moisture and ocean salinity derived from these measurements.

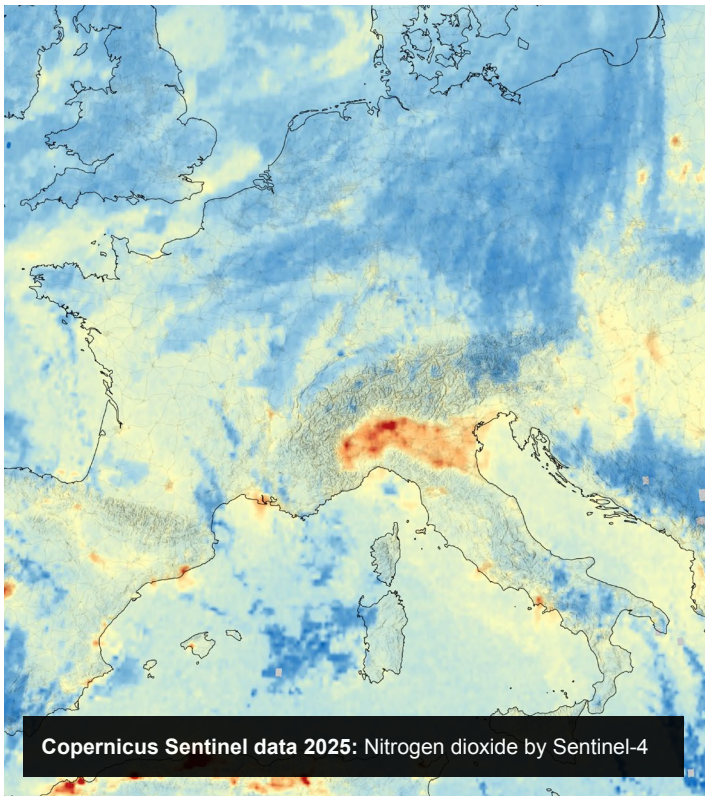
The Medium Resolution Imaging Spectrometer (MERIS) onboard the Envisat satellite (2002-2012) was primarily designed for ocean colour observations but also supported atmospheric and land-surface studies. MERIS operated in the solar reflective spectral range with high spectral and radiometric resolution. It acquired data at a spatial resolution of 260 meters over land and coastal areas and at a reduced resolution of 1040 meters over ocean surfaces.

The Landsat missions - a joint programme of the USGS and NASA - represent the world's longest continuous record of moderate-resolution optical observations of Earth's land and coastal areas. Landsat data available through the CDSE originate from ESA processing and include products from Landsat-5, Landsat-7, Landsat-8 and Landsat-9. In 2025, the data offer was significantly expanded with the systematic ingestion of Landsat-8 and Landsat-9 Collection 2 Level-1 data (from 2021 onwards), enabling consistent and up-to-date global coverage. In addition, Landsat bi-monthly analysis-ready mosaics (1997-2024), generated by OpenGeoHub, were made available through the STAC catalogue, providing over two decades of harmonized, cloud-optimized data for large-scale temporal analysis. These new collections substantially enhance the capability for multi-mission analysis by enabling the combined use of Sentinel and Landsat datasets.

In addition to mission data, the CDSE provides access to third-party and derived datasets, including:

- Sentinel-1 products such as Radiometrically Terrain Corrected (RTC), CARD-BS (Terrain-Corrected Backscatter), and orbit data,
- Sentinel-2-based global mosaics and land cover maps (including S2GLC for Europe and Poland),
- and digital elevation models (COP DEM and SRTM DEM).

https://dataspace.copernicus.eu/data-collections/complementary-data



Copernicus Sentinel data 2025: Nitrogen dioxide by Sentinel-4

6.6. Publication per Geographical coverage

The Sentinel observation scenarios generally follow the pre-defined Sentinel High Level Observation Plan (HLOP) which is aimed at delivering the observation requirements for the Copernicus Services. The Sentinel HLOP can be assessed here:

Sentinel High Level Operations Plan (HLOP)

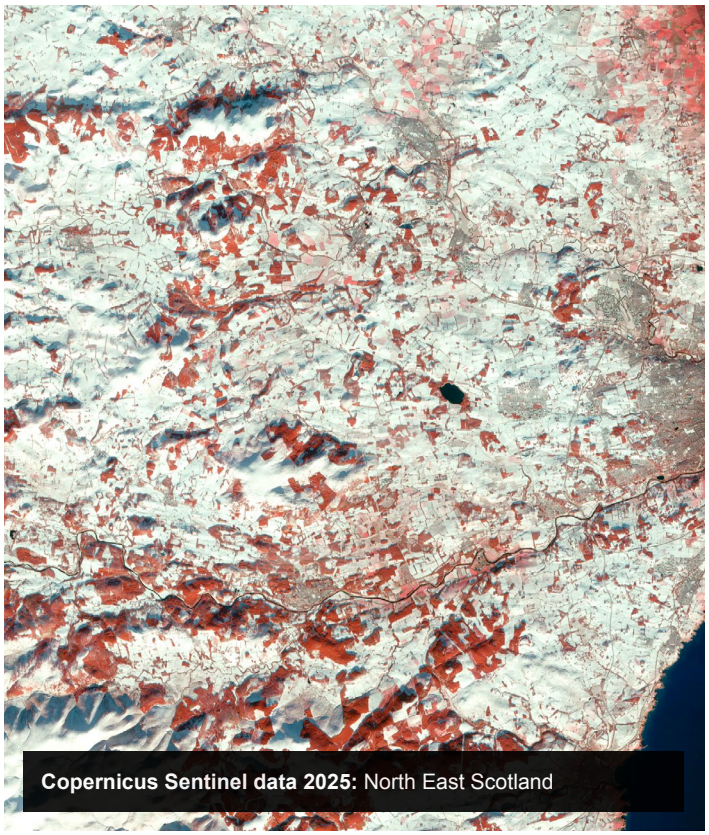
Consequently, the geographical areas covered by specific Sentinel missions are defined by their individual observation scenarios, which can be found online through the following links:

Sentinel-1:
- https://sentiwiki.copernicus.eu/web/s1-mission
- https://sentinels.copernicus.eu/web/sentinel/copernicus/sentinel-1/observation-scenario

Sentinel-2:
- https://sentiwiki.copernicus.eu/web/s2-mission

Sentinel-3:
- https://sentiwiki.copernicus.eu/web/s3-mission

Sentinel-5P:
- https://sentiwiki.copernicus.eu/web/s5p-mission



Copernicus Sentinel data 2025: North East Scotland

6.7. Heatmaps

The heatmaps presented in this section illustrate the geographical distribution of user-level data products published from the start of CDSE operations until the end of 2025. They provide a spatial overview of data availability across all Sentinel missions, highlighting regions with higher publication density and overall coverage patterns.

In 2025, the methodology for generating heatmaps was refined to improve consistency and representativeness. In the updated approach, white areas in the heatmaps indicate regions where no data was published. The higher publication densities observed in polar regions are linked to the increased frequency of satellite observations at high latitudes.

Minor striping patterns and artifacts may appear in some figures due to the interaction between satellite acquisition geometry and the aggregation grid used for visualization.

Sentinel-1

Figure 42 presents a heatmap of the geographical coverage of Sentinel-1 user-level data published from the beginning of Sentinel-1 operations until the end of 2025. The colour scale shows the quantity of user-level data published for different regions of the world. Regions with the highest numbers of published Sentinel-1 user-level data are represented by dark red fields. This heatmap includes all user-level data types except OCN. The overall distribution shows near-global land coverage, with the highest publication densities concentrated over Europe, as indicated by orange and yellow tones. Yellow and light green tones extend across central Asia, the western coastlines of North and South America, and parts of Africa, indicating lower publication activity.

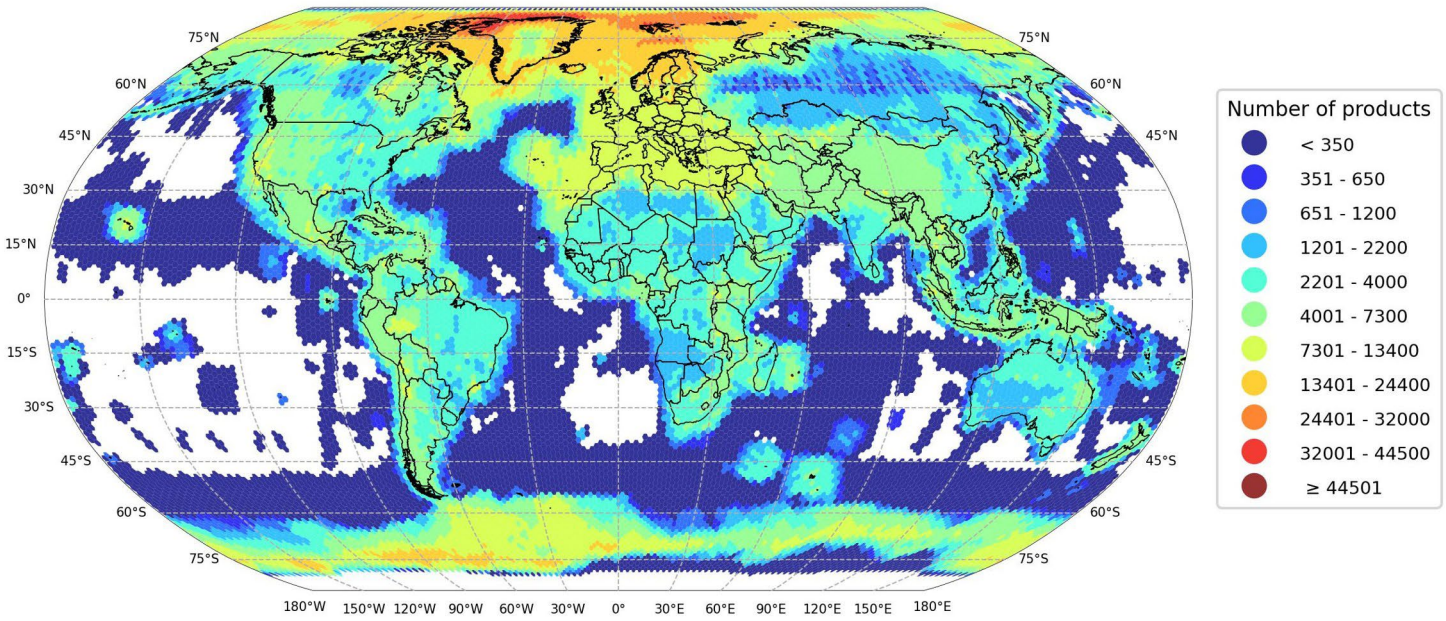


FIGURE 42: Heatmap of Sentinel-1 user-level data (excluding OCN) published from the start of operations to the end of 2025. White colour indicates areas where no data was published.

To facilitate a more detailed analysis on Sentinel-1 user-level data, the following heatmaps show GRDM (Figure 43), GRDH (Figure 44), and SLC (Figure 45) individually.

The Sentinel-1 GRDH (Ground Range Detected High Resolution) user-level data type provides high-resolution radar imagery primarily focused on land areas. This data type is mainly associated with the Interferometric Wide Swath (IW) mode and offers a detailed view of terrestrial features and changes over time. The highest densities (Figure 44) appear over Europe and Greenland, with yellow tones extending across central and south-eastern Asia, as well as the western regions of North and South America.

The Sentinel-1 SLC (Single Look Complex) user-level data type provides radar imagery with a high level of detail and phase information. This data type is primarily associated with the Interferometric Wide Swath (IW) mode and the Stripmap (SM) mode, offering both wide coverage and detailed imaging capabilities. Higher publication densities (Figure 45) are almost exclusively confined to Europe, while the rest of the world remains at comparatively low levels. This strong regional focus reflects targeted acquisition planning driven by demand for interferometric applications, such as deformation monitoring, InSAR analysis, change detection, and urban subsidence studies, which are most actively pursued over the European continent.

The Sentinel-1 GRDM (Ground Range Detected Medium Resolution) user-level data type is designed to capture medium resolution radar imagery, with a focus on sea, ice, and polar marine areas. As a result, its heatmap (Figure 43) shows a clearly different pattern compared to the other product types. Data coverage is concentrated over marine and high-latitude areas such as the Arctic, Greenland, the waters surrounding Antarctica, and regions like the Baltic Sea, while continental areas are largely absent. This distribution reflects the role of the Extra Wide Swath (EWS) mode, which is optimized for maritime monitoring, sea ice observation, and polar applications.

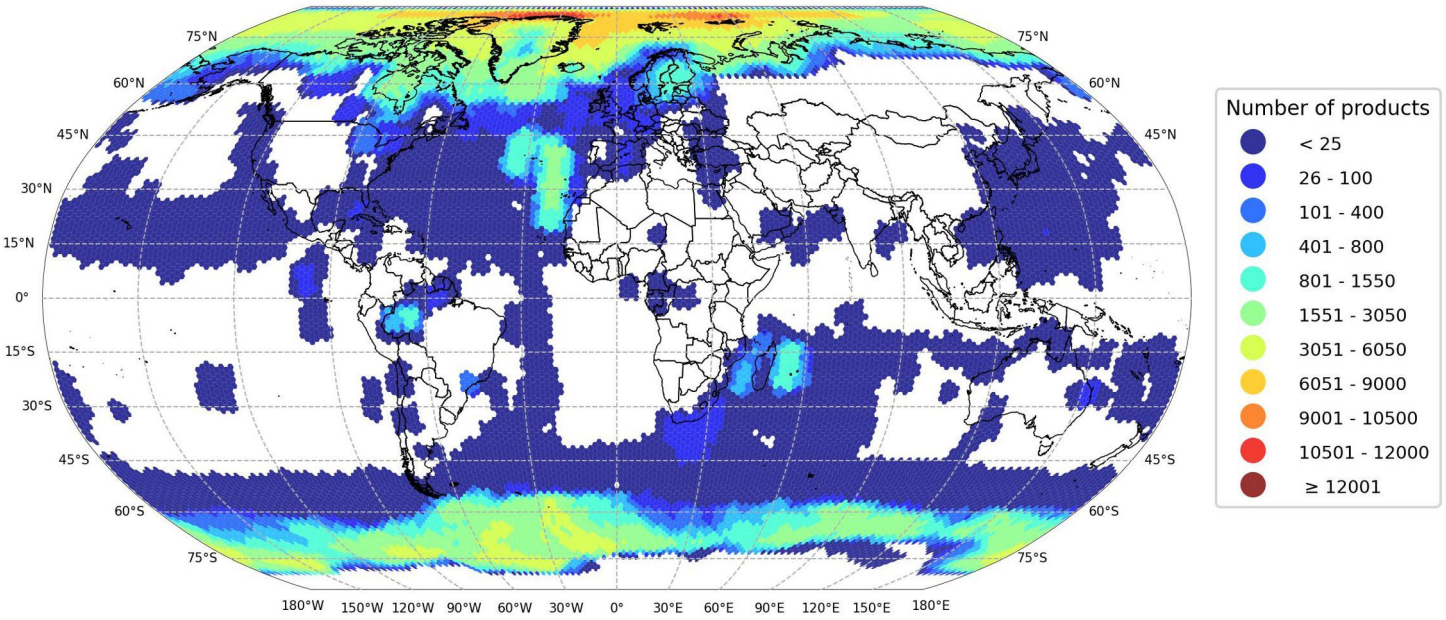


FIGURE 43: Heatmap of Sentinel-1 GRDM user-level data published from the start of operations to the end of 2025. White colour indicates areas where no data was published.



Copernicus Sentinel data 2025: Peatlands in Estonia

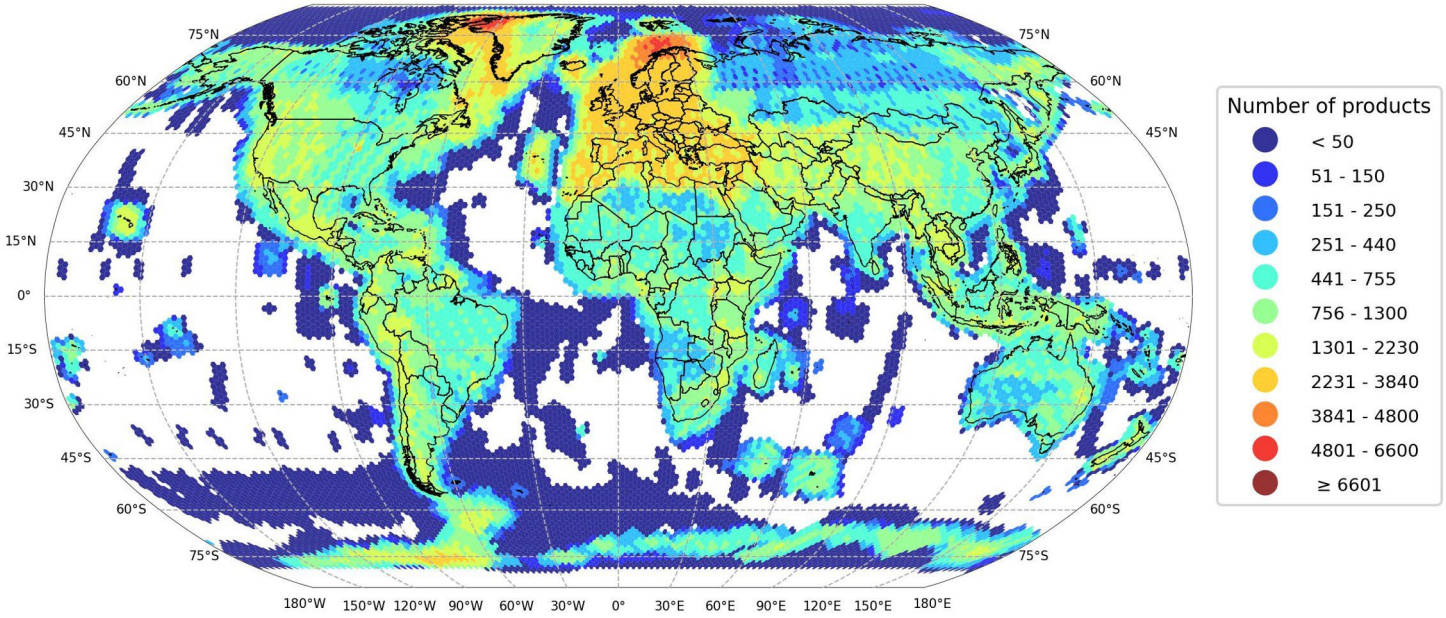


FIGURE 44: Heatmap of Sentinel-1 GRDH user-level data published from the start of operations to the end of 2025. White colour indicates areas where no data was published.

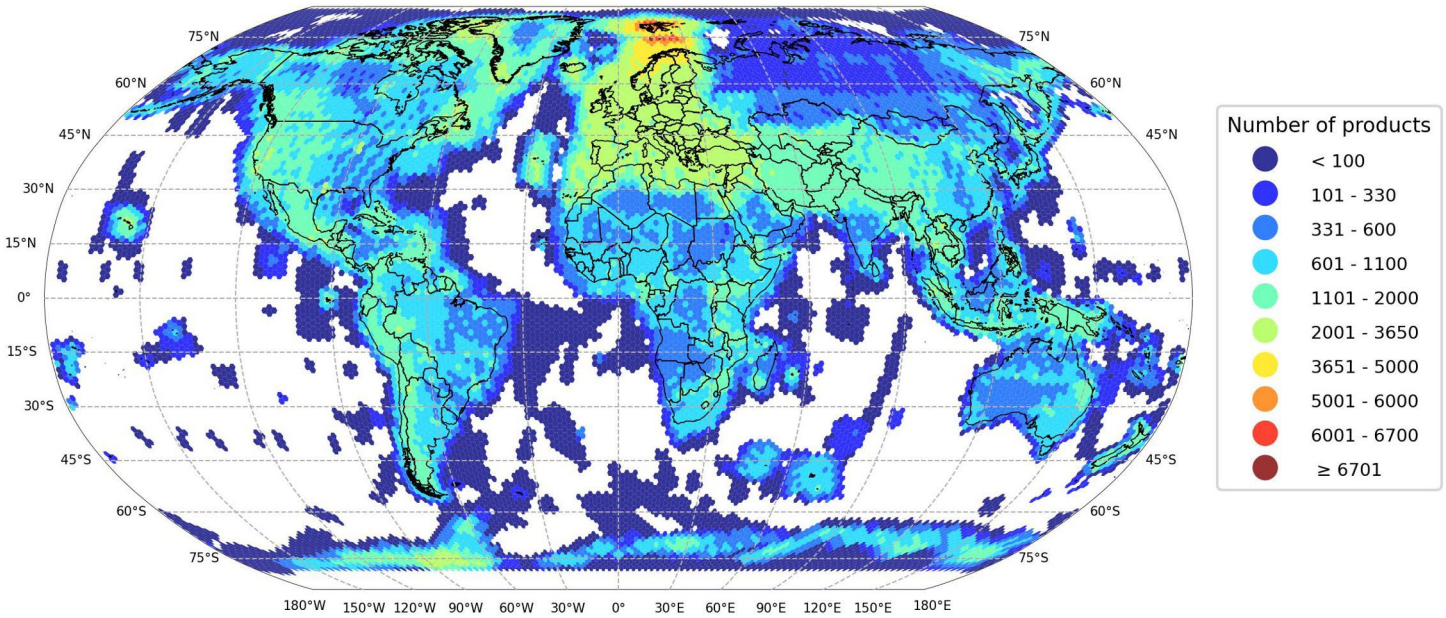
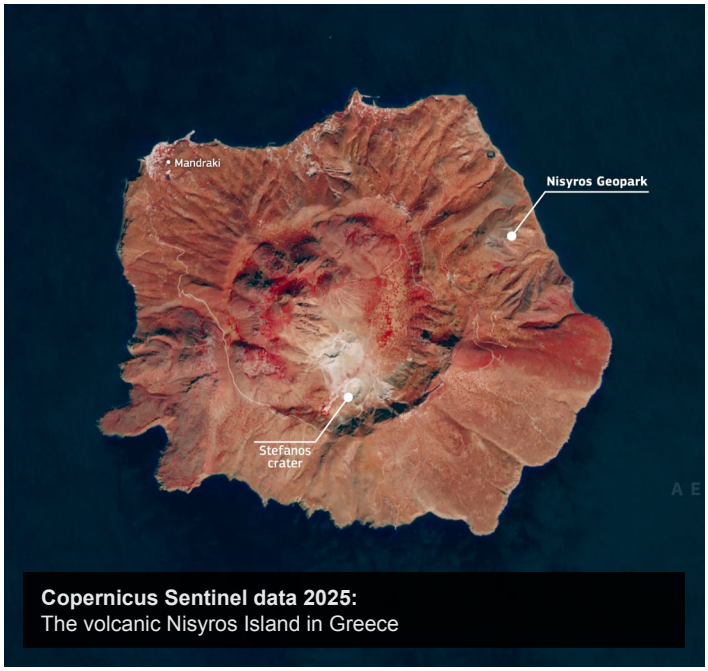


FIGURE 45: Heatmap of Sentinel-1 SLC user-level data (excluding WV SLC) published from the start of operations to the end of 2025. White colour indicates areas where no data was published.



Sentinel-2

Figure 46 and Figure 47 present geographical coverage heatmaps of Sentinel-2 user-level data published from the start of Sentinel-2 operations until the end of 2024, for Level-1C and Level-2A, respectively. Please note that maps include standard user-level data only, i.e. without the reprocessed data.

Both heatmaps show a similar global distribution with extensive land coverage across all continents. The highest publication densities are concentrated over Europe, North America, and northern Asia, where systematic acquisitions have accumulated over the longest period. Green and yellow tones cover most of the remaining land areas, reflecting consistent operational coverage worldwide. The contribution of the Sentinel-2A extended campaign, which operated from March 2025 with a focus on improving coverage over cloud-prone tropical regions in Africa and South America, is reflected in the comparatively stronger density over these areas in both product types.

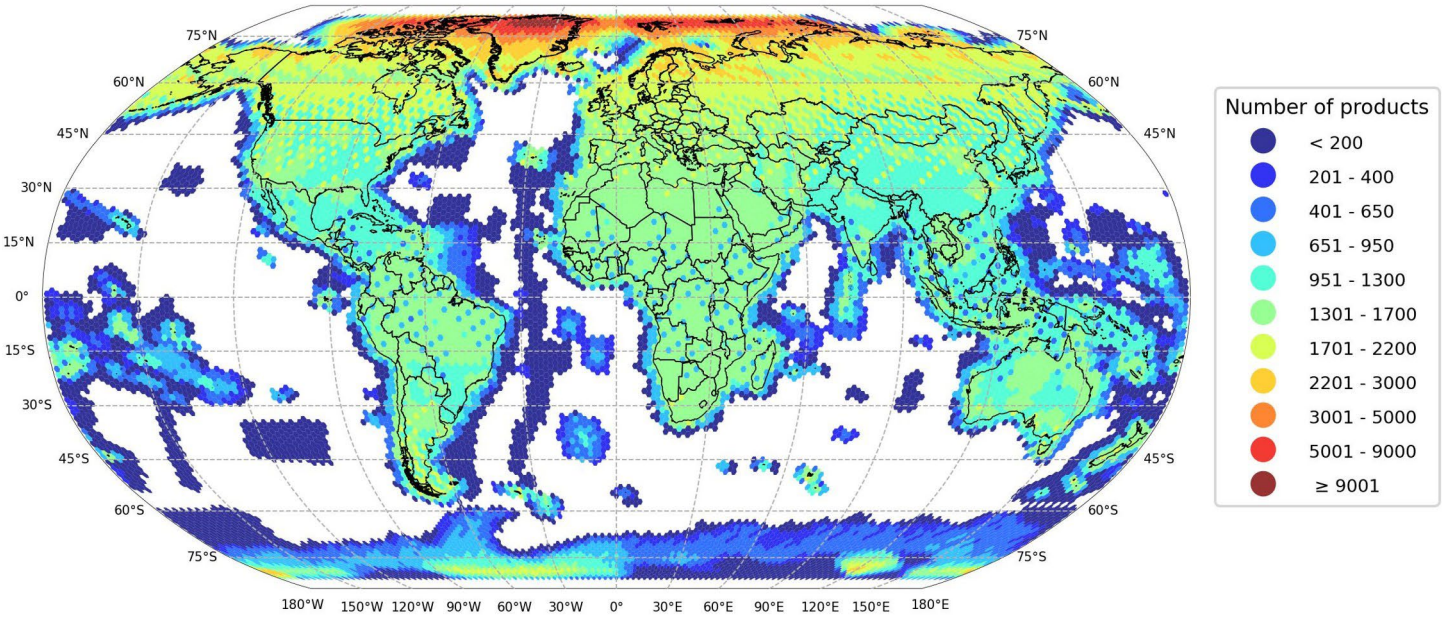


FIGURE 46: Heatmap of Sentinel-2 Level-1C user-level data published from the start of operations to the end of 2025. White colour indicates areas where no data was published.

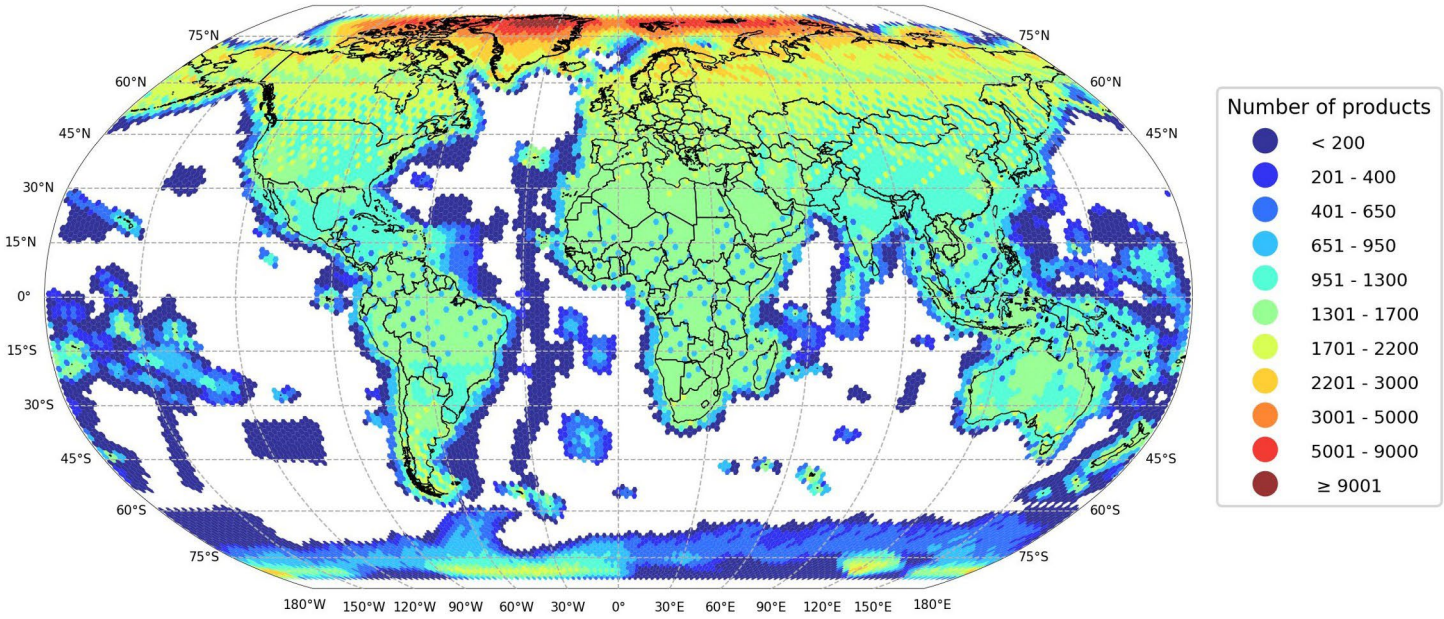


FIGURE 47: Heatmap of Sentinel-2 Level-2A user-level data published from the start of operations to the end of 2025. White colour indicates areas where no data was published.



Copernicus Sentinel data 2025: Retreating Glaciers of the Hoher Dachstein Massif in Austria



Copernicus Sentinel data 2025:
The Tatra Mountains between Poland and Slovakia

Sentinel-3

The following heatmaps present the geographical coverage for Sentinel-3 user-level data from the start of operations until the end of 2025. The heatmaps, provided in Figure 48 - Figure 54 correspond to five data groups: SRAL (excluding NRT and Level-2), SRAL-NRT Level-2, OLCI, SLSTR, and SYNERGY.

Overall, the spatial distribution is primarily driven by the measurement geometry and observation strategy of each instrument, as well as the geometry of the footprint of the final products, rather than by land-focused acquisition priorities, as with Sentinel-2. For OLCI, SLSTR, and SRAL (excluding NRT and Level-2 products), the heatmaps show a relatively uniform, global coverage with a clear increase toward higher latitudes. This pattern reflects the wide-swath, global scanning strategy of these instruments combined with orbit convergence near the poles, which naturally results in more frequent observations in polar regions.

The SYNERGY heatmap shows a distinctly fragmented, patchwork pattern with visible rectangular gaps, particularly over equatorial and mid-latitude ocean areas. This distribution is primarily determined by the footprint geometry of the final products.

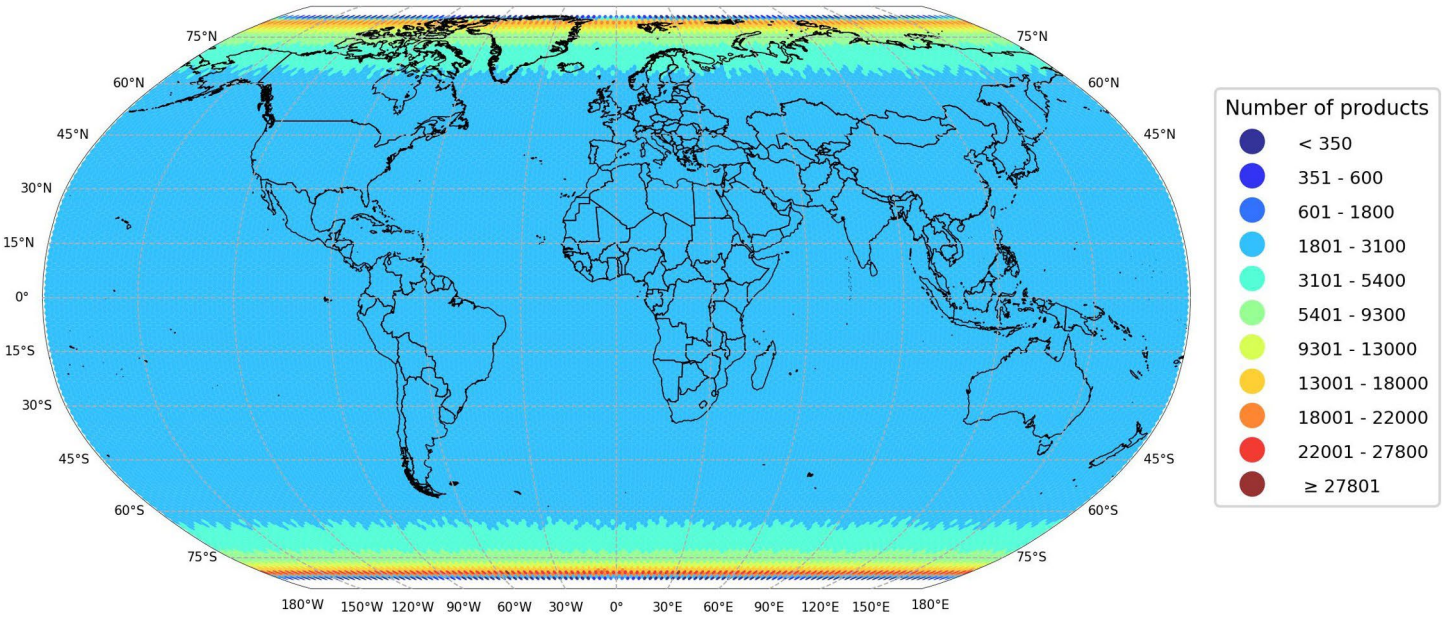


FIGURE 48: Heatmap of Sentinel-3 SRAL (excluding NRT and Level-2) user-level data published from the start of operations to the end of 2025. White colour indicates areas where no data was published.

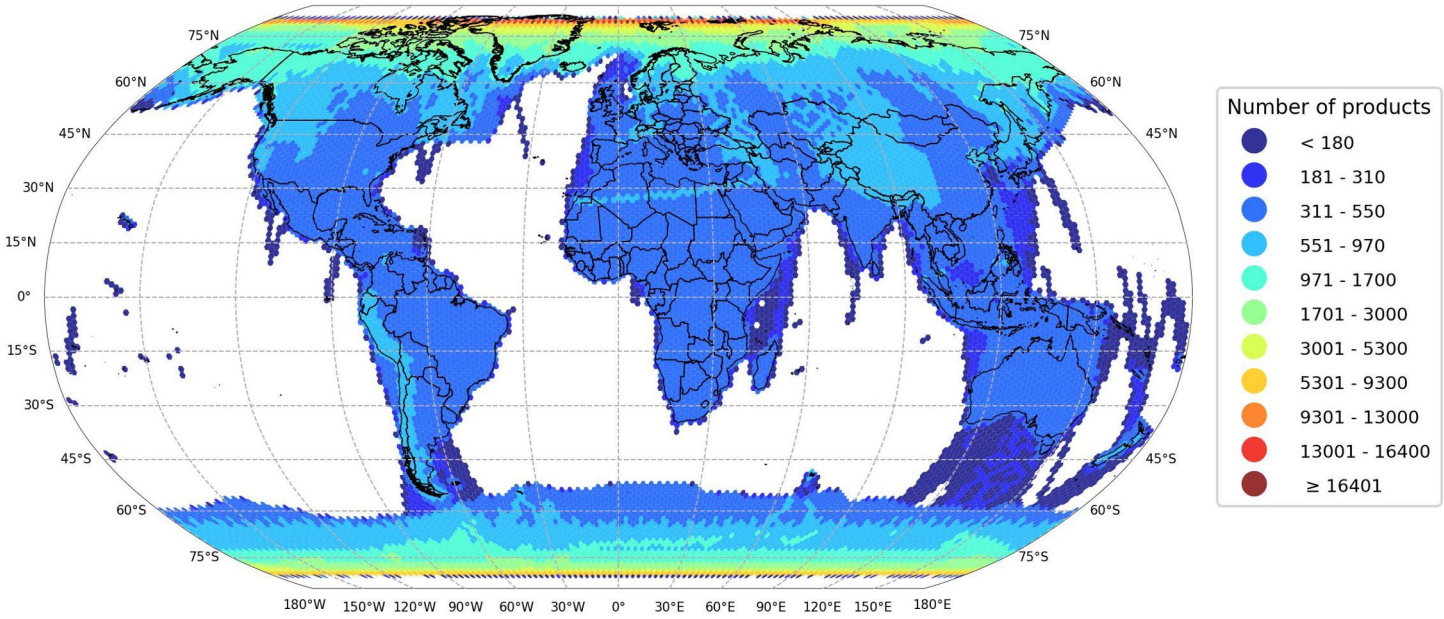


FIGURE 49: Heatmap of Sentinel-3 SRAL-NRT Level-2 user-level data published from the start of operations to the end of 2025. White colour indicates areas where no data was published.

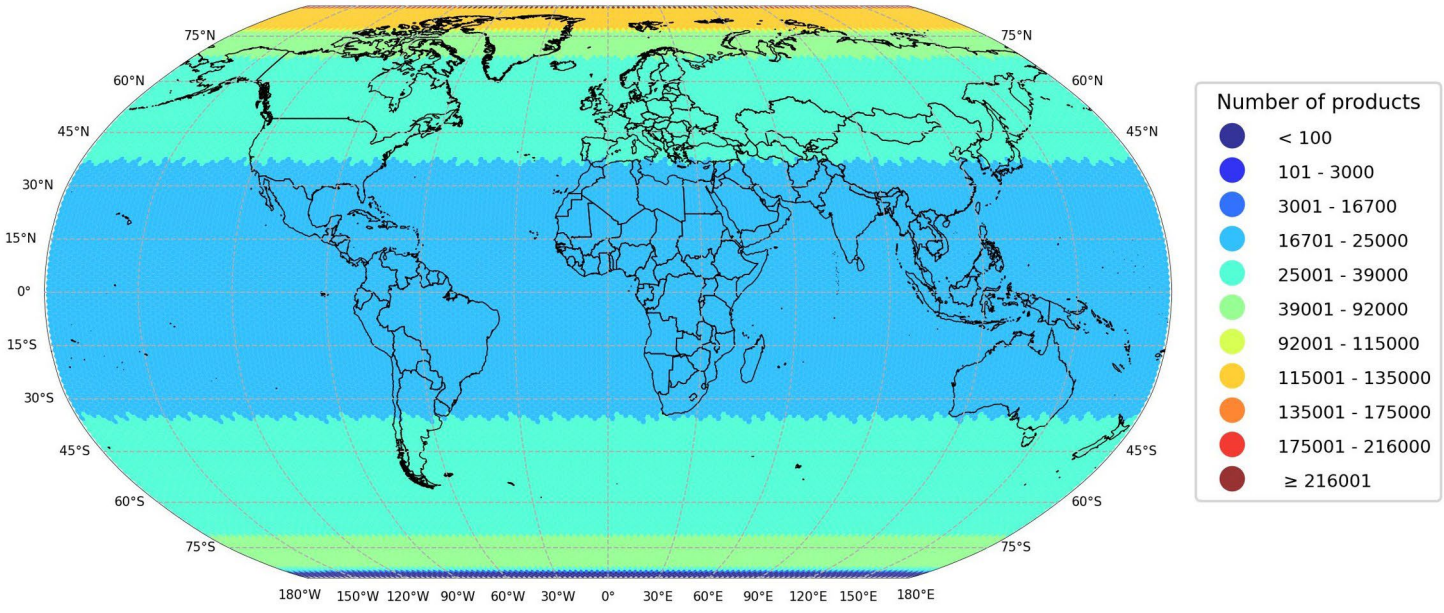


FIGURE 50: Heatmap of Sentinel-3 OLCI user-level data published from the start of operations to the end of 2025.

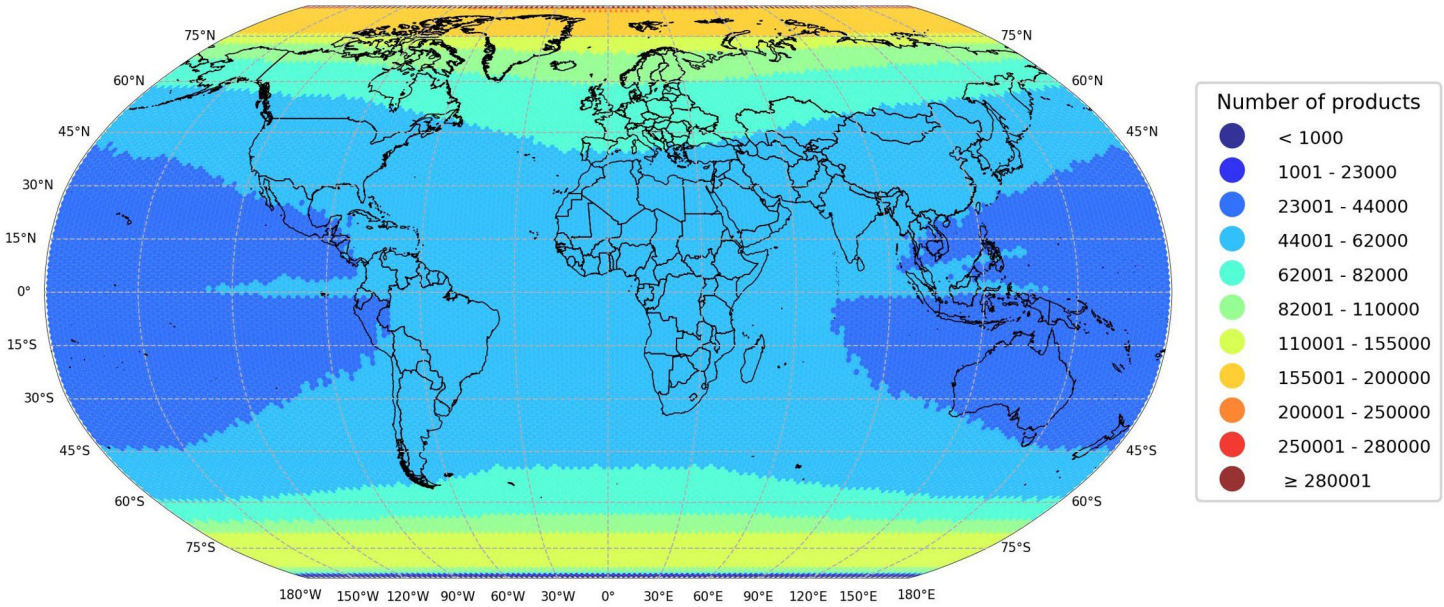


FIGURE 51: Heatmap of Sentinel-3 SLSTR user-level data published from the start of operations to the end of 2025.

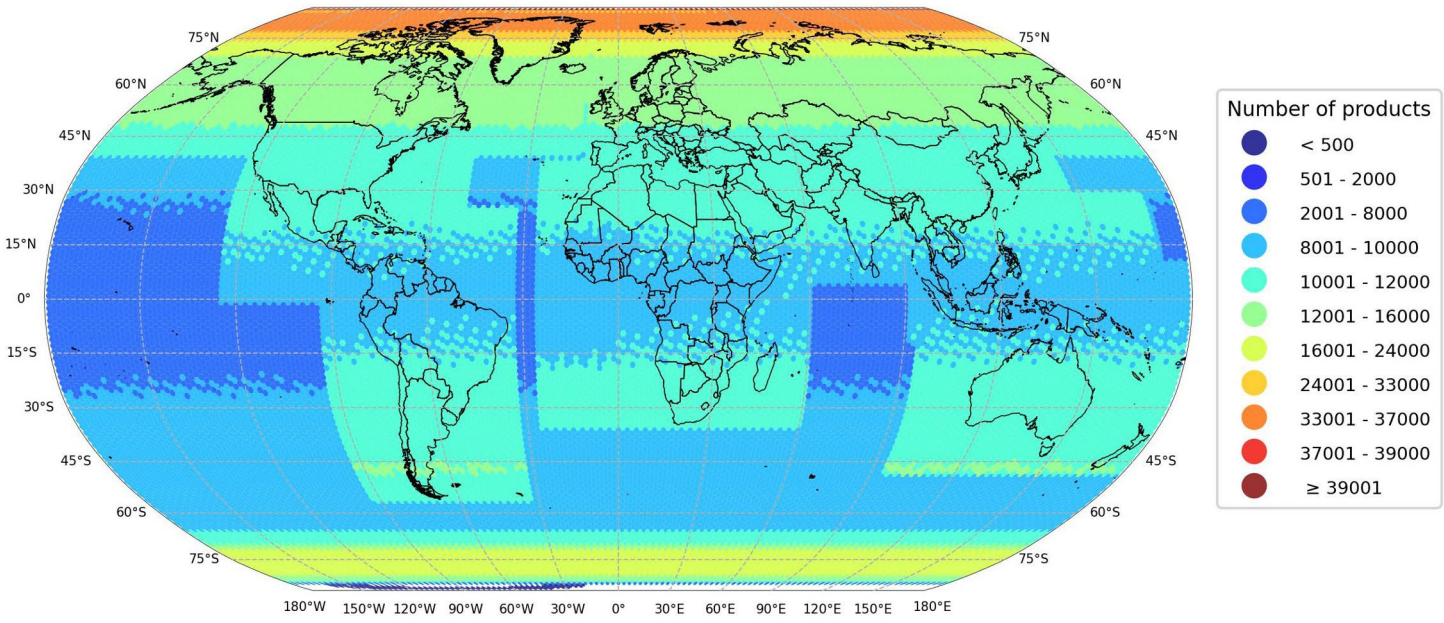


FIGURE 52: Heatmap of Sentinel-3 SYNERGY user-level data published from the start of operations to the end of 2025. White colour indicates areas where no data was published.

Sentinel-5P

Figure 53 and Figure 54 presents the Sentinel-5P user-level data (Level-1 and Level-2), divided by NRT or NTC timeliness and published from the beginning of operations until the end of 2025. This data is uniformly collected from across the globe, so the increase in the number of products with latitude is solely due to the overlap of the field of view from individual orbits.

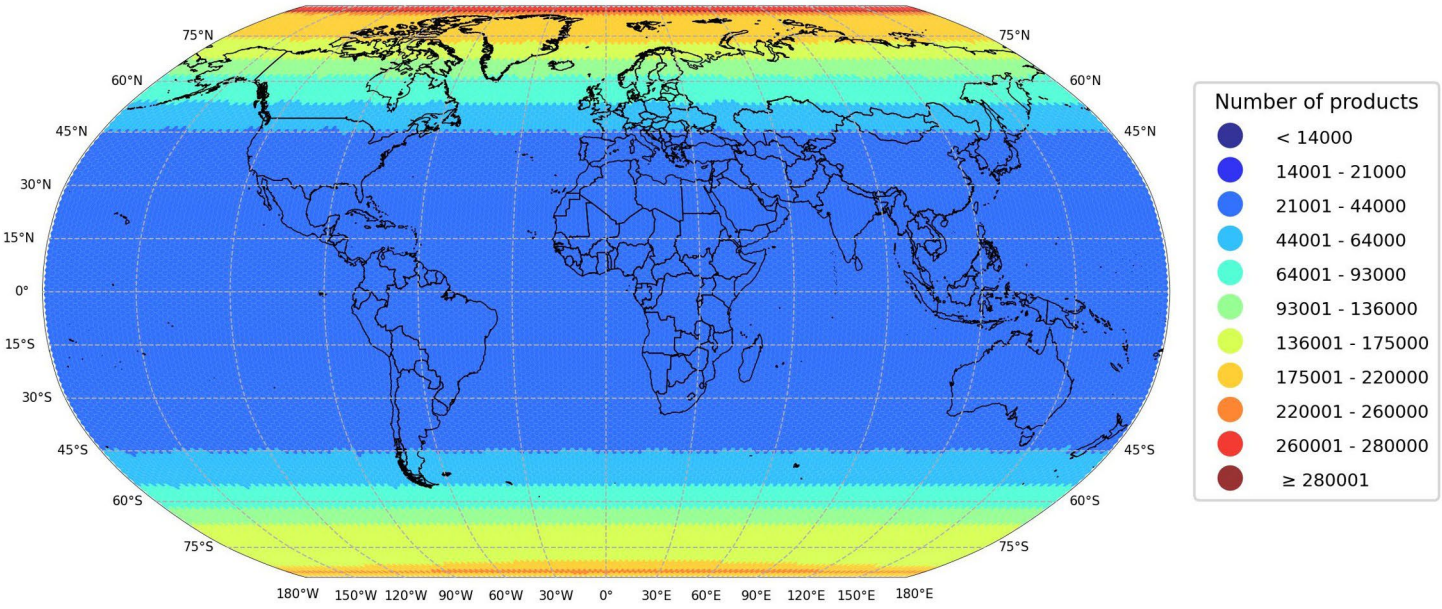


FIGURE 53: Heatmap of Sentinel-5P user-level data (Level-1 and Level-2, NRT only) published from the start of operations to the end of 2025.

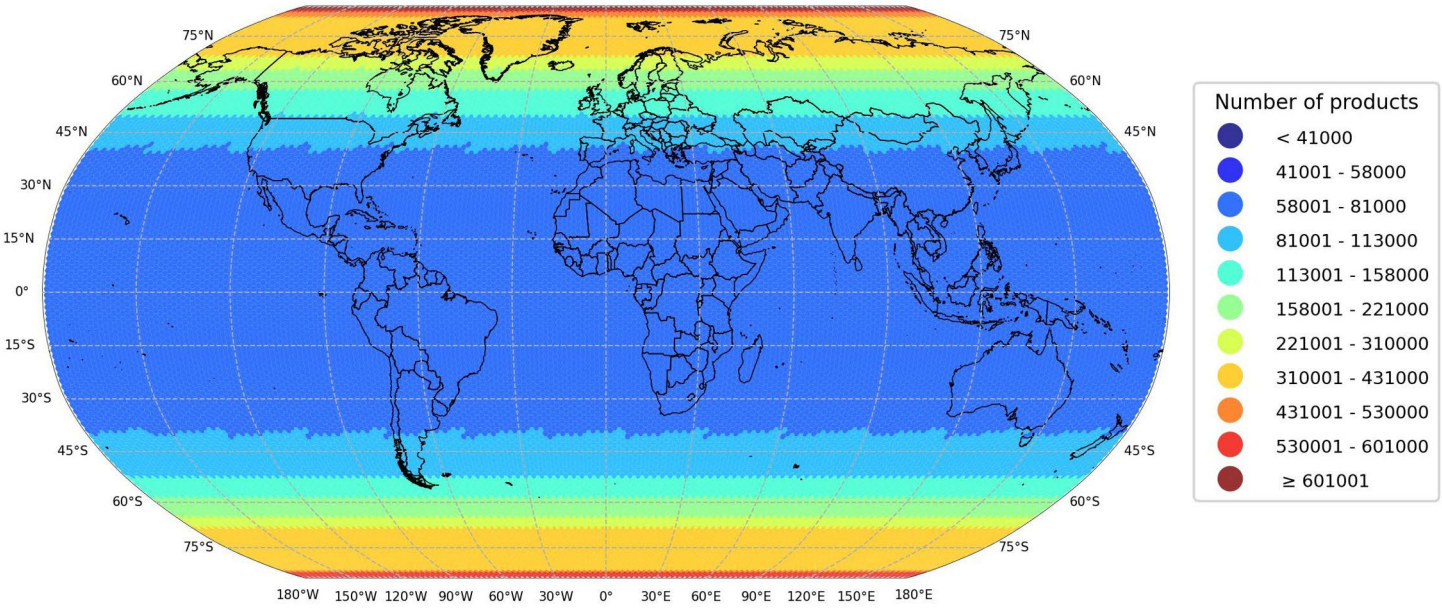


FIGURE 54: Heatmap of Sentinel-5P user-level data (Level-1 and Level-2, NTC only) published from the start of operations to the end of 2025.

7 DATA DELIVERY

This section presents an overview of data delivery trends observed in 2025, with particular emphasis on how users accessed the data through the various interfaces provided by the CDSE. Although users still rely on direct downloads, they represent only a portion of overall data usage, as CDSE enables seamless access and on-demand processing of Sentinel data without the need for local downloads – marking a significant advancement over the former Sentinel Data Access Service. At present, four main delivery channels are available:

- data download
- data access via Sentinel Hub
- data access via OpenEO
- data access from federated cloud environments

The year 2025 was a record-breaking year for data delivery within the CDSE. Several factors converged to drive this result: a continuously growing and diversifying user base, the release of new data acquired from new satellites, particularly Sentinel-1C and Sentinel-2C, an extended Sentinel-2A campaign, an ever-expanding portfolio of datasets, as well as a series of global events (including major natural disasters) that triggered elevated, time-critical demand for Earth observation data from all Sentinel satellites within the CDSE. All these aspects translated directly into higher user acquisition, a significantly increased number of download requests, and the highest data volumes ever recorded on the platform.

By the end of 2025, the average monthly volume of downloaded data had increased to approximately 10.8 PB, up from 8.1 PB in 2024 – an additional rise of 33.5% year-on-year. For broader context, the monthly average stood between 6.2 and 6.9 PB annually under the former Copernicus Sentinel Data Access Service (2020–2023). It is clear that CDSE is not only sustaining, but also accelerating, the growth of Sentinel data usage on a global scale.

Over the course of the year, the CDSE provided users with more than 242 PB of EO data via multiple access channels. This included over 130 PB of data downloaded by registered users accessing data from outside the CDSE infrastructure, i.e by transferring it directly to external environments such as institutional servers or other end-user machines. By contrast, approximately 42 PB was accessed by users operating within the CDSE architecture and leveraging its internal virtual resources (e.g. IaaS or hosted environments like Sentinel Hub, openEO). Furthermore, over 70 PB was delivered through federated cloud environment (i.e. CREODIAS, which is a commercial service for CDSE), that hosts EO data and provides access to it outside the core CDSE platform. These figures confirm the continued relevance of traditional download methods and illustrate the evolving access patterns within the Earth observation community.

At the same time, the shift toward cloud-native data interaction has accelerated considerably. As detailed in Section 7.2, Sentinel Hub processed more than 2.5 billion requests in 2025 – nearly double the volume recorded in 2024 – and reached a record-breaking 10 billion processing units (PUs) consumed within the system. Concurrently, the synchronous openEO backend, launched in July 2025 and integrated directly into the Copernicus Browser, was rapidly adopted and now powers over 75% of all processing volume within that environment. All these innovations reflect the platform's continued evolution: the distinction between data access and data processing is increasingly blurring, as users move toward cloud-native workflows that eliminate the need for data transfers to local infrastructures.

To better illustrate the scale of these figures, the following comparisons translate the 2025 CDSE data delivery metrics into real-world equivalents:

- The **242 PB of EO data** delivered by CDSE in 2025 would completely fill the storage of **nearly 1 million high-end smartphones** equipped with 256 GB of memory.
- The **129.9 PB of Sentinel missions' data** downloaded in 2025 is roughly equivalent to streaming over **8.6 million hours of 4K Ultra HD video** (assuming ~15 GB/hour) – enough to watch non-stop for nearly 1,000 years.
- The **14.9 billion individual download events** correspond to nearly **two download requests for every person on Earth** (based on a global population of ~8 billion). On average, this translates to approximately **472 downloads per second** throughout the entire year.
- The **year-on-year increase in data delivered of over 32.6 PB** is equivalent to streaming data continuously **at 1 Gbps for over 8 years**, or filling **more than 6,500 high-capacity hard drives** (5TB each).



Copernicus Sentinel data 2025: Aalborg in Denmark

7.1. Data download

This section presents the number and size of Sentinel products downloaded via CDSE. Data delivered through other channels (e.g. streamlined or cloud-based access) is not reflected in this section's statistics.

All download statistics in this report include data retrieved via both the OData/Zipper interface and the S3 interfaces and encompass all user roles combined. This ensures consistency with the methodology introduced in last year's report, allowing for reliable and accurate year-on-year comparisons of user download activity across the entire platform. It is recalled that the CDSE offers access to user level data on the individual file basis and indeed to portions of the files, the download events counts each of these individual access and is not directly comparable to the download of complete user level packages that was reported in the pre-CDSE era.

Throughout all tables in this chapter that include a ‚Count' column, this column refers to the total number of download events, consisting of both full and partial product downloads.

7.1.1. Data download summary

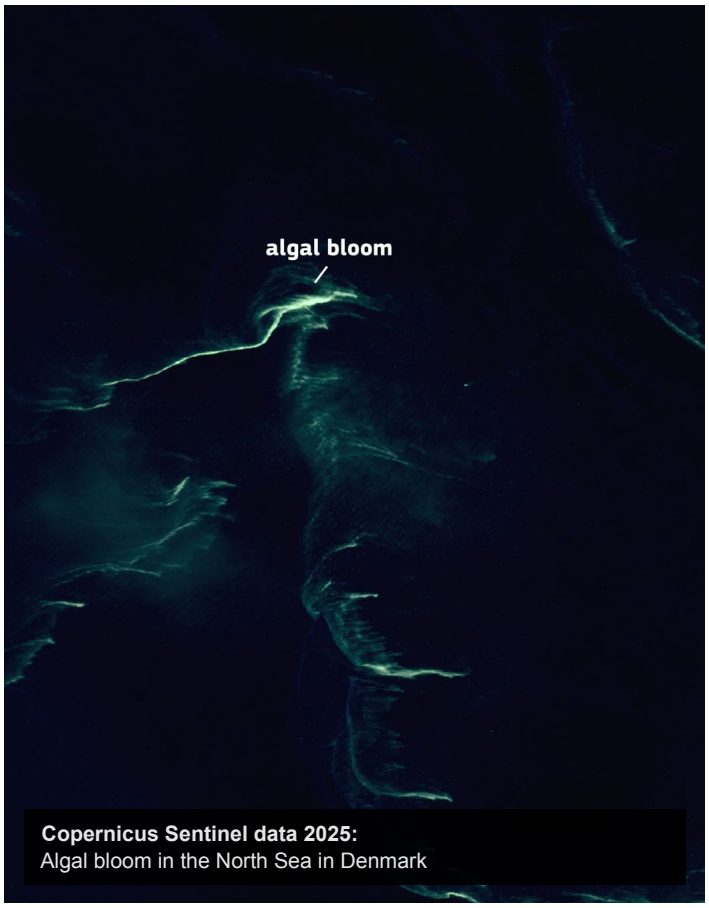
The CDSE operates on a multi-cloud infrastructure, designed to provide resilient and redundant services through two distributed cloud environments: CloudFerro Cloud (CFC), located in Warsaw, and T Cloud Public (TCP), located in Amsterdam. Both clouds enable user access via OData/Zipper and S3 interfaces and downloads recorded from either source contribute to overall system activity.

The summary below presents the total volume and number of download events for user-level data download statistics for 2025, covering all missions and both cloud environments. Alongside the four core Sentinel missions, the table features an ‚Other' category including data from supplementary collections within the CDSE, such as Sentinel-6, CCM, CLMS, Global Mosaics and Landsat 5–9. It is worth noting that this category was not reported separately in last year's edition of this report. These figures reflect all user roles combined. The corresponding doughnut charts visually represent the data volume and download counts for each mission, including their respective percentage shares.

The combined results across both cloud environments can be summarized as follows (Table 20 and Figure 55):

- **Sentinel-1:** A total of 39,965 TB of data was downloaded, accounting for 30.6% of the total download volume across all missions – an increase of 14,801 TB (+58.82%) compared to 2024. The number of Sentinel-1 downloads reached 839,853,360, which represents 5.6% of all downloads made during the year (+318,613,282; +61.13% year-on-year).
- **Sentinel-2:** This mission remains the most frequently accessed, with a total download volume of 73,987 TB, making up 56.6% of the total (+13,842 TB; +23.01% vs. 2024). The number of downloads increased further to reach 12,350,565,974, which corresponds to 82.9% of the total number of downloads made during the year (+3,223,179,101; +35.31% year-on-year).
- **Sentinel-3:** Users downloaded 10,767 TB of data, which is 8.2% of the total volume (+1,797 TB; +20.04% vs. 2024). The download count was 1,388,632,802, or 9.3% of the total for the year (+190,194,063; +15.87% year-on-year). In line with the reporting of the data offer in section 6.1 Table 20 reports the split of downloads for the Sentinel-3 Land component managed by ESA, and the level-2 data from Marine component of Sentinel-3 managed by EUMETSAT.
- **Sentinel-5P:** This mission accounted for 5,234 TB (4.0%) of downloaded data and 127,468,093 downloads (0.9% of the total) and recorded the most significant relative growth (+2,198 TB; +72.41% in downloaded volume and +39,191,279; +44.40% for number of downloads vs. 2024).
- **Other:** The remaining 778 TB (0,6%) and 186,283,498 downloads (1.3%) originated from additional collections, including Sentinel-6, CCM, CLMS, Global Mosaics, and Landsat 5-9.

In total, 130,731 TB of data was downloaded across both cloud environments in 2025, with a combined total of 14,892,803,727 download requests - a notable increase of 33,416 TB (+34.34%) and 3,957,461,223 downloads (+36.19%) compared to 2024. These figures cover all Sentinel missions, as well as the additional collections reported under the „Other“ category.



Copernicus Sentinel data 2025:
Algal bloom in the North Sea in Denmark

Mission	Volume [TB]	% of Total volume downloaded in 2025	Number of download events	% of Total number downloaded in 2025
Sentinel-1	39,965	30.6%	839,853,360	5.6%
Sentinel-2	73,987	56.6%	12,350,565,974	82.9%
Sentinel-3 ESA	10,150	7.8%	1,292,439,411	8.7%
Sentinel-3 EUM	617	0.5%	96,193,391	0.6%
Sentinel-5P	5,234	4.0%	127,468,093	0.9%
Other*	778	0.6%	186,283,498	1.3%
Sentinel-only Total	**129,954**	**99.4%**	**14,706,520,229**	**98.7%**
Grand Total	**130,731**	**100.0%**	**14,892,803,727**	**100.0%**

TABLE 20: Total volume and number of user-level data downloads per mission across both cloud environments (CFC and TCP) using OData/Zipper and S3 interfaces in 2025. *Other includes Sentinel-6, CCM, CLMS, Global Mosaics, Landsat 5–9. This category was not reported separately in the 2024 Annual Report.

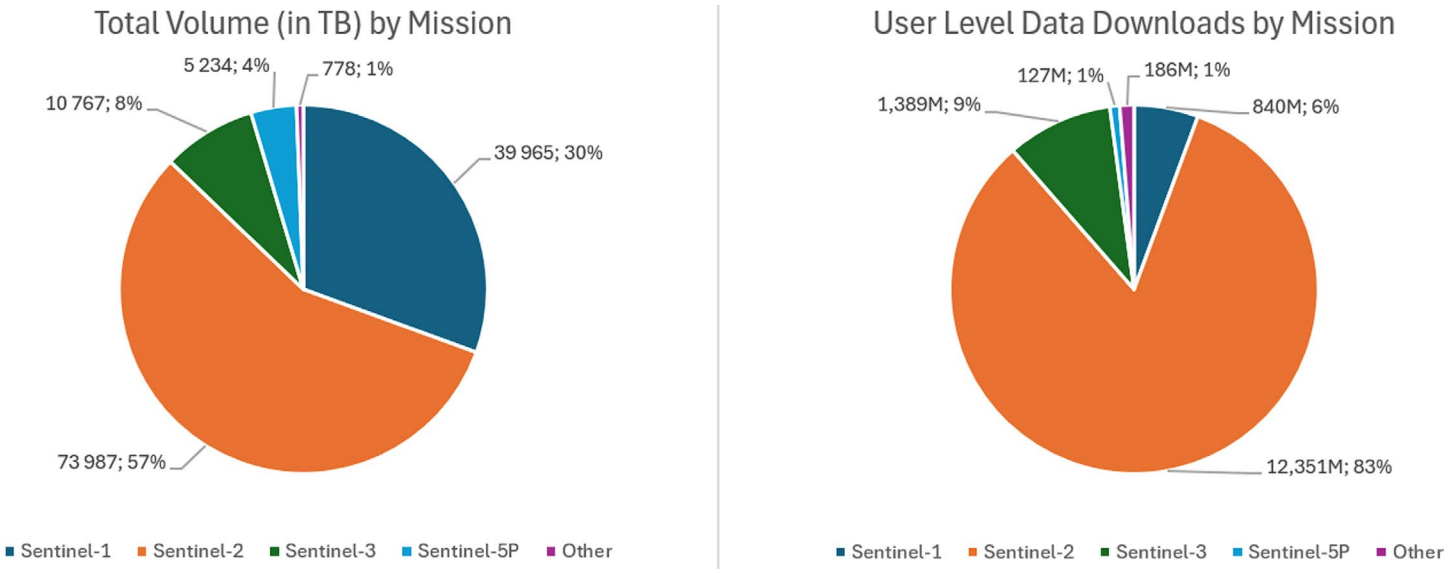
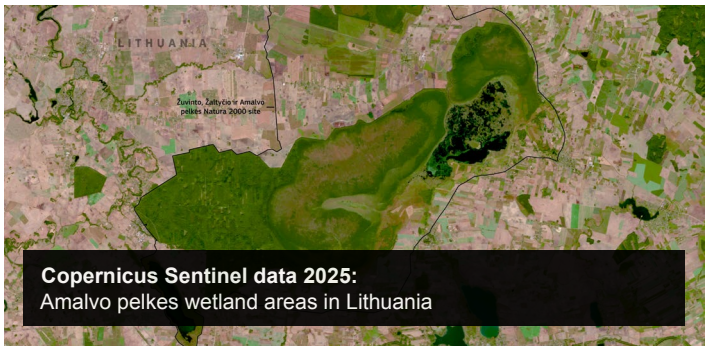


FIGURE 55: Total volume and number of user-level data downloads per mission across both cloud environments (CFC and TCP) using OData/Zipper and S3 interface in 2025.



Copernicus Sentinel data 2025:
Amalvo pelkes wetland areas in Lithuania

Table 2 shows the breakdown of download statistics between the two cloud environments. CloudFerro Cloud (CFC) remained the primary access point, accounting for 86.8% of the total volume and 74.5% of all downloads. T Cloud Public (TCP) contributed the remaining 13.2% of the volume and 25.5% of the downloads, reflecting a full twelve-month reporting period for the first time. Unlike the previous year, when TCP statistics were only tracked from May to December, the 2025 figures reflect a complete twelve-month period, which substantially contributes to the observed growth in TCP-sourced downloads.

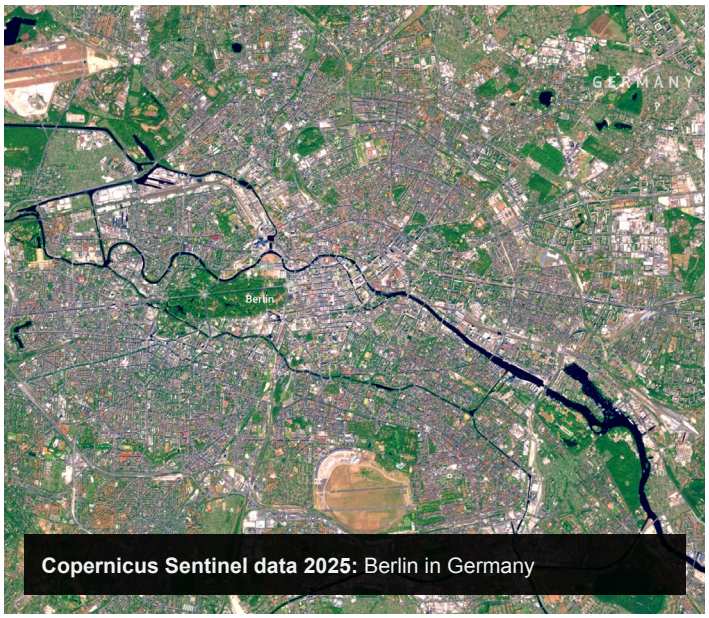
Cloud environment	Volume [TB]	% of total volume	Number of download events	% of total downloads
CloudFerro Cloud (CFC)	113,486	86,8%	11,100,585,420	74,5%
T Cloud Public (TCP)	17,246	13,2%	3,792,218,307	25,5%
Grand Total	**130,731**		**14,892,803,727**	

TABLE 21: Download volume and number of user-level data downloads split between cloud environments in 2025.

Collectively in 2025, the total volume of data downloaded by CDSE users from CFC and TCP across all Sentinel missions and the additional collections included in the „Other“ category reached 130,731 TB, with a combined total of 14,892,803,727 download events (Table 21). Sentinel-2 once again dominated user activity in terms of both volume and download count. However, it is worth highlighting that Sentinel-1 achieved the most significant year-on-year growth in absolute volume, which was linked to the release of new data from the commissioned S1C, ongoing reprocessing campaigns, and growing uptake among new user segments. Sustained growth in overall download metrics can be attributed to several factors, including an increasing user base, growing adoption of the CDSE platform and continuous expansion of available datasets and services.

Table 22 and Figure 56 resent the monthly volumes and their distribution across the multiple access channels of the CDSE, providing a transparent basis for tracking these figures year on year. Of the total delivered volume of 242.56 PB, the largest share – 129.08 PB (53.2%) – was downloaded by CDSE users accessing the data from outside the CDSE infrastructure. As in previous years external data transfer remains the dominant access pattern. Access to users from federated cloud platforms accounted for a further 71.27 PB (29.4%), while cloud processing within the CDSE architecture via openEO, Sentinel Hub and IaaS provided to institutional users contributed 42.21 PB (17.4%). Standard file based download via http (OData/Zipper) accounted for 179.0 PB (73.8%) of the total delivered volume across all three channels combined, while the use of the cloud storage oriented S3 protocol accounted for the remaining 63.56 PB (26.2%). However, these aggregate figures mask substantial differences between channels. For the cloud processing within the CDSE channel, S3 access was dominant, representing 40.15 PB out of 42.21 PB (95.1% of the total for that channel). This reflects the cloud-native nature of Sentinel Hub and openEO workflows, which by design deliver processed data on demand rather than via standard http file transfers. By contrast, S3 access accounted for a much smaller proportion of the data download outside CDSE channel (14.99 PB, or 11.6%) and on the Federated cloud channel (8.42 PB, or 11.8%), where Odata/Zipper download remains the predominant method.

Notably, the monthly share of S3 access across all channels combined increased steadily over the course of the year, growing from 22.5% in January to 29.8% in December, which suggests a sustained and accelerating shift in how users interact with the platform. This trend is consistent with the adoption of cloud-based processing workflows, as described in Section 7.2, and reinforces the trajectory observed in previous reporting periods.



Copernicus Sentinel data 2025: Berlin in Germany

Access Channel	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Data Download outside the CDSE infrastructure	9.49	9.52	10.63	11.62	14.46	10.14	10.31	9.64	10.83	11.87	10.24	10.32	129.07
Cloud Processing within the CDSE infrastructure (openEO + SentinelHub + IaaS)	3.44	3.56	3.65	3.03	3.98	3.75	3.99	3.10	3.03	2.55	3.05	5.06	42.18
Access from federated cloud platforms	5.41	4.38	4.12	6.97	5.90	6.10	5.24	4.55	4.44	5.83	6.95	11.39	71.26
Grand Total	**18.34**	**17.46**	**18.39**	**21.62**	**24.34**	**19.98**	**19.54**	**17.29**	**18.30**	**20.25**	**20.24**	**26.77**	**242.52**

TABLE 22: Monthly volume of EO data [PB] delivered by CDSE via multiple access channel in 2025.

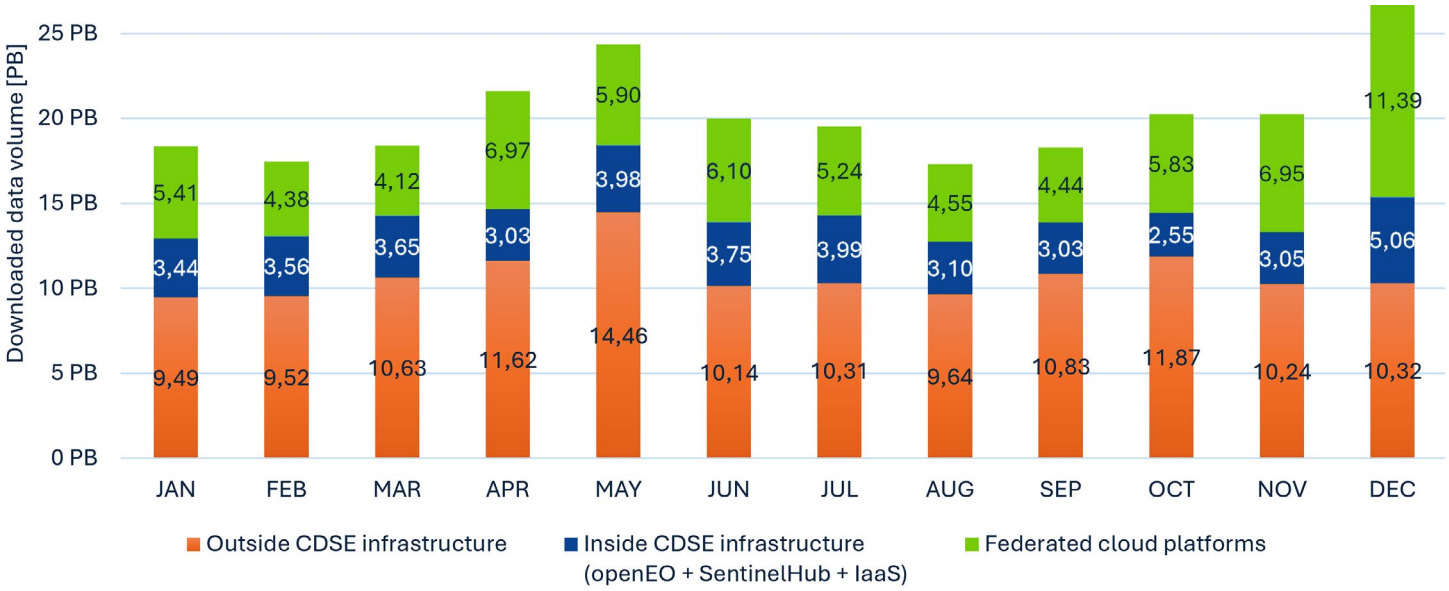


FIGURE 56: Monthly volume of EO data [PB] delivered by CDSE via multiple access channel in 2025.

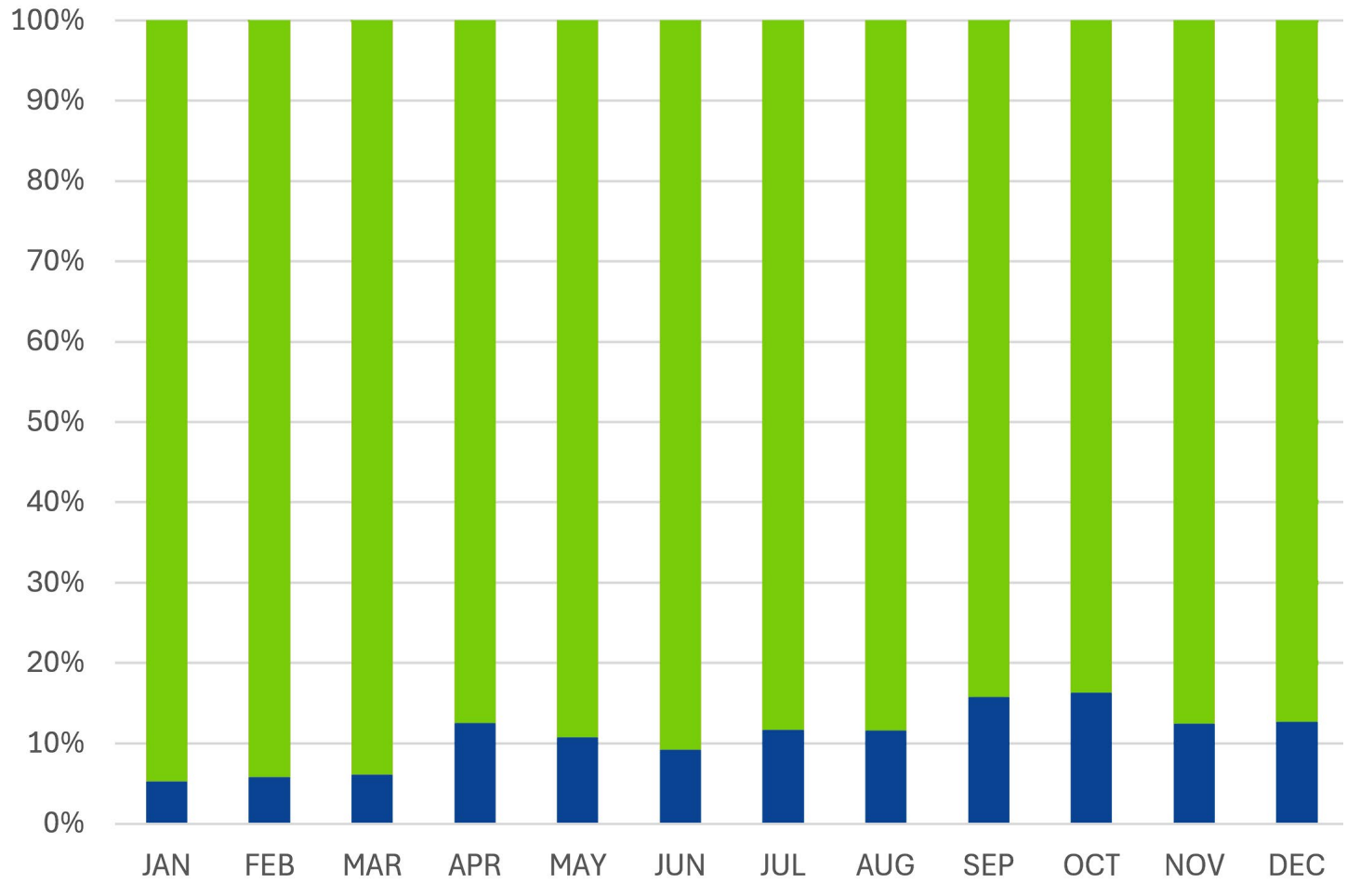


FIGURE 57: Volume of user-level data downloaded in 2025 year via OData/zipper and S3 interfaces

The comparison of the total volume of user-level data downloaded in 2025 via the OData/Zipper and S3 interfaces, presented in Figure 57, offers a valuable insight into the evolving user preferences for accessing data within the CDSE. This year's analysis reveals a gradual but noticeable shift in user selection. While the OData/Zipper interface remained the dominant access method throughout the year, its share decreased compared to 2024, accounting on average for 89.15% of the total monthly download volume. At the same time, the S3 interface continued to gain traction, reaching an average share of 10.85% (+3.24%. year-on-year) and exceeding 10% in eight months of the year (compared to just one month in 2024). The highest S3 usage was recorded in September and October, when it accounted for over 15% of the total volume. Despite this growing adoption, OData/Zipper remains the primary access method, most likely due to its widespread use in automated and scripted download workflows, making it the interface of choice for large-scale, programmatic data retrieval. Overall, the findings suggest a gradual diversification of access patterns, with S3 becoming an increasingly important channel, particularly for advanced and large-scale data users.

Figure 58 provides a longer-term evolution perspective, showing the total volume of user-level data downloads for each Sentinel mission since the start of operations. The chart tracks trends in data volumes over the years and compares the level of user activity in the CDSE with previous years under the Legacy Sentinel Data Hubs. The volume statistics for 2015–2023 originate from the Copernicus Sentinel Data Access Annual Report 2023, in which volumes were reported in pebibytes (PiB) and subsequently converted to terabytes (TB) to enable direct comparison. Additionally, it should be noted that the 2023 values cover only ten months, from January to the end of October, as the Legacy system was shut down on 2 November 2023. In contrast, all subsequent metrics since 2024 originate from the CDSE and cover full calendar years.

Examining the figures, 2025 was the strongest year in the history of Sentinel data dissemination by a considerable margin. The total volume of Sentinel-only user-level data downloaded reached 129,954 TB, which is a leap of 32,639 TB (+33.5%) compared to the 97,315 TB recorded in 2024, which was the previous record. Most importantly, 2025 marked the first year in which the 100 PB (100,000 TB) threshold of Sentinel data downloaded through the CDSE was surpassed, with a surplus of over 30 PB – an extraordinary achievement in the programme's history. All missions recorded increased download volumes, with particularly strong growth observed for Sentinel-1 and Sentinel-2. The average monthly download volume rose to 10,894 TB, further highlighting this upward trend. This ongoing growth reflects not only the expanding user base, but also the continuous enrichment of the data offer, increasing adoption of cloud-based workflows, and the overall development of the platform. Taken together, 2025 stands out as a landmark year for the CDSE. (Figure 58)



Copernicus Sentinel data 2025: Bjørnafjorden in Norway

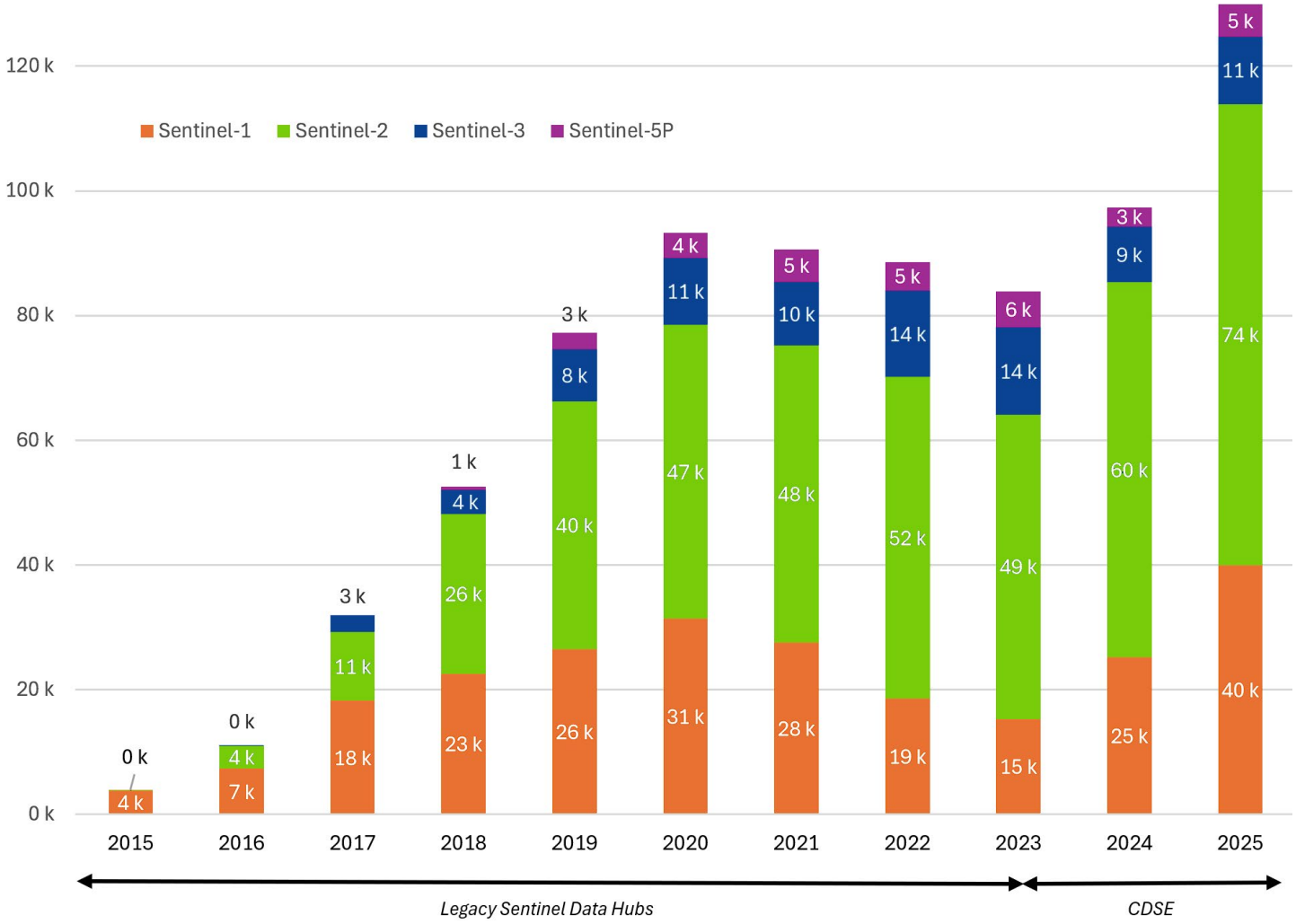
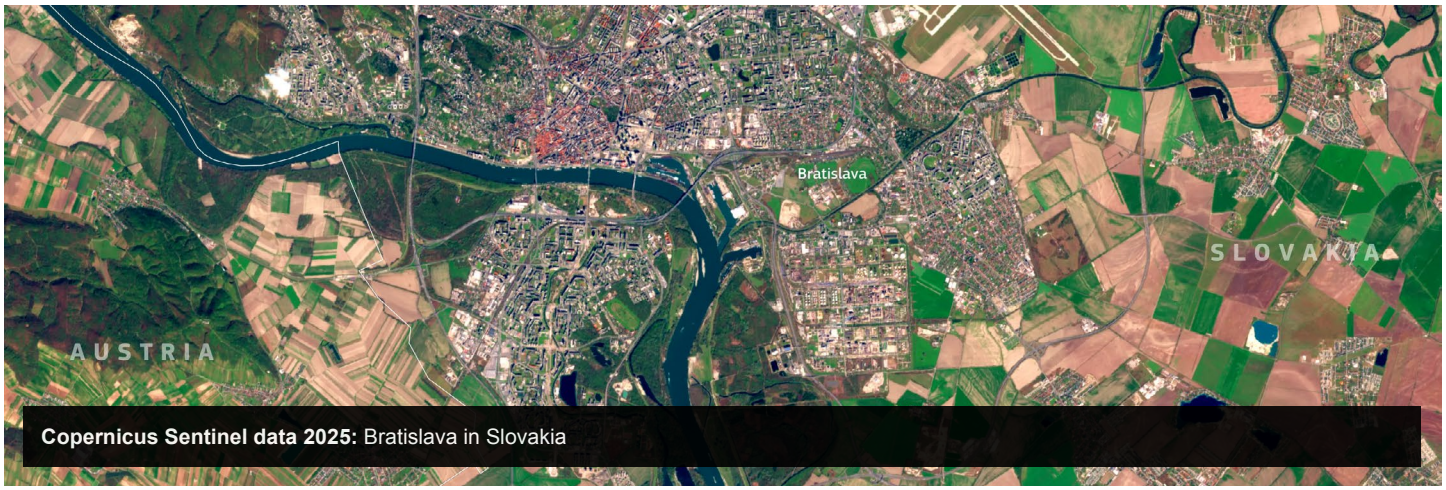
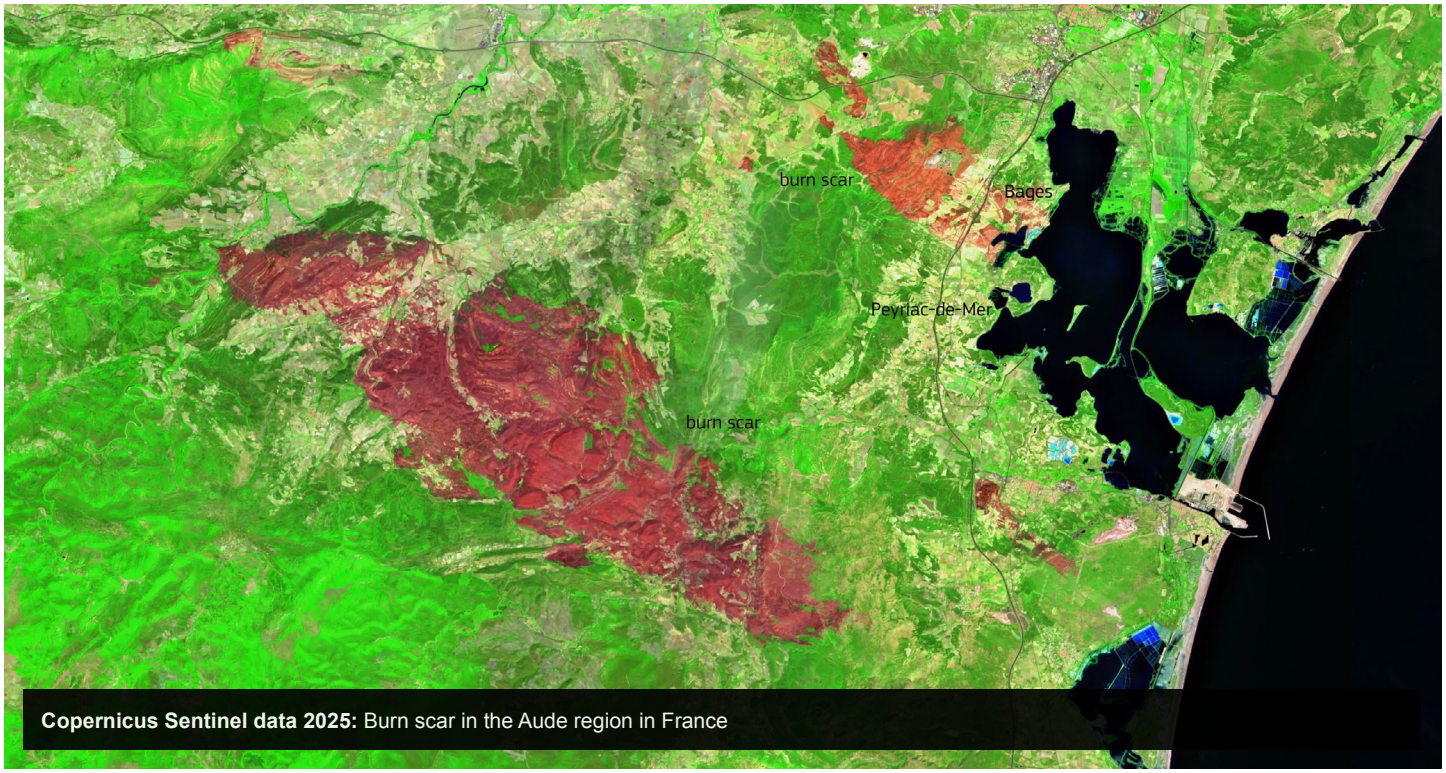


FIGURE 58: Total volume of user-level data downloaded per year since the start of operations for each Sentinel mission. ‚K' signifies thousands of TBytes.



Copernicus Sentinel data 2025: Bratislava in Slovakia



Copernicus Sentinel data 2025: Burn scar in the Aude region in France

7.1.2. Relative Download Volume Heatmaps

The relative download volume heatmap is another key indicator that helps to evaluate how the Sentinel user-level data is being used, which geographical areas are of most interest. They provide an overview of where the largest volumes of data are downloaded, offering insight into geographical patterns of data exploitation and regional demand for specific missions and data types. The heatmaps presented in this chapter are mission-specific, broken down by instrument, data level and timeliness.

The Relative Download Volume heatmaps, introduced in the 2024 edition of this report, continue to be the method of choice for visualizing spatial usage patterns, as they offer a clear and intuitive representation of areas with the highest user interest. As noted previously, this approach should not be directly compared with the Archive Exploitation Ratio (AER) used up to 2022 or the Volume Exploitation Ratio (VER) applied in 2023, since each method is based on distinct methodologies and data parameters.

The underlying download statistics include access via interfaces, such as OData/Zipper, S3 interfaces, openEO and Sentinel Hub, as well as other federated cloud services – based on the approach adopted from 2024 onwards. To ensure the most accurate visualization of the final outcomes, the scope of the analyzed data excludes internal CDSE technical use (e.g. generating the global mosaics or traceability records). The relative volume downloaded is calculated by assigning the product download volume to all grid cells overlapping the footprint of each dataset and then normalizing the scale between 0 and 1. This normalization prevents inflated totals that could arise when the same download contributes to multiple cells. High download volumes near the poles are linked to the greater number of observation opportunities in these regions and are further accentuated by the systematic retrieval of datasets.

In all heatmaps, the color white is not presented in the legend, but the white areas indicate a lack of data. This lack of data could be due to either no published products in a particular area or zero downloads of those products. The interval boundaries displayed in the legend for heatmaps are rounded representations of the actual numerical limits used for classification. The precise interval thresholds are defined with higher numerical precision to ensure continuity and non-overlapping ranges between classes.

Sentinel-1

The relative download volume heatmaps from Sentinel-1 reveals strong spatial patterns of user interest, with activity concentrated predominantly over Europe, South Asia and East Asia, as well as over specific regions linked to notable natural disasters that occurred in 2025.

The broadest spatial coverage of download activity is visible in the all user-level data heatmap (Figure 59) and SLC heatmap (Figure 62), both of which show remarkably similar spatial patterns. Europe is the dominant region of interest with high relative download volumes spanning from the Iberian Peninsula through Central and Eastern Europe to Scandinavia. This reflects not only the strong tradition of SAR-based research and operational monitoring within the European scientific community, but also the fact that European users primarily access data directly via CDSE. In contrast, users outside Europe are more likely to rely on third-party redistributors, which partly explains the comparatively lower direct download intensity observed in other regions.

A notable regional hotspot visible in both heatmaps is the western coast of North America, particularly California. This increased activity is likely linked to the Southern California wildfires in January 2025, for which Copernicus Sentinel-1 SAR data was used to model building damage, for example, in the Altadena area, and to support emergency response organizations by providing damage analysis. The Palisades Fire, which occurred between 7 and 11 January 2025, was one of the most destructive wildfires in California‘s history and attracted widespread scientific interest in SAR-based damage assessment and burn scar mapping. Sentinel-1 was particularly valuable during this emergency due to its ability to penetrate smoke and operate regardless of daylight conditions (Figure 59, Figure 62)

https://appliedsciences.nasa.gov/our-impact/news/imagery-january-2025-southern-california-wildfires

https://disasters.nasa.gov/what-we-do/disasters/disasters-activations/southern-california-wildfires-jan-2025

The GRDH (high resolution) data heatmap shows a pronounced concentration of downloads over China and Myanmar, which can be directly linked to the devastating earthquake that struck on 28 March 2025. On that date, a powerful earthquake measuring 7.7 on the Richter scale struck central Myanmar. Scientists subsequently used radar images from the Sentinel-1 satellites to reveal how the ground had shifted, providing new insights into the mechanics of the Sagaing Fault and the extent of the seismic rupture. This was the most powerful seismic event in the region since 1912, occurring along the Sagaing Fault near Mandalay. The international scientific interest resulting from this event in InSAR-based seismic deformation analysis drove substantial downloads of Sentinel-1 GRDH data across the affected region. The earthquake was also felt in parts of southwestern China, which may explain the somewhat broader elevated footprint extending northwards into Chinese territory (Figure 60)

(Sentinel-1 captures ground shift from Myanmar earthquake).

The GRDM (medium resolution) data heatmap reveals a clearly distinct spatial pattern compared to the other three heatmaps. Download activity is sparse across most of the globe, concentrated primarily in the northern high latitudes and in certain regions of Europe and Asia. This is consistent with the typical use of GRDM data, which is mainly used for wide-area maritime and sea-ice applications. The elevated activity over the Arctic and sub-Arctic reflects systematic downloads by operational oceanographic and ice monitoring services. Relatively low download volumes over land areas outside Europe suggest that the medium resolution product is less commonly used for terrestrial disaster response or general land monitoring, for which the GRDH products are preferred (Figure 61).

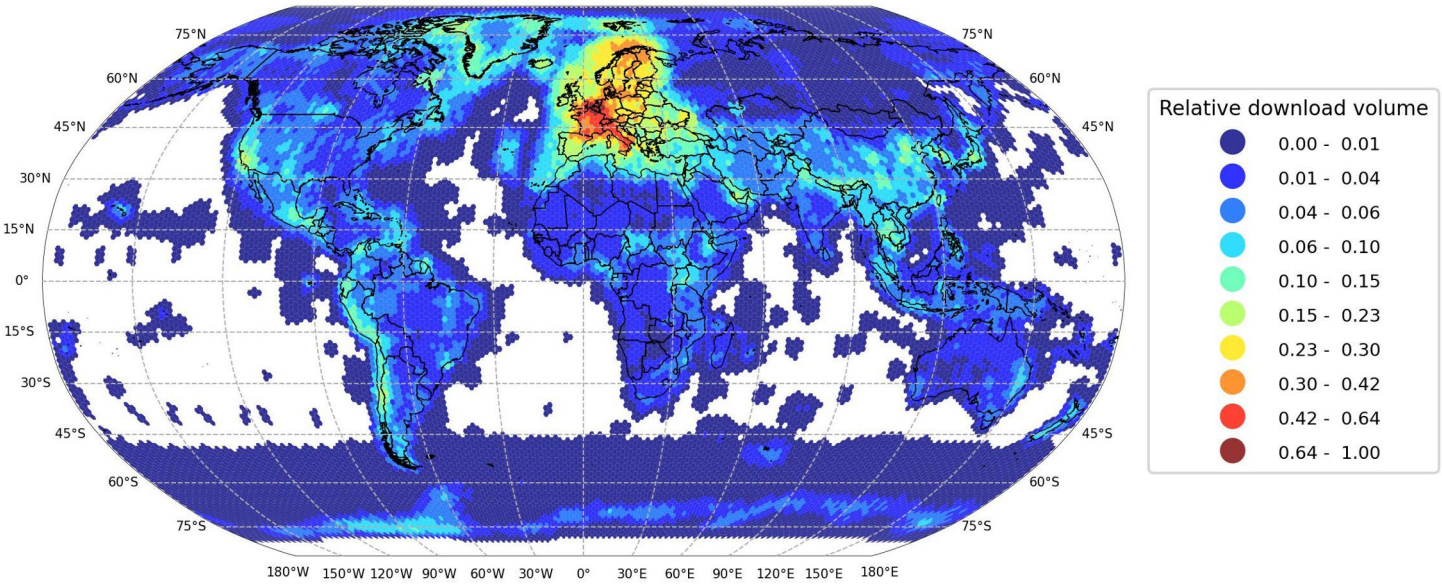


FIGURE 59: Heatmap of the Relative Download Volume for Sentinel-1 (excluding OCN) user-level data in 2025. White indicates areas where either no data was published or downloaded.

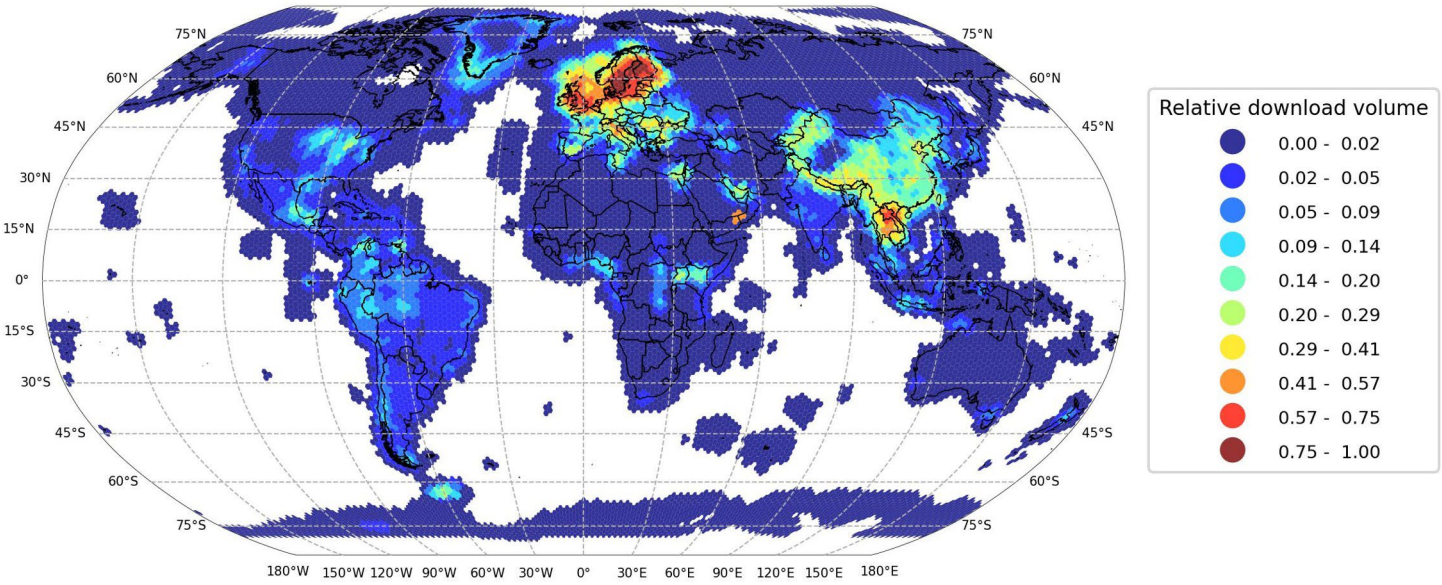


FIGURE 60: Heatmap of the Relative Download Volume for Sentinel-1 GRDH user-level data in 2025. White indicates areas where either no data was published or downloaded.

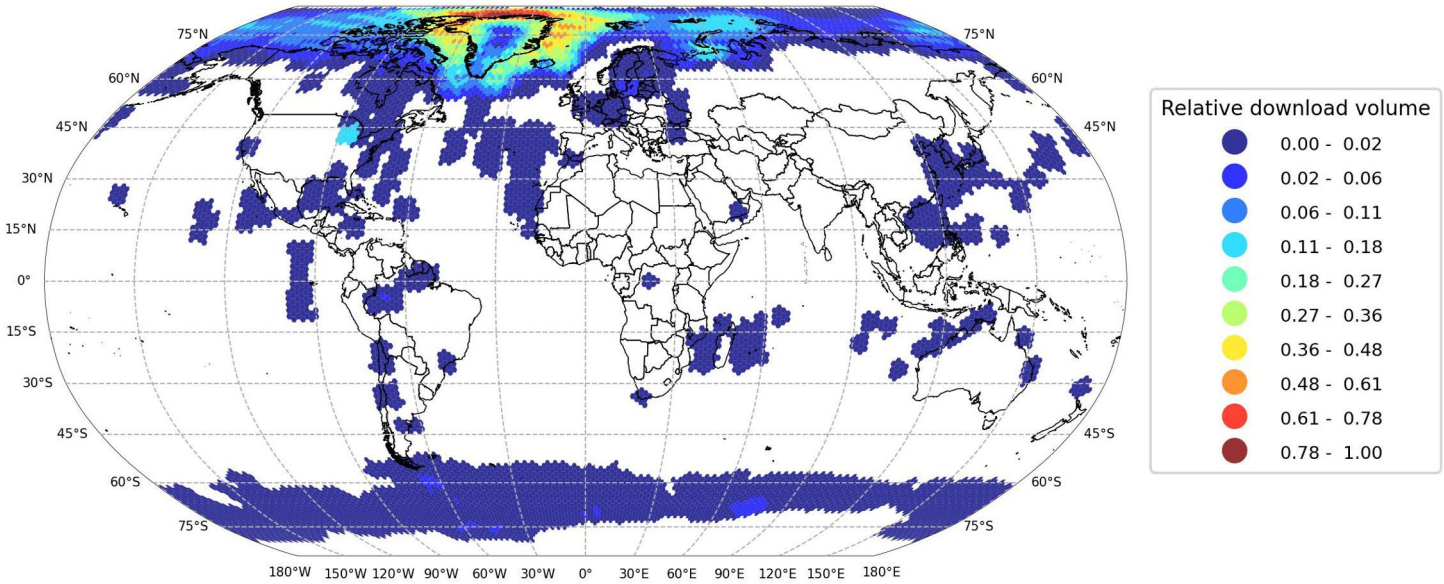


FIGURE 61: Heatmap of the Relative Download Volume for Sentinel-1 GRDM user-level data in 2025. White indicates areas where either no data was published or downloaded.

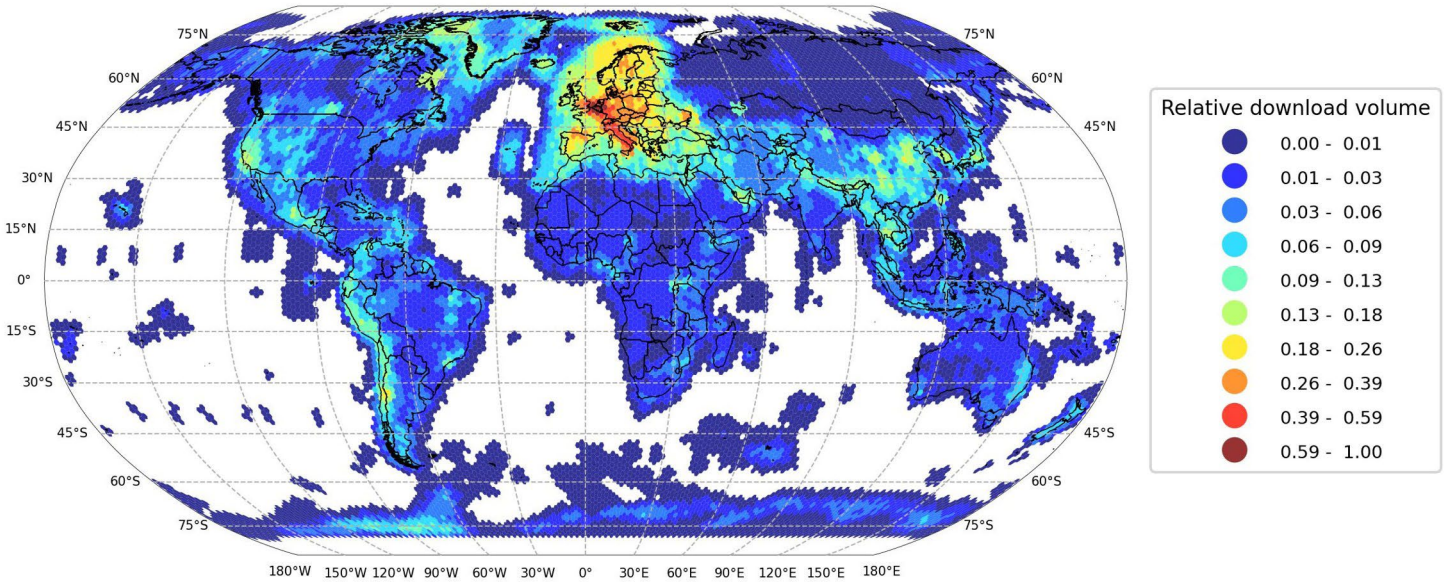


FIGURE 62: Heatmap of the Relative Download Volume for Sentinel-1 SLC user-level data (excluding WV SLC) in 2025. White indicates areas where either no data was published or downloaded.

Sentinel-2

The Sentinel-2 download heatmaps for both L1C and L2A user-level products illustrate a generally similar spatial distribution, with several distinct patterns. Unlike Sentinel-1 heatmaps, Sentinel-2 maps show a more globally uniform download footprint, consistent with the wide range of applications of the multispectral mission – including vegetation and land cover monitoring, flood mapping, wildfire burn scar assessment and agricultural monitoring – which attract users from many regions of the world.

The L1C and L2A heatmaps both show that the highest relative download volumes are concentrated over Europe, with particularly intense activity spanning western and central Europe. Within Europe, the Iberian Peninsula (Spain and Portugal), France and the Mediterranean basin are among the areas with the highest volume of downloads. This is consistent with the regular exploitation of Sentinel-2 data by the European community, a trend that has been further reinforced by the growing demand for optical data arising from the exceptional wildfire season of 2025. This was the most severe wildfire season ever recorded in the EU, with over 1,079,000 hectares burnt across 25 EU member states – almost double the annual average for the period 2006–2024 – with particularly intense wildfire activity in Portugal, Spain, southern France, southern Italy, Greece and Turkey. The peak of the season occurred in August, when some of the largest fires of the year severely impacted Spain and Portugal, with 22 very large, near-simultaneous fires burning approximately 460,000 hectares. Sentinel-2 played a crucial role in monitoring wildfire activity and assessing its impact across the Iberian Peninsula, supporting a wide range of organizations involved in environmental monitoring and emergency response. Its shortwave infrared capabilities are often used in false-color composites to enable the clear identification of active fires and burnt areas. For example, the European Forest Fire Information System (EFFIS) relies on Sentinel-2 imagery at 20 meters resolution as a core tool for the final delineation of wildfire perimeters. Consequently, the increased demand for Sentinel-2 data during the fire season in this region highlights its significance as a primary data source for operational services and scientific analysis (Figure 63 and Figure 64)

2025 was EU's most destructive wildfire season on record

OBSERVER: Record-breaking 2025 fire season in the EU — insights from the Copernicus Emergency Management Service

Iberian wildfires seen from space).

Another spatial pattern that is worth highlighting is the increased download volume over the tropical regions of Africa and South America. This is in line with the objective of the Sentinel-2A Extension Campaign, initiated in early 2025 to increase the availability of cloud-free imagery in these areas. The campaign achieved this by repositioning Sentinel-2A into a complementary orbital configuration with Sentinel-2B and Sentinel-2C, thereby increasing the observation frequency over tropical regions where persistent cloud cover has historically limited the availability of usable optical imagery (Figure 63 and Figure 64).

The heatmaps reveal additional hotspots in South Asia (the Indian subcontinent and Bangladesh) and East Asia (China, the Korean Peninsula, and Japan). This broad and persistent area of elevated download activity reflects the widespread use of Sentinel-2 for agricultural monitoring, vegetation, change detection, and disaster response in these densely populated and highly productive regions. In the context of events in 2025, download activity over Southeast Asia can be partially correlated with monitoring responses to catastrophic flooding caused by unusually intense monsoon conditions and cyclones that struck the region at the end of the year. Several countries in South and Southeast Asia experienced destructive flooding in November and December 2025, resulting in tragic loss of life, widespread displacement, and severe damage to infrastructure – with Sri Lanka, Indonesia, Thailand, Malaysia, the Philippines, and Vietnam being among the worst affected. Sentinel-2 played a direct role in documenting the extent of these disasters. In late November 2025, the satellite acquired false-color near-infrared imagery of the Puttalam district in north-western Sri Lanka, capturing severe flooding, landslides and rockfalls. At the same time, it imaged the Aceh province of northern Sumatra in Indonesia, where flash floods and overflowing rivers had submerged entire neighborhoods. The International Charter on Space and Major Disasters was activated in both cases, highlighting the operational role of Sentinel-2 in emergency response.

Flooding in Sri Lanka

Severe flooding in Sumatra, Indonesia

https://www.britannica.com/science/natural-disaster)

Moderate but clearly higher download volumes are evident across the continental United States. As with Sentinel-1 products, the western coast of North America and the wider Californian region show somewhat greater activity levels, possibly reflecting ongoing interest in the Southern California wildfires of January 2025 and post-fire recovery monitoring using optical imagery (Figure 63 and Figure 64).

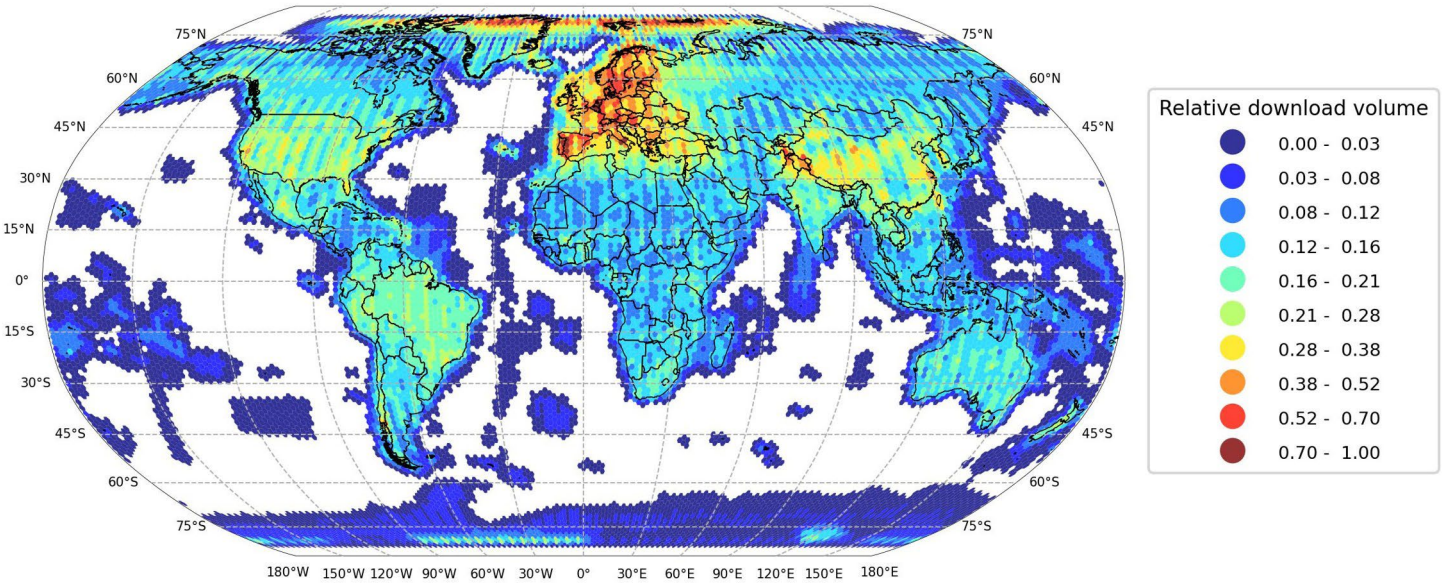


FIGURE 63: Heatmap of the Relative Download Volume for Sentinel-2 Level-1C user-level data in 2025. White indicates areas where either no data was published or downloaded.

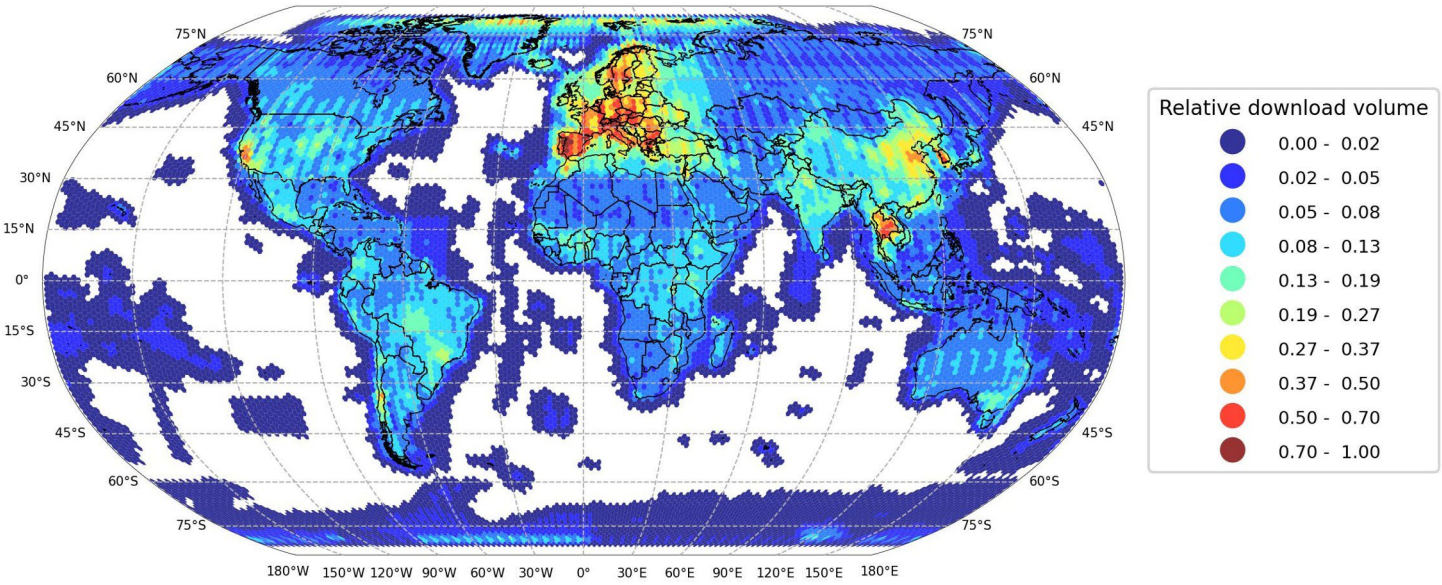


FIGURE 64: Heatmap of the Relative Download Volume for Sentinel-2 Level-2A user-level data in 2025. White indicates areas where either no data was published or downloaded.

Sentinel-3

The Sentinel-3 download heatmaps feature unique spatial patterns, with each map reflecting the geometry and primary application domain of its respective instrument. Interpreting these heatmaps therefore requires careful consideration of the mission's orbital characteristics and product-specific coverage constraints, as these heavily influence the observed download distributions – often more than location-specific, event-driven demand.

The typical patterns for OLCI and SYNERGY are more land-oriented, with the highest download activity concentrated over Europe, sub-Saharan Africa and South and East Asia. This reflects the sustained and robust demand for vegetation monitoring, agricultural assessment and environmental analysis. Furthermore, the presented distribution is fully consistent with the core application area of Sentinel-3 SYNERGY end products. These products combine OLCI and SLSTR data to provide information for food security monitoring, early warning systems for droughts, and climate monitoring programmes. The high level of activity over South Asia also points to the use of NDVI and vegetation products for monitoring crops in India and Bangladesh, where large-scale, seasonal agriculture is routinely tracked using medium resolution satellite data (Figure 65 and Figure 69).

By contrast, the patterns displayed by SLSTR and SRAL heatmaps are strongly influenced by orbital geometry. SLSTR shows characteristic striped structures linked to its dual-view scanning design, with the highest activity observed in polar regions. This corresponds to its widespread use in monitoring sea-ice, land surface temperature and sea surface temperature (SST). SST is one of the most important climate variables in marine science and is used in near real time for weather forecasting, identifying fronts, and characterizing the hydrodynamic structure of the ocean surface layer. Increased activity over Europe also suggests additional demand linked to wildfire monitoring during the intense wildfire season of 2025. SRAL products, on the other hand, exhibit sparse, track-like patterns reflecting the nature of altimetry measurements along the orbit, with a higher density at high latitudes due to orbit convergence. The most important applications driving SRAL downloads include ocean surface topography, sea-ice elevation and thickness estimation, inland water level monitoring, and ice sheet surface elevation change – all of which are predominantly driven by systematic scientific and operational users rather than event-triggered demand (Figure 66, Figure 67 and Figure 68).

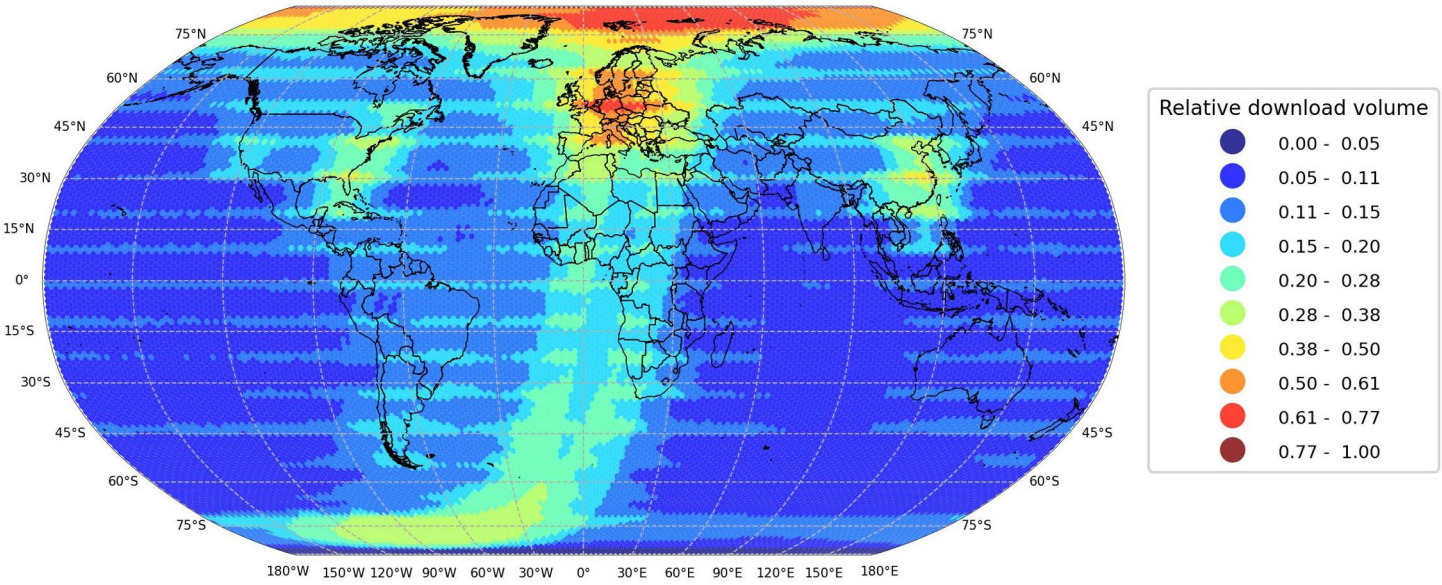


FIGURE 65: Heatmap of the Relative Download Volume Ratio for Sentinel-3 OLCI user-level data in 2025.

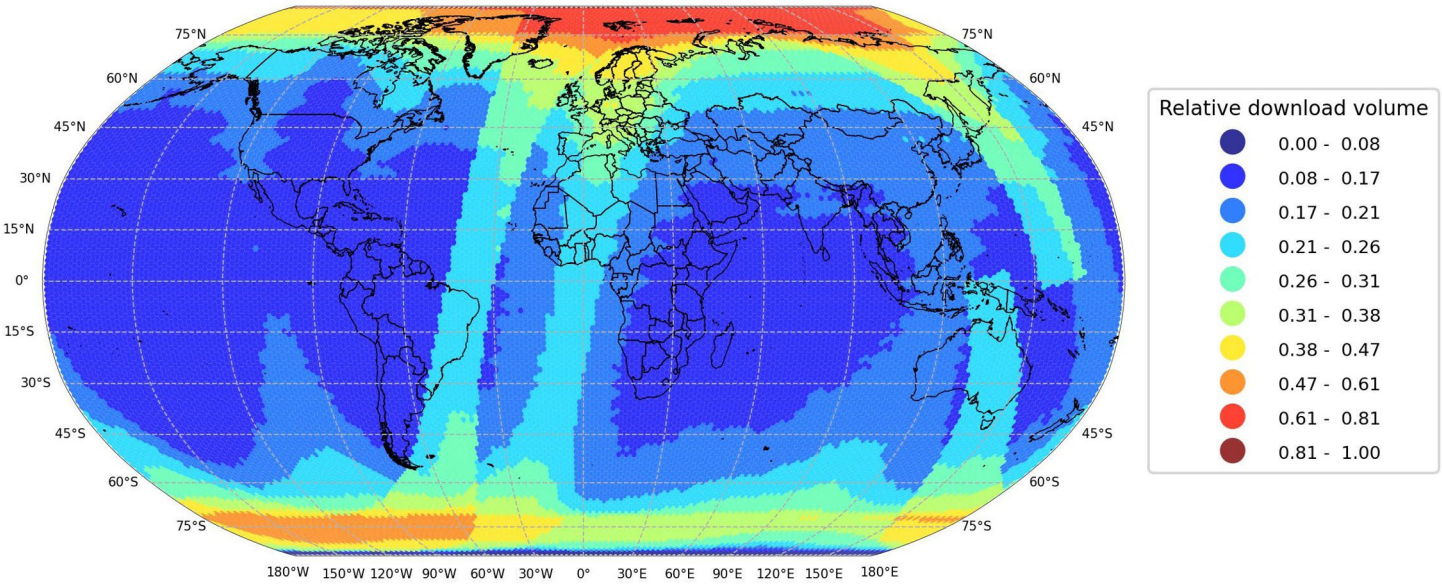


FIGURE 66: Heatmap of the Relative Download Volume for Sentinel-3 SLSTR user-level data in 2025.

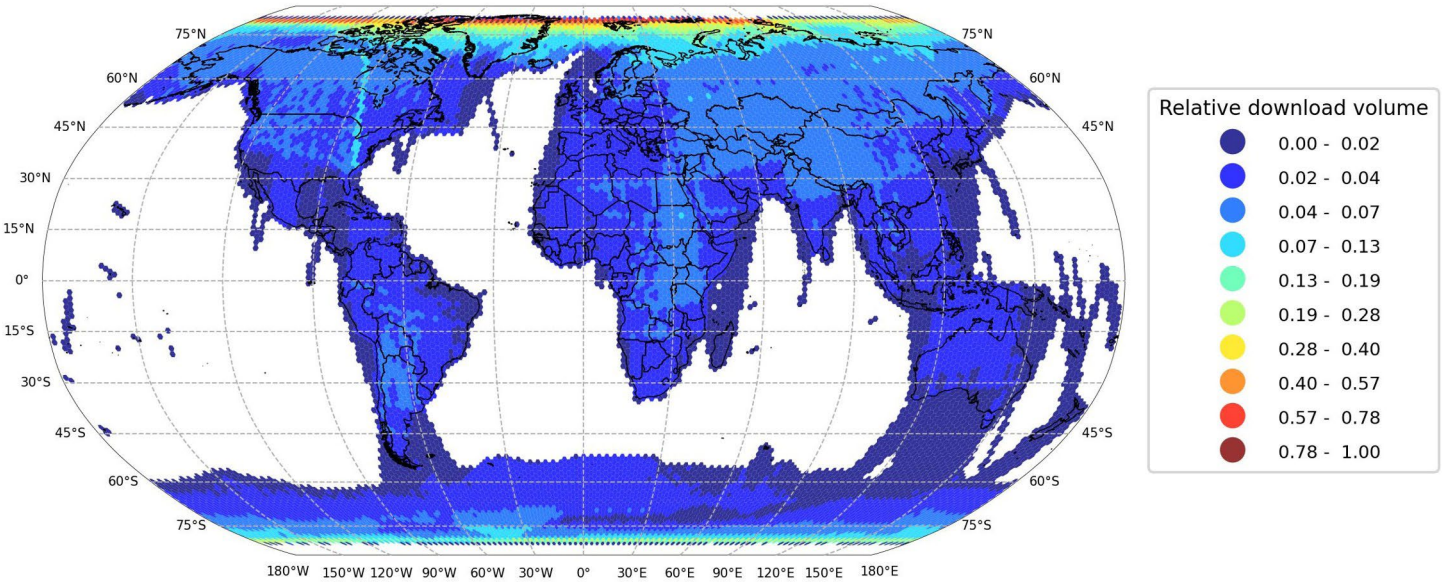


FIGURE 67: Heatmap of the Relative Download Volume for Sentinel-3 SRAL (NRT and Level-2 only) user-level data in 2025. White indicates areas where either no data was published or downloaded.

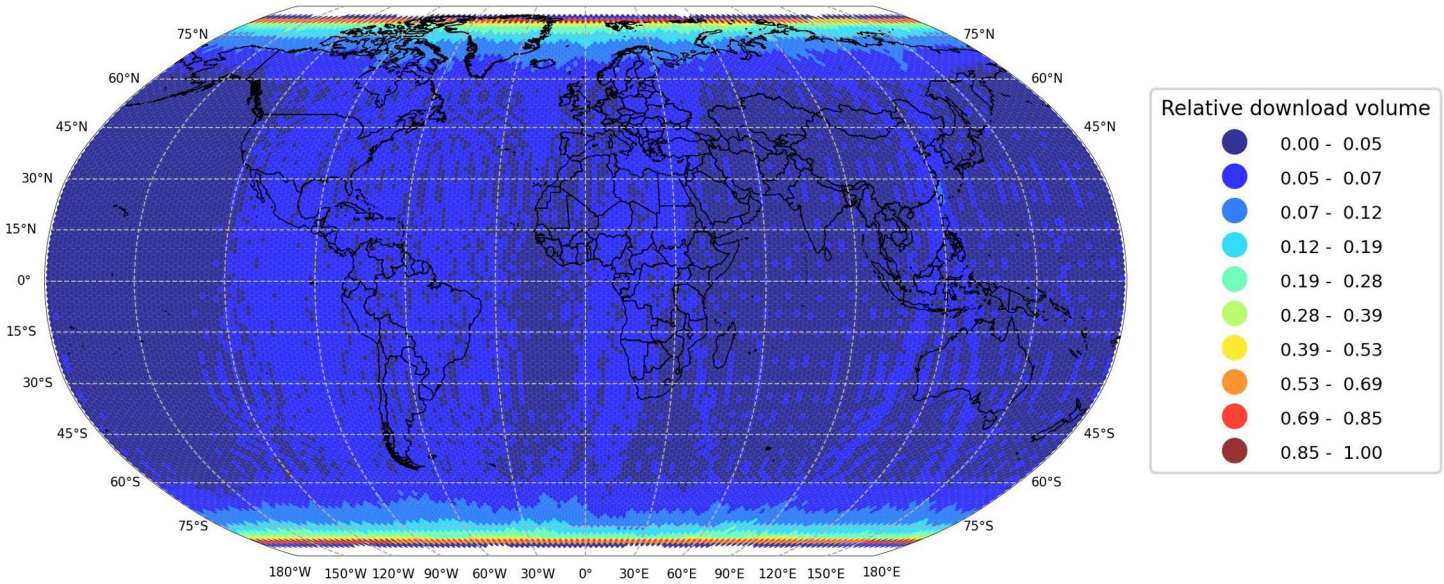


FIGURE 68: Heatmap of the Relative Download Volume for Sentinel-3 SRAL (excluding NRT and Level-2) user-level data in 2025.

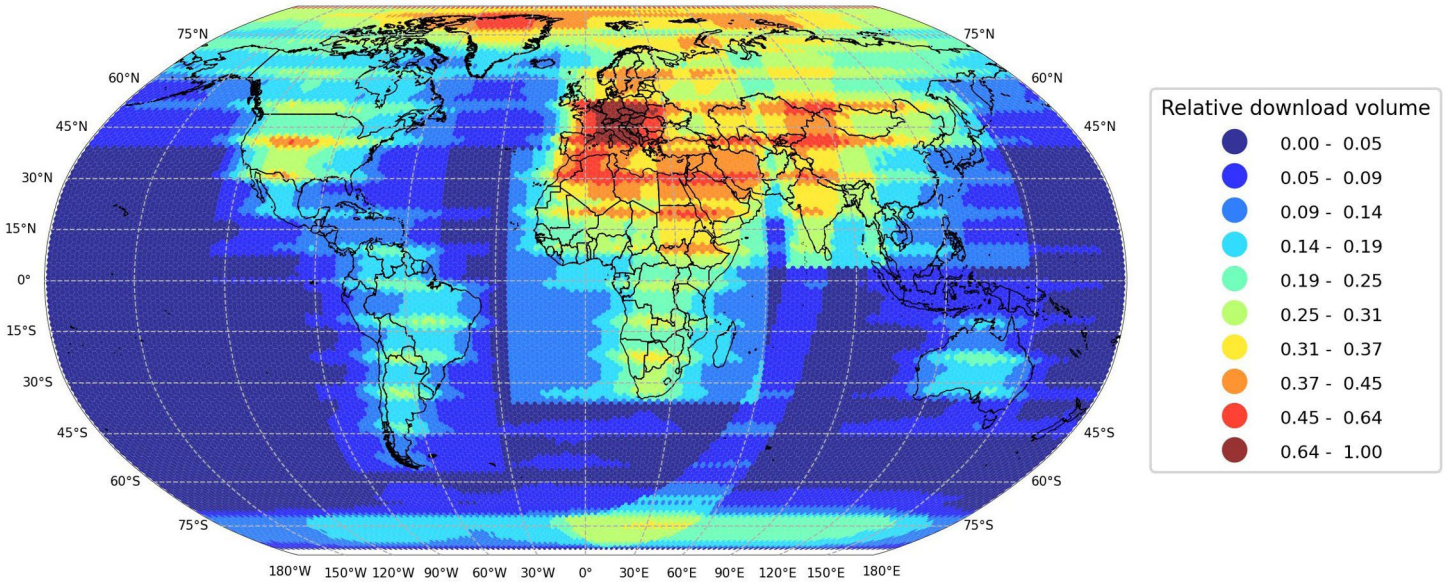


FIGURE 69: Heatmap of the Relative Download Volume for Sentinel-3 SYNERGY user-level data in 2025.

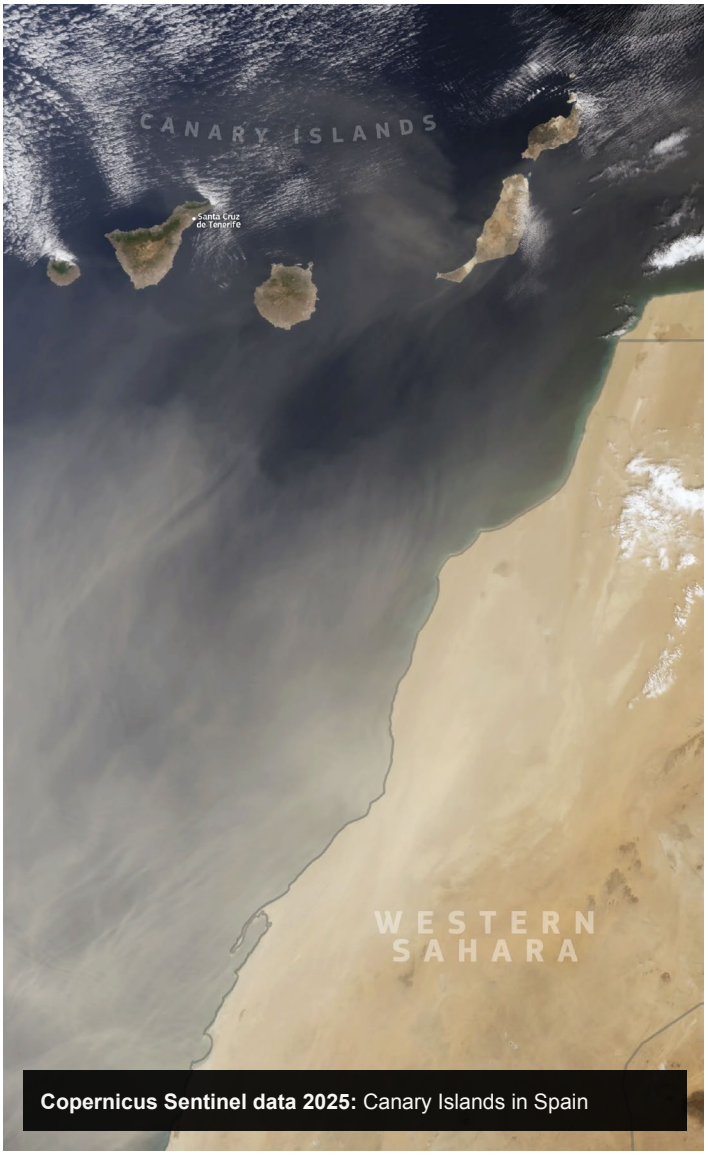
Sentinel-5P

The Sentinel-5P NRT and NTC heatmaps both display a clear, gradual increase in relative download volume from the equatorial regions towards the poles, forming clear concentric zones. This pattern is a direct consequence of TROPOMI's wide-swath imaging geometry. While this guarantees daily global coverage, the number of overlapping orbit tracks per unit area increases significantly with latitude, which is a fundamental property of all near-polar sun-synchronous orbits. At high latitudes, consecutive orbit swathes overlap substantially, meaning any given geographic area is covered multiple times per day. Unlike Sentinel-1 and Sentinel-2, where the download distribution reflects localized event-driven or application-driven demand, the Sentinel-5P download distribution depends on the satellite's orbital geometry and instrument design (Figure 70 and Figure 71).

It is worth noting that the TROPOMI instrument on the Sentinel-5P satellite is routinely used for atmospheric monitoring during major natural disasters and pollution events. In 2025, several significant events triggered heightened scientific interest and increased demand for TROPOMI data. For example, it was used alongside the recently launched TEMPO geostationary instrument to analyze the spatial and temporal distribution of wildfire emissions in Los Angeles, mapping trace gases such as nitrogen dioxide, carbon monoxide, formaldehyde and aerosols. More significantly for the European domain, Spain experienced its highest annual fire emissions in 23 years in mid-August, with smoke from the fires travelling as far as the UK and northwestern Europe. Consequently, surface concentrations of fine particulate matter air pollution (PM2.5) far exceeded the 24-hour average guidelines set by the World Health Organization (WHO). Sentinel-5P data were crucial for tracking these fire emission plumes and the long-range transport of smoke from Europe, North America, and Africa across the Atlantic Ocean.

Copernicus: Wildfires surge around the Northern Hemisphere: record emissions across Europe in 2025

Overall, the spatial patterns of the NRT and NTC heatmaps are very similar, with only minor differences in intensity distribution. The NRT product is available within approximately three hours of data acquisition and serves time-critical applications such as volcanic ash monitoring for aviation safety, near-real-time air quality alerts and rapid-response atmospheric assessments during disaster events. In contrast, the NTC product is available with a latency of approximately one month. It is processed with improved auxiliary data and serves scientific and operational climate monitoring users who require higher accuracy. In conclusion, both heatmaps show the same dominant polar gradient, confirming the global and systematic nature of Sentinel-5P's atmospheric monitoring mission, in which the relative download volume is hardly affected by the timeliness profile (Figure 70 and Figure 71).



Copernicus Sentinel data 2025: Canary Islands in Spain

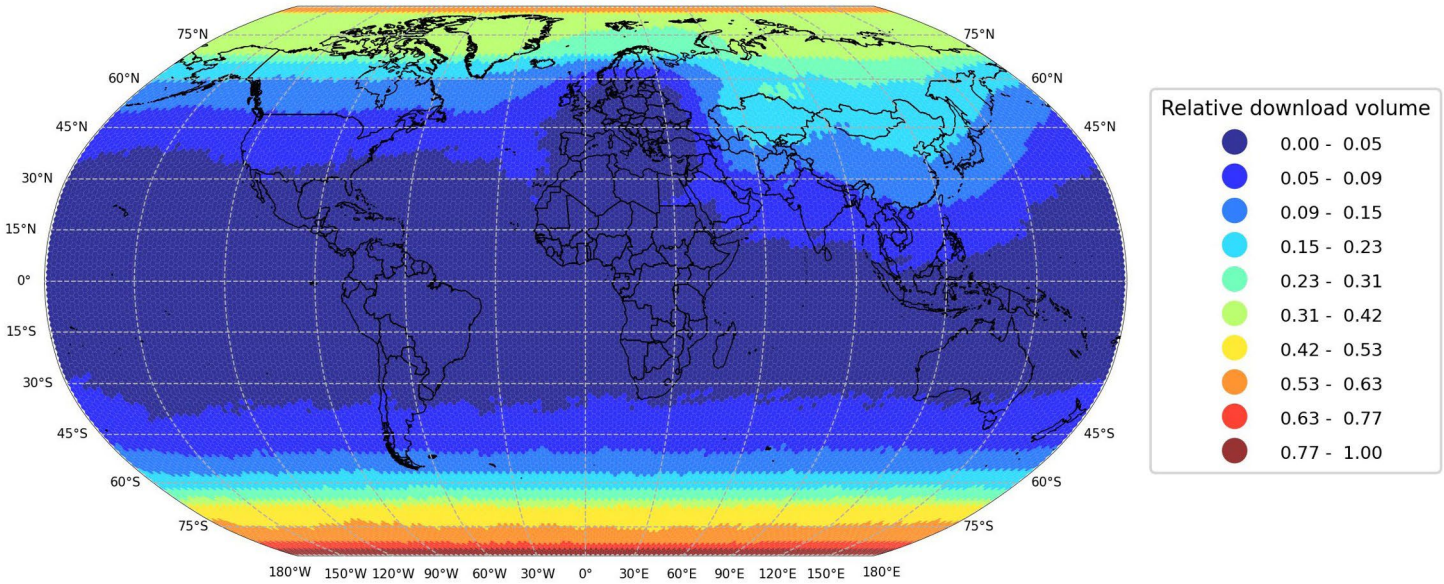


FIGURE 70: Heatmap of the Relative Download Volume for Sentinel-5P (Level-1 and Level-2, NRT only) user-level data in 2025.

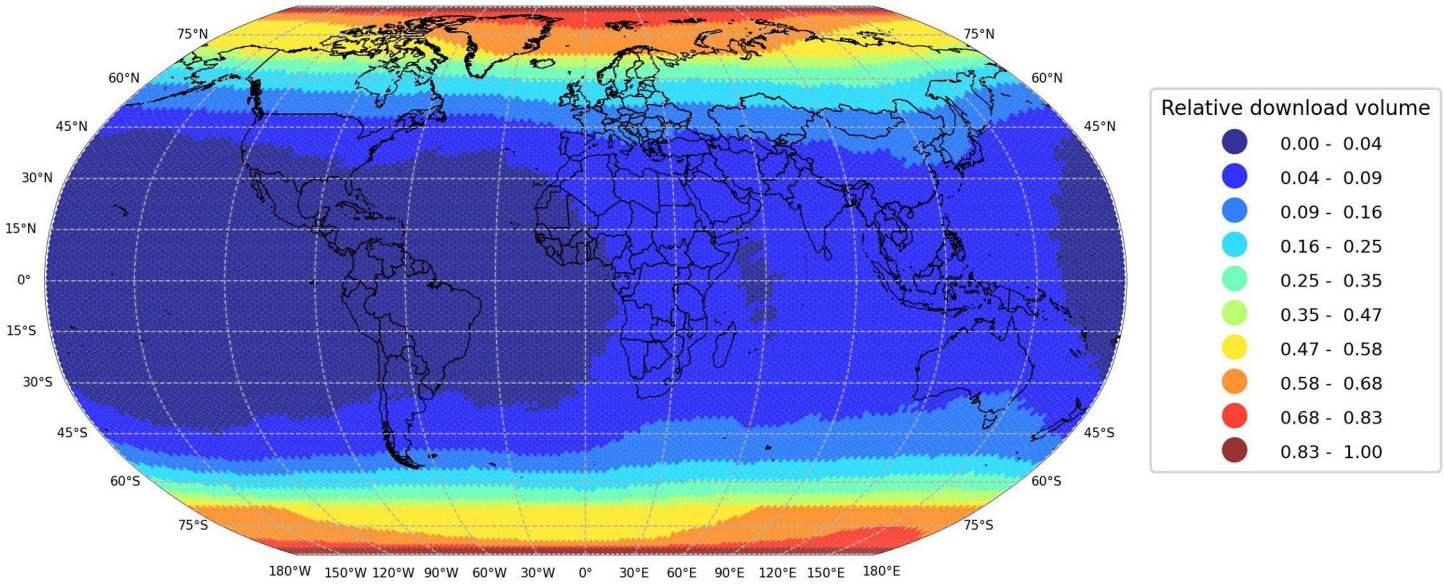


FIGURE 71: Heatmap of the Relative Download Volume for Sentinel-5P (Level-1 and Level-2, NTC only) user-level data in 2025.

7.1.3. Data download per collection and type

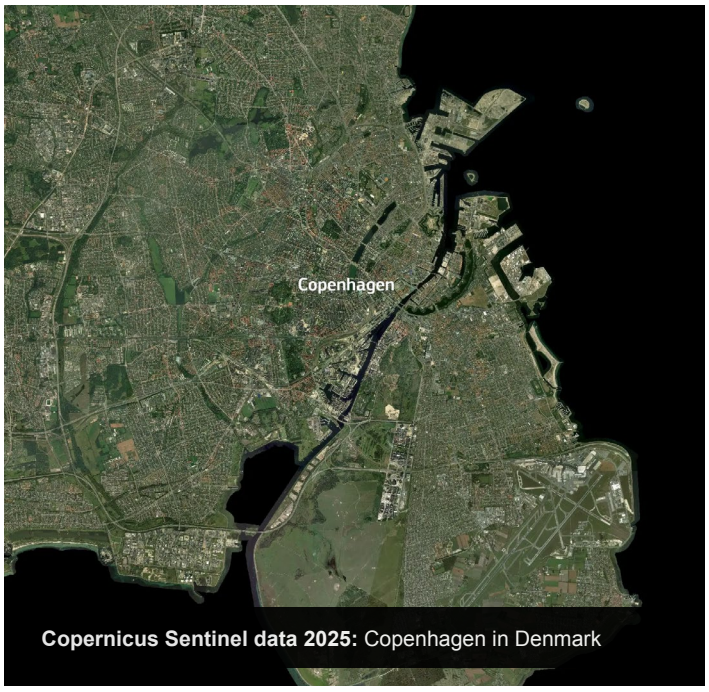
This section provides a breakdown of downloaded data volumes by mission, product type, and reprocessing status for 2025. The statistics are based on combined downloads via the OData/Zipper and S3 interfaces and reflect overall usage patterns across the Sentinel portfolio.

As in previous years, Sentinel-2 continued to attract the most user activity in 2025, accounting for the largest share of downloaded volume, representing 56.93% of the total volume across all missions at the user level data – confirming its position as the most data-intensive mission within the CDSE (Table 23). Among Sentinel-2 products, Level-2A (L2A) data made up 50.79% of the Sentinel-2 volume (28.92% of the overall total), marginally ahead of Level-1C (L1C) with 49.19% (28.01% of the overall total volume). The continued high usage of these two product types confirms the ongoing and widespread preference among users for high-resolution, analysis-ready optical imagery. It also emphasizes the central role of Sentinel-2 in a variety of applications, ranging from environmental monitoring to operational services.

Collection	Type	Volume (TB)	% of total
Sentinel-1	AUX	10	0.01%
	ETA	5	0.00%
	GRD	12,020	9.25%
	OCN	101	0.08%
	RAW	2,909	2.24%
	SLC	24,920	19.18%
	S1 Total	**39,965**	**30.75%**
Sentinel-2	AUX	9	0.01%
	L1C	36,398	28.01%
	L2A	37,581	28.92%
	S2 Total	**73,987**	**56.93%**
Sentinel-3	AUX	9	0.01%
	OLCI	5,466	4.21%
	SLSTR	3,870	2.98%
	SRAL	782	0.60%
	SYNERGY	641	0.49%
	S3 Total	**10,768**	**8.29%**
Sentinel-5P	AUX	15	0.01%
	L1	2,344	1.80%
	L2	2,875	2.21%
	L2B	**0.3**	**0.00%**
	S5P Total	**5,234**	**4.03%**
Grand Total		**129,954**	

Demand for reprocessed Sentinel-2 data remains substantial, as detailed in Table 25. In 2025, reprocessed products accounted for 23% of the L1C volume (8,291 TB out of 36,379 TB) and 25% if the L2A volume (9,313 TB out of 37,581 TB) – together totaling 17,604 TB, or approximately 23.8% of the total Sentinel-2 volume downloaded. While the proportion of reprocessed products remained similar, the absolute volume of downloaded data increased significantly. This points out that the overall growth in platform usage directly translated into a markedly higher demand for reprocessed, harmonized and quality-improved archive datasets (Table 24).

In 2025, Sentinel-1 products accounted for 30.75% of the total download volume. SLC products were by far the most downloaded in terms of volume, representing 62.35% of all Sentinel-1 downloads (24,920 TB), followed by GRD with 30.08% (12,020 TB). Together, these two product types combined to represent 92.4% of the total Sentinel-1 downloaded volume. This distribution reflects the complementary use of these two product types: GRD is used for large-scale monitoring and rapid analysis, while the considerably higher SLC volume reflect its use in more data-intensive, advanced applications such as interferometry and change detection. Other product types such as OCN, RAW, ETA, and AUX were downloaded far less frequently, indicating more specialized use cases (Table 23).



Copernicus Sentinel data 2025: Copenhagen in Denmark

TABLE 23:
Volume and percentage of all Sentinel user-level data types downloaded per type, using the OData/Zipper and S3 interfaces in 2025.

Collection	Type	All products	Re-processed	% of reprocessed products downloads
Sentinel-2	L1C	36,379	8,291	23%
Sentinel-2	L2A	37,581	9,313	25%

TABLE 24: Volume and percentage of Sentinel-2 reprocessed user-level data downloaded using OData/Zipper and S3 interfaces in 2025.

The outlined statistics are illustrated further in Figure 72 and Figure 73, which show the percentage distribution of user-level Sentinel-1 and Sentinel-2 data downloads by product type in 2025. The charts provide a concise and clear, graphical summary of the usage patterns.

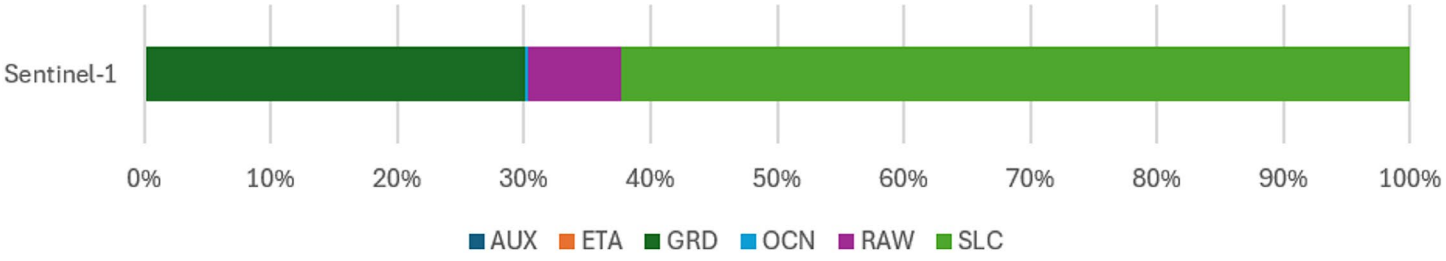


FIGURE 72: Percentage of total volume of Sentinel-1 user-level data downloaded per type using OData/Zipper and S3 interfaces in 2025.

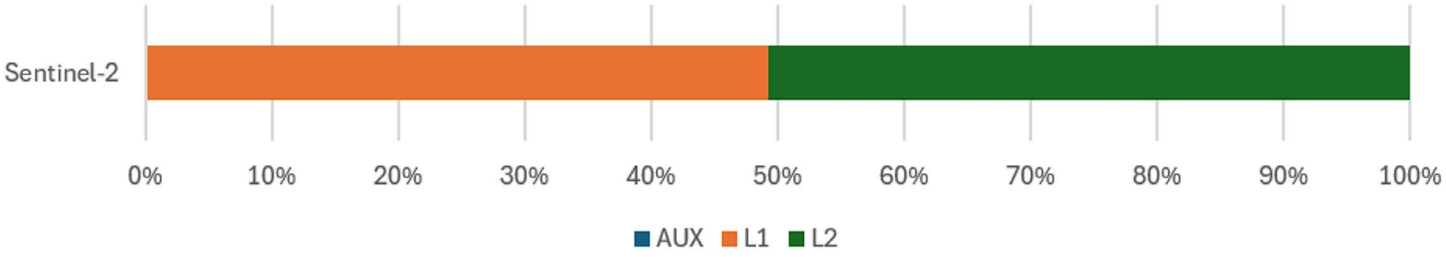
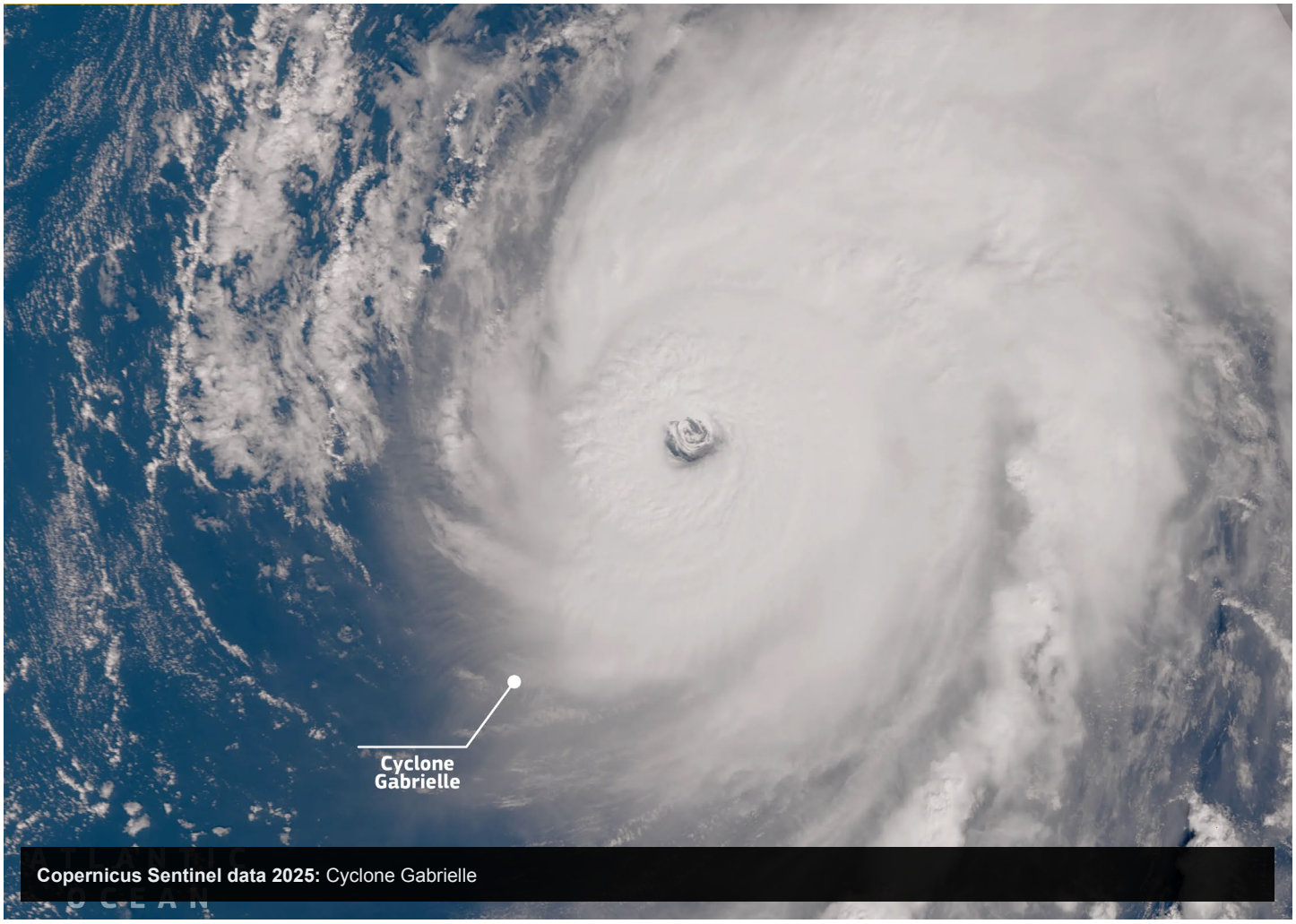


FIGURE 73: Percentage of total volume of Sentinel-2 user-level data downloaded per type using OData/Zipper and S3 interfaces in 2025.



Copernicus Sentinel data 2025: Cyclone Gabrielle

Downloads of Sentinel-3 user-level data in 2025 represented 8.29% of total volume across all missions. (Table 23). The distribution across instruments remained consistent with that in 2024: In terms of downloaded volume, OCI was the leading instrument, accounting for 50.76% of the total Sentinel-3 volume (5,465.71 TB), followed by SLSTR with 35.94% (3,870.25 TB). Together, they made up over 86.7% of all Sentinel-3 download volume (Table 25).

Analysis at the product level shows that users downloaded OL_1_EFR data type the most, with 4,516.71 TB (41.95% of the Sentinel-3 total volume), reflecting persistently high demand for full-resolution optical imagery. SLSTR's SL_1_RBT (Level-1 radiance and brightness temperature) was the second most popular product, emphasizing continued interest in thermal infrared radiance data. SRAL products contributed 7.26% of the Sentinel-3 volume, indicating the specialized nature of the data, which is primarily used for altimetry and water-level monitoring. SYNERGY products represented 5.96% of downloads, targeting user community interested in land surface analysis and vegetation monitoring. These products combine data from OLCI and SLSTR instruments to provide atmosphere corrected surface reflectance and aerosol properties, making them valuable for applications such as crop monitoring, food security assessment and drought detection using NDVI-based vegetation indices. Auxiliary data (AUX) continued to account for a negligible fraction of downloads (Table 25 and Figure 74).

S3 Instrument	Product type	Volume (TB)	% of total
OLCI	OL_1_EFR___	4,516.71	41.95%
	OL_2_WFR___	298.63	2.77%
	OL_1_ERR___	271.91	2.53%
	OL_2_LFR___	241.16	2.24%
	OL_2_LRR___	82.19	0.76%
	OL_2_WRR___	**55.11**	**0.51%**
	OLCI Total	5,465.71	50.76%
SLSTR	SL_1_RBT___	3,069.93	28.51%
	SL_2_LST___	545.10	5.06%
	SL_2_FRP___	143.47	1.33%
	SL_2_WST___	111.64	1.04%
	SL_2_AOD___	0.11	0.00%
	SLSTR Total	**3,870.25**	**35.94%**
SRAL	SR_1_SRA_A_	628.62	5.84%
	SR_2_LAN_HY	66.76	0.62%
	SR_2_LAN___	29.53	0.27%
	SR_2_LAN_SI	24.06	0.22%
	SR_2_WAT___	21.32	0.20%
	SR_2_LAN_LI	**9.31**	**0.09%**
	SR_1_SRA_BS	1.30	0.01%
	SR_1_SRA___	0.85	0.01%
	SRAL Total	781.76	7.26%
SYNERGY	SY_2_SYN___	620.49	5.76%
	SY_2_VG1___	8.47	0.08%
	SY_2_VGP___	4.85	0.05%
	SY_2_AOD___	3.78	0.04%
	SY_2_V10___	3.74	0.03%
	SYNERGY Total	**641.33**	**5.96%**
AUX	AUX_POEORB	7.80	0.07%
	AUX_GNSSRD	0.70	0.01%
	AUX_PROQUA	0.05	0.00%
	AUX_MOEORB	0.02	0.00%
	SR___ROE_AX	0.00	0.00%
	AUX_PRCPTF	0.00	0.00%
	AUX_COMB__	0.00	0.00%
	SR___POE_AX	0.00	0.00%
	SR___MDO_AX	0.00	0.00%
	AUX Total	**8.59**	**0.08%**
Grand Total		**10,767.63**	

TABLE 25:
Volume and percentage of Sentinel-3 user-level data downloaded using OData/Zipper and S3 interfaces during 2025 per user-level data type.

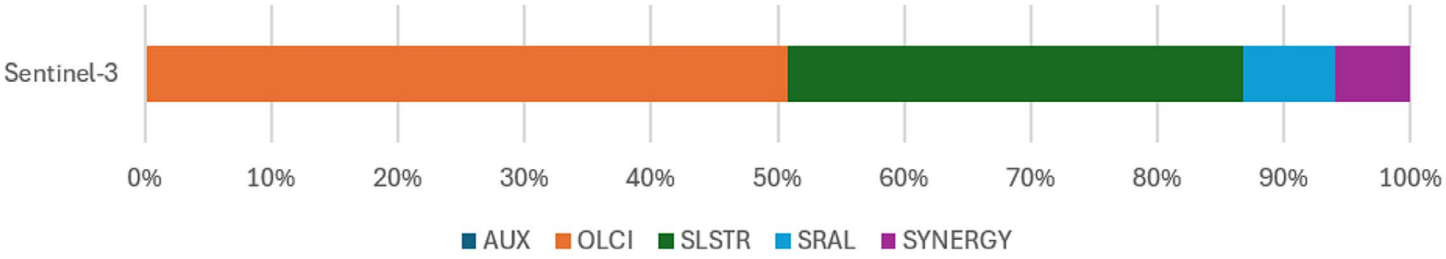


FIGURE 74: Percentage of total volume of Sentinel-3 user-level data downloaded using OData/Zipper and S3 interfaces, per type in 2025.

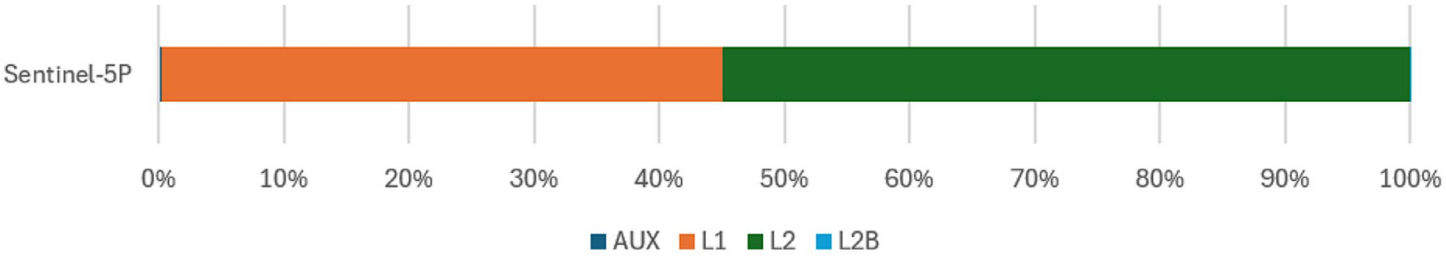
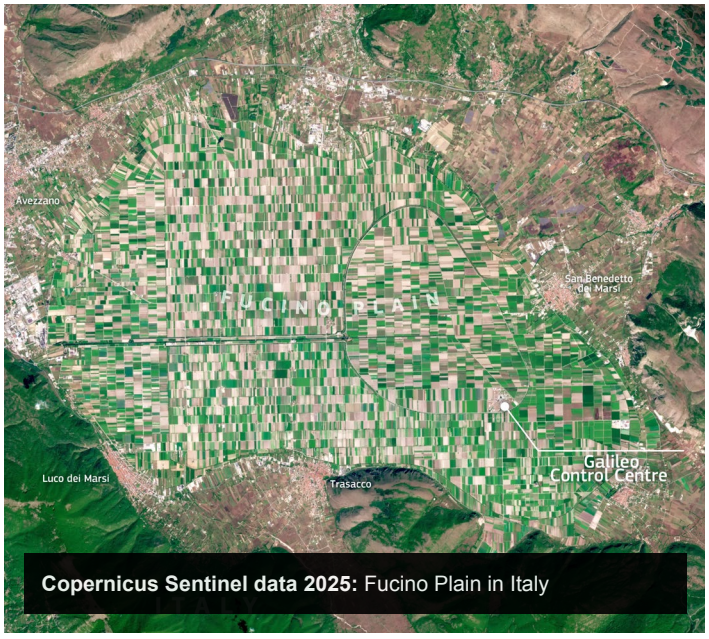


FIGURE 75: Percentage of total volume of Sentinel-5P user-level data downloaded using OData/Zipper and S3 interfaces, per type in 2025.

Sentinel-5P accounted for 4.03% of the total downloaded volume across all missions, with L2 products representing the majority as 54.93% of the Sentinel-5P total volume (2,875 TB), followed by L1 products at 44.78% (2,344 TB) Such distribution reflecting the primary use case of this mission: delivering higher-level atmospheric data products – including tropospheric concentrations of ozone, nitrogen dioxide, sulphur dioxide, methane, and carbon monoxide – that are ready for direct use in air quality monitoring, climate research, and environmental applications. (Figure 75).

Overall, the 2025 statistics confirm the trends seen in previous years, namely a consistent preference among users for higher-level, value-added products, and a sustained demand for reprocessed datasets. Continued growth in downloaded volumes across all missions, alongside a stable distribution of product type preferences, suggests that the expanding CDSE user base largely matches the access patterns of existing users rather than shifting towards different data types.



Copernicus Sentinel data 2025: Fucino Plain in Italy

7.1.4. Data download throughout the year

This section presents an overview of data download activity throughout 2025, focusing on the monthly dissemination volumes for each Sentinel mission. The aim is to understand usage patterns, seasonal trends, and the overall demand for Copernicus Earth observation products via the OData/Zipper and S3 interfaces. The data illustrates how different missions are utilized over time and how download behavior evolves month by month.

Over the course of 2025, a cumulative total of approximately 129.95 PB of data was downloaded (+32.64 PB; +33.5% year-on-year). On average, this equates to 10,829 TB downloaded per month +3,153 TB/month compared to 2024).
In 2025, Sentinel-2 remained by far the most downloaded mission, accounting for 56.93% of the total downloaded volume during the year. Its peak download volume of 8.22 PB was recorded in May. Sentinel-1 ranked second in terms of downloaded volume, representing 30.75% of the annual total, with its highest monthly volume also reached in May at 4.40 PB. Together, Sentinel-2 and Sentinel-1 accounted for 87.69% of all data downloaded throughout the year. Sentinel-3 followed with a peak volume of 1.53 PB in May. Although Sentinel-5P remained the smallest contributor overall, its activity showed noticeable variation throughout the year, with monthly volume ranging from around 272 TB in January to nearly 764 TB in October.

The overall dissemination trend in 2025 can be described as stable, with moderate fluctuations and several pronounced peaks, particularly in May and October. May was the most active month, with 14.50 PB of data transferred, primarily due to elevated user activity across all four missions simultaneously. The lowest total download activity occurred in February, with approximately 9.51 PB volume downloaded. Despite these fluctuations, the yearly pattern remains balanced, with consistently high usage throughout the year and no pronounced upward trajectory towards the end of the year, as was observed in 2024. (Figure 76)

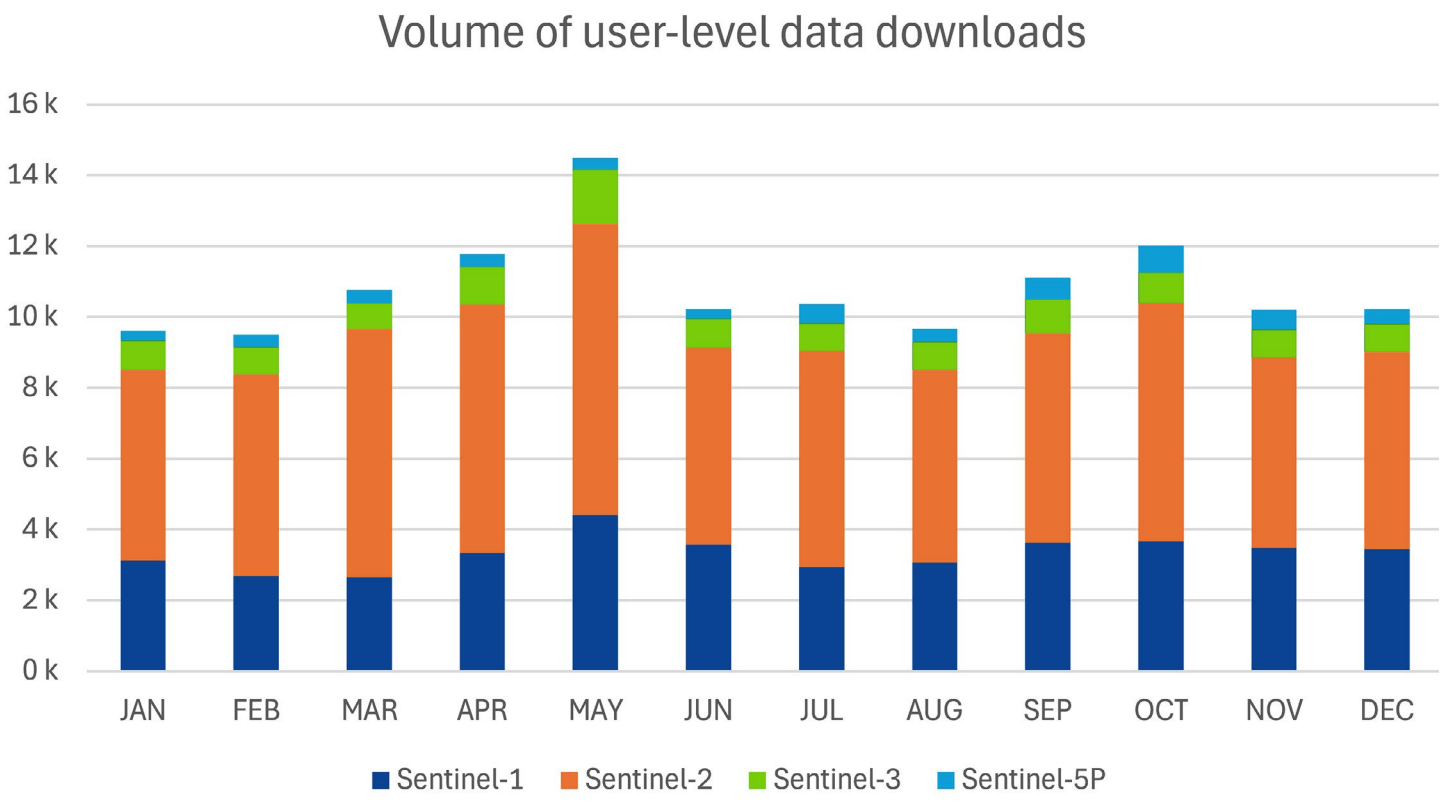


FIGURE 76: Dissemination volume trend using OData/Zipper and S3 interfaces, per month and mission in 2025.

The average daily volume of data disseminated in December 2025 using the OData/Zipper and S3 interfaces reached 314.26 TB representing a further increase compared to 287.39 TB recorded in December 2024. Sentinel-2 maintained the highest daily download volume with 179.53 TB/day, up from 159.78 TB/day a year earlier, indicating ongoing growth in user demand. Sentinel-5P saw the strongest relative increase, nearly doubling its daily average from 7.07 TB/day to 13.77 TB/day Sentinel-3's volume rose slightly from 23.99 TB/day to 25.63 TB/day. By contrast, Sentinel-1 recorded a marginal decline, falling from 96.54 TB/day to 95.33 TB/day, but remained broadly stable year-on-year. (Table 26)

Collection	Daily average volume [TB] downloaded in December 2025	Daily average volume [TB] downloaded in December 2024
Sentinel-1	95.33	96.54
Sentinel-2	179.53	159.78
Sentinel-3	25.63	23.99
Sentinel-5P	13.77	7.07
Total	**314.26**	**287.39**

TABLE 26: Average volume of data disseminated using OData/Zipper and S3 interfaces, during December 2025 and 2024.

7.1.5. Data downloads per continent and per country

The distribution of data downloads across continents and countries serves as a valuable indicator of how the CDSE is being adopted around the world. This geographical perspective enables a deeper understanding of the platform's impact on both global and local scales, uncovering trends in data consumption that may correspond with policy needs, research focus areas, or economic development levels. Identifying where users are most active can inform future decisions about developing services, conducting outreach, and building capacity in emerging user communities.

The percentage split of downloads by continent in 2025 is presented in Table 27 and Figure 77, which both present the same values. Europe accounted for the highest global share of downloaded volume once more at 78.4% (+0.7% vs. 2024), consolidating its position as the leading continent for CDSE data consumption. Meanwhile, North America's share declined further to 8.7% (-2.1%), continuing the downward trend observed in 2024. In contrast, Asia edged up to 8.4% (+0.5%), bringing down the gap with North America to just 0.3% – the closest the two regions have ever been in the platform's reporting history. The most significant change was seen in Oceania, whose share almost quadrupled from 0.5% to 1.9% (+1.4%), indicating increasing engagement from that region. South America together with Antarctica showed increased activity at 2.2% (+1.3%), while Africa showed the lowest percentage of downloads 0.5% (-1.7%).

Continent	Percentage of downloads
Europe	78.4%
North America	8.7%
Asia	8.4%
South America + Antarctica	2.2%
Oceania	1.9%
Africa	0.5%

TABLE 27: Percentage split of downloads using OData/Zipper and S3 interfaces, by volume per continent in 2025.

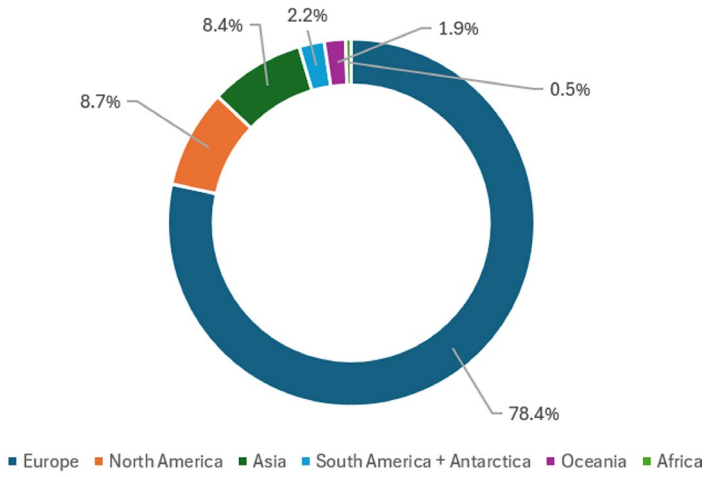


FIGURE 77: Percentage split of downloads using OData/Zipper and S3 interfaces, by volume per continent in 2025.

Table 28 presents the percentage breakdown of user-level data downloads by continent in 2025, categorized by Sentinel mission. This comparison provides a geographical overview, offering insights into how different regions engage with the CDSE. While Europe's overall lead rose to 78.4% of the total downloaded volume (+1.0%), the distribution varied considerably across missions. Its share increased for Sentinel-1, reaching 78.2% (+1.6%) and for Sentinel-2, reaching 79.6% (+4.0%), while it decreased substantially for Sentinel-3, reducing to 77.8% (-13.2%), and most notably for Sentinel-5P, falling to 64.6% (-6.7%). The latter shift is particularly interesting and points to a significant redistribution of Sentinel-5P usage toward Asia, whose share for that mission surged to 20.7% (+12.1%), making it the largest single year-on-year change observed across any mission-continent combination in 2025.

North America's overall share declined to 8.7% (-2.8%), with decreases recorded across all missions except Sentinel-3, where its share increased to 12.3% (+8.2%), placing it second for that mission ahead of Asia. Asia's total percentage share rose to 8.4% (+1.1%), driven primarily by the surge in downloads for Sentinel-5P noted above. South America and Antarctica grew slightly to 2.2% (+1.3%), with Sentinel-1 and Sentinel-2 noting the biggest increase for those regions at +1.8% and +1.4% respectively. Oceania's overall share reached 1.9% (+1.4%), with gains across every mission, but mostly Sentinel-1 to 2.7% (+2.2%) and Sentinel-2 to 1.7% (+1.2%). Africa was the second continent to record an overall decline, dropping to 0.5% (-2.0%), primarily due to a significant decrease in its Sentinel-2 share (-2.2%). (Table 28)

The statistics for 2025 indicate that Europe remains at the center of global CDSE usage. Its presence is growing further, which confirms the deep integration between the platform and the European Earth observation community for regional applications and operations. Outside of Europe, several significant changes emerged over the year. For example, Asia demonstrated a clear uptick in the use of Sentinel-5P atmospheric data, while South America and Oceania strengthened their presence across multiple Sentinel missions. These new trends point to a gradually expanding global footprint, with new user communities becoming more active contributors to the CDSE platform.

Continent	% of Sentinel-1 Downloads	% of Sentinel-2 Downloads	% of Sentinel-3 Downloads	% of Sentinel-5P Downloads	% of all missions Downloads
Africa	0.2%	0.7%	0.4%	0.4%	0.5%
Asia	5.8%	9.0%	7.5%	20.7%	8.4%
Europe	78.2%	79.6%	77.8%	64.6%	78.4%
North America	11.0%	6.6%	12.3%	12.7%	8.7%
Oceania	2.7%	1.7%	0.2%	1.4%	1.9%
South America + Antarctica	2.1%	2.5%	1.7%	0.3%	2.2%

TABLE 28:
Percentage split of downloads using OData/Zipper and S3 interfaces, by volume in TB for each Sentinel mission and overall per continent in 2025.

Table 29 presents a detailed breakdown of the top 10 EU and ESA member states by number of downloads for each Sentinel mission in 2025. This ranking provides a comparative perspective on national engagement with the CDSE within Europe, helping to identify the main contributors to overall data usage.

As in previous years, downloads were concentrated among a core group of countries, with Italy, France and Germany leading the way across multiple missions. Italy dominated the download volume rankings, taking first place across three missions – Sentinel-1 (12,141 TB), Sentinel-2 (15,463 TB) and Sentinel-3 (2,917 TB) – and second place for Sentinel-5P. This marks a notable change compared to 2024, when France led the Sentinel-1 ranking by downloaded volume. The most significant change at the top of an individual mission ranking was in Sentinel-5P, where Norway moved to first place (454 TB), displacing the Netherlands, which dropped to fourth (368 TB). Another notable change relates to Luxembourg, which has appeared in both the Sentinel-1 and Sentinel-2 rankings for the first time, claiming fourth place in each (2,359 TB and 6,759 TB respectively). Several countries appeared consistently across multiple mission rankings. Italy, France, Germany, Belgium and Norway each appeared across all four mission rankings, confirming their strong and widespread engagement with the platform. Meanwhile, the United Kingdom, Greece, Spain and Austria maintained a stable presence across three lists.



Copernicus Sentinel data 2025: Greenland's sea ice in motion

#	Sentinel-1		Sentinel-2		Sentinel-3		Sentinel-5P	
	Country	Volume (TB) of downloads	Country	Volume (TB) of downloads	Country	Volume (TB) of downloads	Country	Volume (TB) of downloads
1	Italy	12.141	Italy	15.463	Italy	2.917	Norway	454
2	France	6.437	Germany	10.401	Germany	2.163	Italy	412
3	Germany	2.465	France	9.886	France	818	Germany	391
4	Luxembourg	2.359	Luxembourg	6.759	Norway	542	Netherlands	368
5	Belgium	1.36	Belgium	2.639	United Kingdom	408	United Kingdom	360
6	Norway	1.349	Czech Republic	2.064	Finland	381	Ireland	326
7	Austria	946	Greece	1.562	Austria	316	Belgium	263
8	Denmark	812	Spain	1.272	Belgium	229	Greece	206
9	United Kingdom	620	Norway	1.145	Spain	125	France	156
10	Finland	504	Austria	757	Greece	116	Spain	111

TABLE 29: Top-10 EU and ESA states by volume of Odata/Zipper and S3 downloads for each Sentinel mission in 2025.

7.2. Streamlined Data Access

The past year has witnessed a sustained increase in the adoption of Sentinel Hub and openEO, our two primary streamlined data access services. This growth is a testament not only to the expanding reach of the Copernicus Data Space Ecosystem (CDSE) but also to a fundamental shift in the industry: the transition from „download-and-process“ to a cloud-native analytical model. By performing processing directly within the cloud, users are no longer burdened by the overhead of managing advanced local infrastructures, complexity of remote sensing data, or the prohibitive costs of large-scale data downloads. Instead, they can direct their resources toward what matters most: extracting actionable insights and high-order value from Earth Observation data.

Central to this progress has been the effort to bring Sentinel Hub and openEO closer together by developing a synchronous openEO backend. Now seamlessly integrated into Copernicus Browser, this synergy allows for a unified experience where pixel-level processing and standardized workflows transform Sentinel data and complementary CDSE collections into immediate insights.

7.2.1. Sentinel Hub

At its core, Sentinel Hub acts as a high-performance processing engine that transforms vast satellite archives into analysis-ready data on-the-fly. It handles the complex „heavy lifting“ of geospatial preparation by managing gridding, re-projection, mosaicking, and orthorectification in real-time to provide a smooth experience for all users. The service is built to be highly flexible and easily supports visual applications like the Copernicus Browser as well as data-heavy machine learning workflows that need precise pixel values and rapid statistics. By processing original satellite data directly within the CDSE cloud environment, Sentinel Hub ensures high spectral accuracy while delivering results in a matter of seconds.

Access to these capabilities is provided through a suite of Application Programming Interfaces (APIs) designed for different integration needs. For users working with traditional GIS software or standard web maps, the OGC-compliant API supports industry-standard services such as WMS, WCS, WMTS, and WFS. To achieve more advanced or streamlined data access, the Sentinel Hub RESTful APIs provide a powerful, cloud-native way to systematically process satellite data and integrate it directly into personal workflows. Key examples include the Sentinel Hub Process API and the synchronous openEO API that allow data access within seconds, ideal for streamlined applications.

For large scale temporal and spatial data processing, the ecosystem provides high-volume tools such as the Batch Processing API, which is built to handle extensive geographic areas and decadal time series. Users can also utilize the Statistical API (exists also as Batch Statistical API) to extract quantitative insights directly from imagery without the need for large downloads, while the STAC-compliant Catalog API ensures that metadata remains easily searchable. This infrastructure provides access to a vast array of global datasets, including data from all Sentinels, newly integrated Landsat bimonthly mosaics, and Copernicus Land Monitoring Service (CLMS) collections. Additionally, the „Bring Your Own Data“ feature allows users to seamlessly process their own private datasets alongside these global archives. The most interesting highlights from the year 2025:

- We significantly expanded the archive with the integration of **CLMS datasets, VHR Europe mosaics**, and **Sentinel-3 Synergy** products. The addition of **historical Sentinel-1 and Sentinel-2 mosaics**, alongside **Landsat 8/9, and Landsat bi-monthly mosaics**, provides users with even greater temporal and spatial granularity for global monitoring.
- A major milestone was the July launch of the **synchronous openEO backend** and its integration into the **Copernicus Browser**. This transition has seen rapid adoption, with openEO now powering over **75% of all processing volume** within the Copernicus Browser environment.
- Sentinel Hub services processed more than **2.5 billion requests** during this period, **nearly doubling** the previous year‘s volume and highlighting the rapid expansion of the user base.
- Sentinel Hub handled a record-breaking **10 billion processing units** (PUs) this year. This amount is roughly equivalent to the user processing an impressive **21 million Sentinel-2 tiles in the cloud** while completely bypassing the logistical burden and costs of downloading raw data.
- This annual consumption accounts for more than **260 billion km² of processed imagery**, a figure that represents over 1,745 times the total landmass of Earth. To achieve this, the platform delivered over **2 quadrillion pixels**, marking the highest throughput in the history of the Copernicus Data Space Ecosystem.
- Usage patterns (Table 30 and Figure 78) confirm that **Sentinel-2 L2A** remains the single **most requested collection** (43%), followed by Sentinel-2 L1C (8%). The category „Mosaics (and other)“ corresponds to collections made available via the **„Bring Your Own Data“ (BYOC) capability**, which accounts for the highest overall share of requests (45%), Sentinel-2 quarterly mosaics emerged as the most popular dataset among our users.

Data collection offered in SH	% of all SH requests
Sentinel-1 GRD	2%
Sentinel-2 L1C	8%
Sentinel-2 L2A	43%
Sentinel-3 OLCI L1B + L2	> 1%
Sentinel-3 SLSTR L1B	> 1%
Sentinel-3 SYN L2	> 1%
Sentinel-5P L2	1%
Mosaics (and others)	45%

TABLE 30: Percentage of Sentinel Hub requests per data collection.



FIGURE 78: Percentage of Sentinel Hub requests per data collection.

The Sentinel Hub service experienced exceptional growth this year, reaching a total of over 320.000 unique registered users (this number excludes anonymous users of Copernicus Browser). This figure represents an impressive 60% of the entire CDSE user base, confirming that Sentinel Hub remains a primary entry point and a central component of the ecosystem.

Consistent with the overall expansion of the Copernicus Data Space, monthly engagement followed a strong upward trajectory throughout the year. Active monthly users increased by nearly 50% from 42.067 in January to over 61.462 in December. This steady upward trend reached a significant annual peak in November with 70.317 active users, representing a 65% increase from the start of the year. While the summer months and December saw a slight seasonal decline due to the holiday period, the year-end statistics still reflect a substantial and sustained increase, in the global adoption of our streamlined data access services.

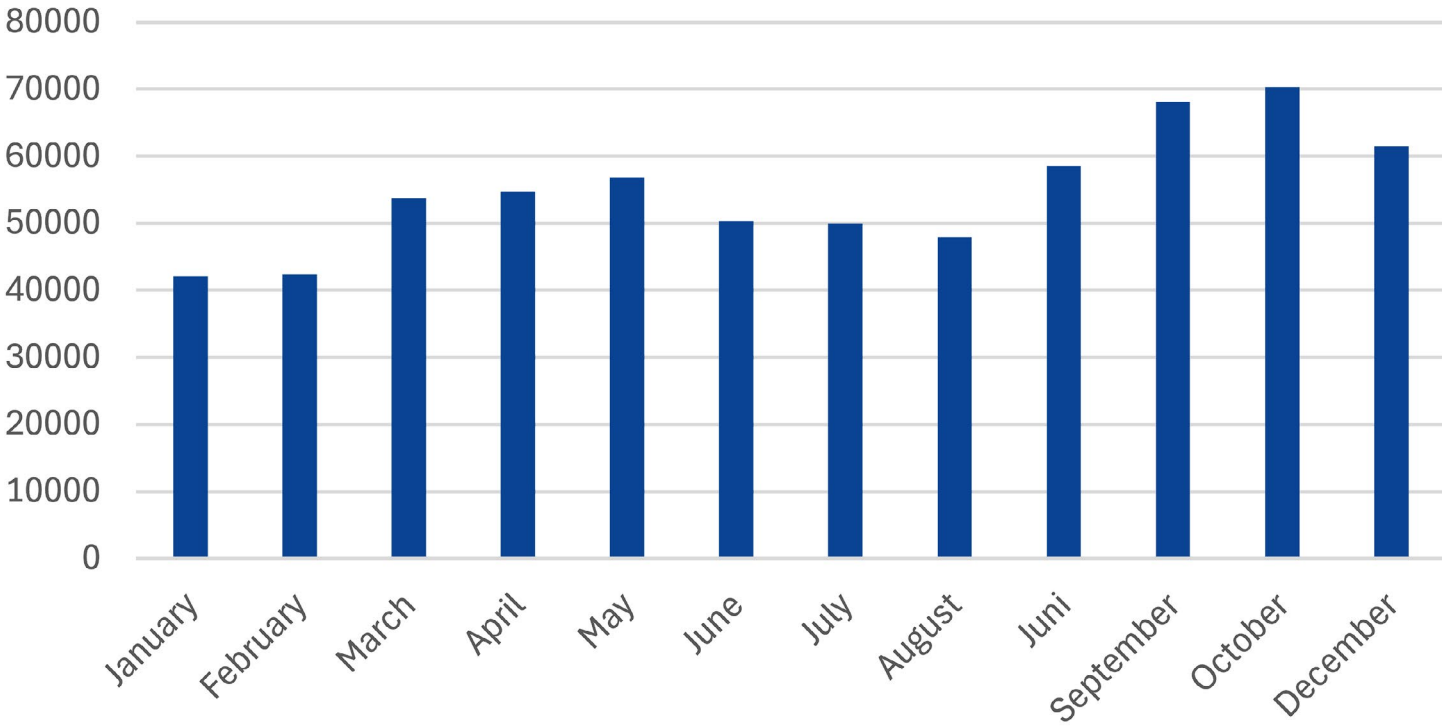


FIGURE 79: Unique Sentinel Hub users per months Unique Sentinel Hub users per months.

Analysis of the 2.5 billion requests processed in 2025 reveals that the majority were directed towards our primary synchronous interfaces of data processing and visualization (Figure 80). The 'Process API' and the 'synchronous OpenEO API' serve as the core engines for Copernicus Browser, explaining their dominant share of total traffic. Since its launch in July, the synchronous openEO API has experienced rapid adoption and now facilitates over 50% of all visualization requests within the browser environment.

Beyond these primary drivers, the 'Catalog API' processed a significant volume of request as a high-performance, STAC based interface for metadata discovery. Similarly, 'OGC Services' continue to play a vital role in streaming data to third-party applications and GIS software like QGIS. Finally, three specialized interfaces each surpassed the one-million-request milestone: the 'Batch Processing API', which is optimized for cost-effective, large-scale temporal and spatial analysis; the 'Statistical API' for on-the-fly data calculations and the 'BYOC API', which allows users to seamlessly ingest their own datasets into the system.

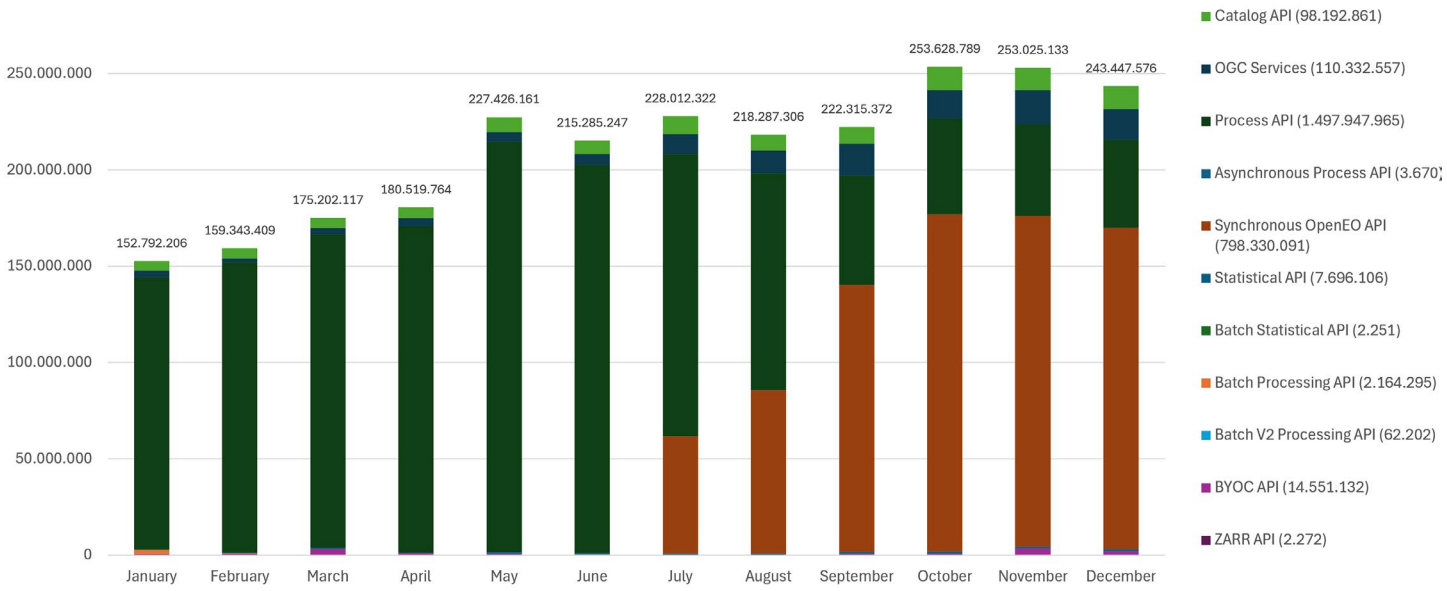
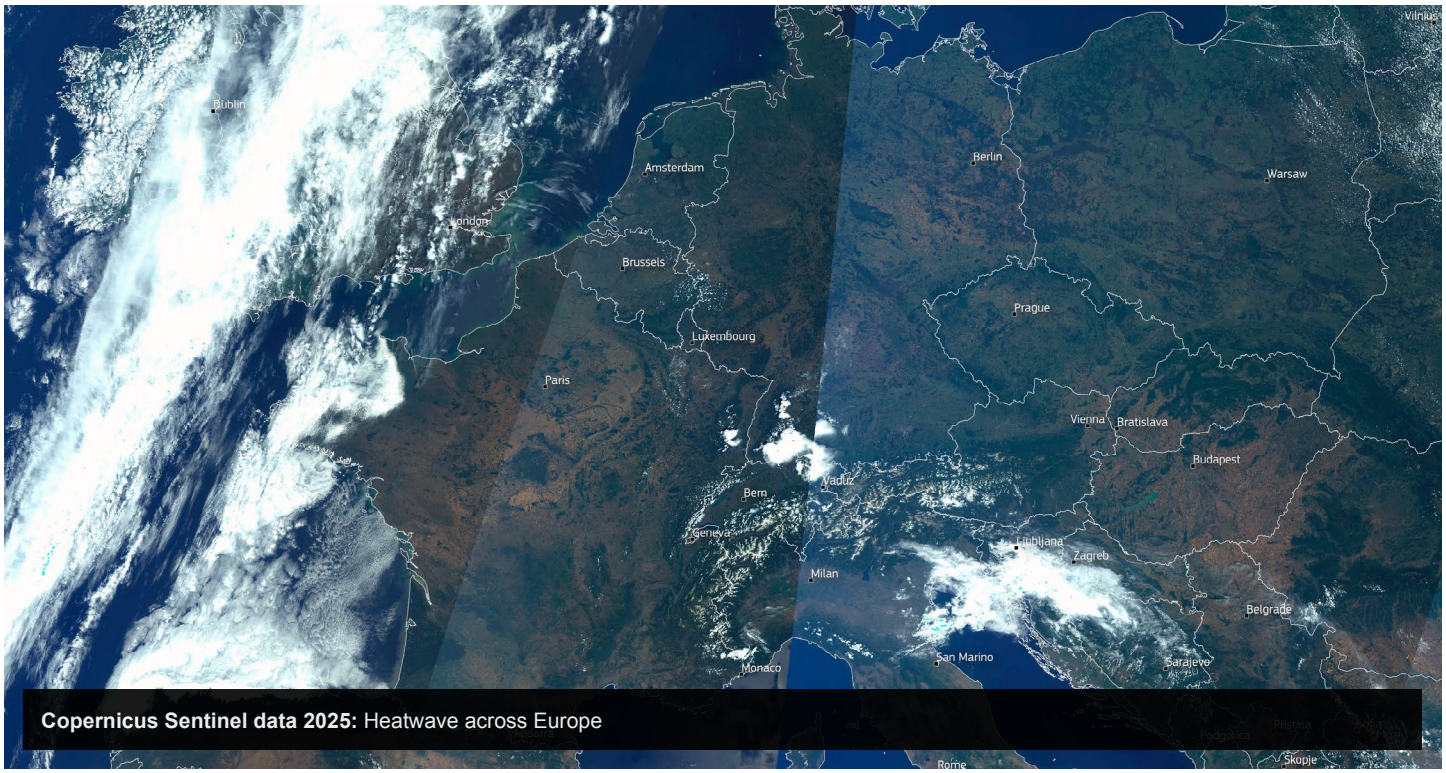


FIGURE 80: Dissemination volume trend using OData/Zipper and S3 interfaces, per month and mission in 2025.



Copernicus Sentinel data 2025: Haapsalu in Estonia

Looking ahead to 2026, we will continue the systematic generation of monthly Sentinel-1 and quarterly Sentinel-2 mosaics while finalizing the processing of our historical archives. Upon completion, the Sentinel-1 mosaic series will be available from October 2014 and Sentinel-2 from July 2015, providing a comprehensive long-term record for environmental analysis. The data portfolio will expand further with the inclusion of Sentinel-3 SLSTR Level-2 data, VHR 2024 mosaics, and hundreds of additional Copernicus Land Monitoring Service datasets. Finally, we will continue to support and encourage direct API integration. This approach empowers the Earth Observation community to optimize and scale their processing workflows, driving more efficient and impactful data science across the globe.



Copernicus Sentinel data 2025: Heatwave across Europe

7.2.2. openEO

Building on the progress made in 2024, openEO has continued to evolve in 2025. Federated access to the Terrascope backend, large-scale processing and machine learning support through built-in Random Forest and foundational models were key highlights in 2025. Further improvements to the openEO Algorithm Plaza and the Web Editor were made based on user feedback.

Next to evolution, the openEO API is also making a few bigger steps. One potentially impactful evolution is support for very fast on the fly visualization, provided by both the CDSE Sentinel Hub and a new openeo-titiler implementation. This reduces the need to work with multiple API's in CDSE and brings a great new feature to existing openEO users.

In addition, projects such as WorldCereal are successfully leveraging openEO as an inference engine for foundational models, and the backend is adding processes to directly support models in the ONNX format.

The goal of CDSE openEO API's is to give our users a full-fledged data access and processing environment, in which they can enjoy a combination of solid operational processes and cutting-edge innovative tools. This should allow users to learn the API once, and benefit for years to come

Next to the work done by the CDSE team, we now also see more contributions from the broader community to our catalog of public algorithms. Thanks to ESA's APEx initiative, we now have a catalog with openEO processes for a variety of things, ranging from dataset mosaics to windmill detection and advanced data fusion.

In 2025, openEO continued to build on these developments, targeting an audience that ranges from data scientists who want to easily explore and analyse Copernicus data, to data engineers who aim to build production workflows. Keeping reusability and scalability as key focuses while also strengthening interoperability and flexible data access. Additional datasets were made accessible via openEO, efforts were made to adapt the latest tools and standards, and large-scale processing workflows were further refined across multiple projects. In addition, openEO explored new domains, including SAR interferometry through the Cloud InSAR project, credit calculation based on input pixels, and vector cube processing.

By directly supporting open science and FAIR principles, openEO continues to support the open-source community in generating quality output built on the CDSE infrastructure.

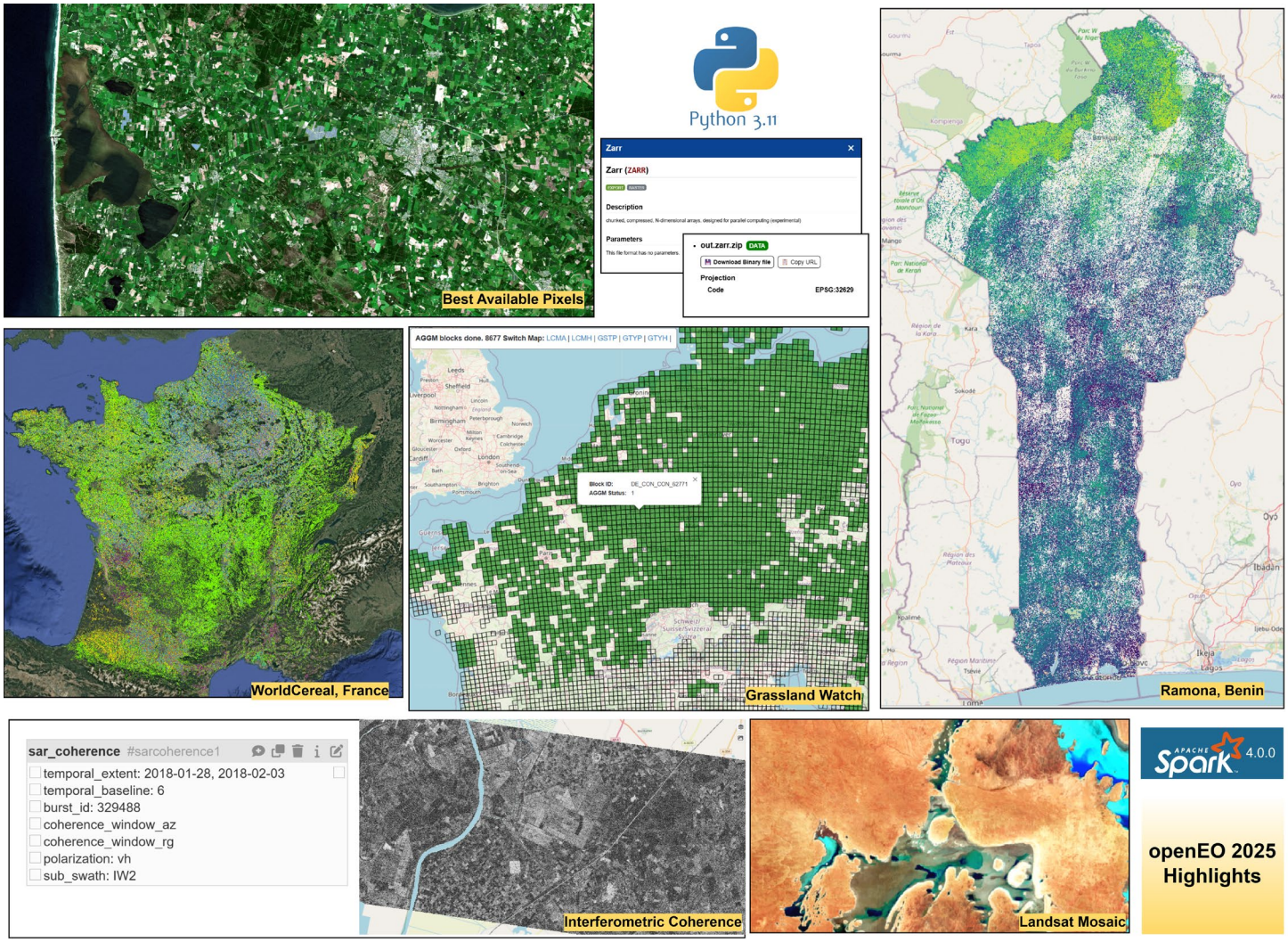


FIGURE 81: openEO highlights for 2025



Copernicus Sentinel data 2025: Lafnitz River in Austria

Expanding Dataset

As part of the continuously growing collection list, two distinct progresses were made in 2025 regarding collections accessed and processed using openEO in the CDSE.

The first is a new addition to the catalogue: Landsat 8 level 2 ARD (European Coverage) and Landsat mosaic (bi-monthly, v1.0.1, Global Coverage).

The Landsat-8 Level 2 ARD product is derived from the Landsat-8 OLI/TIRS L1T or L1TP product and is generated using atmospheric correction algorithms to remove atmospheric effects and convert the top-of-atmosphere reflectance to surface reflectance values. This is the Landsat 8 Collection 2 European Coverage, so it does not correspond to the full Landsat archive.

Whereas the Landsat mosaic provides global, cloud-free, reconstructed historical Landsat spectral bands at a spatial resolution of 30 meters and temporal resolution of bimonthly intervals from 1997 onwards. The dataset was generated using the GLAD Landsat ARD version 2 and processed by OpenGeoHub.

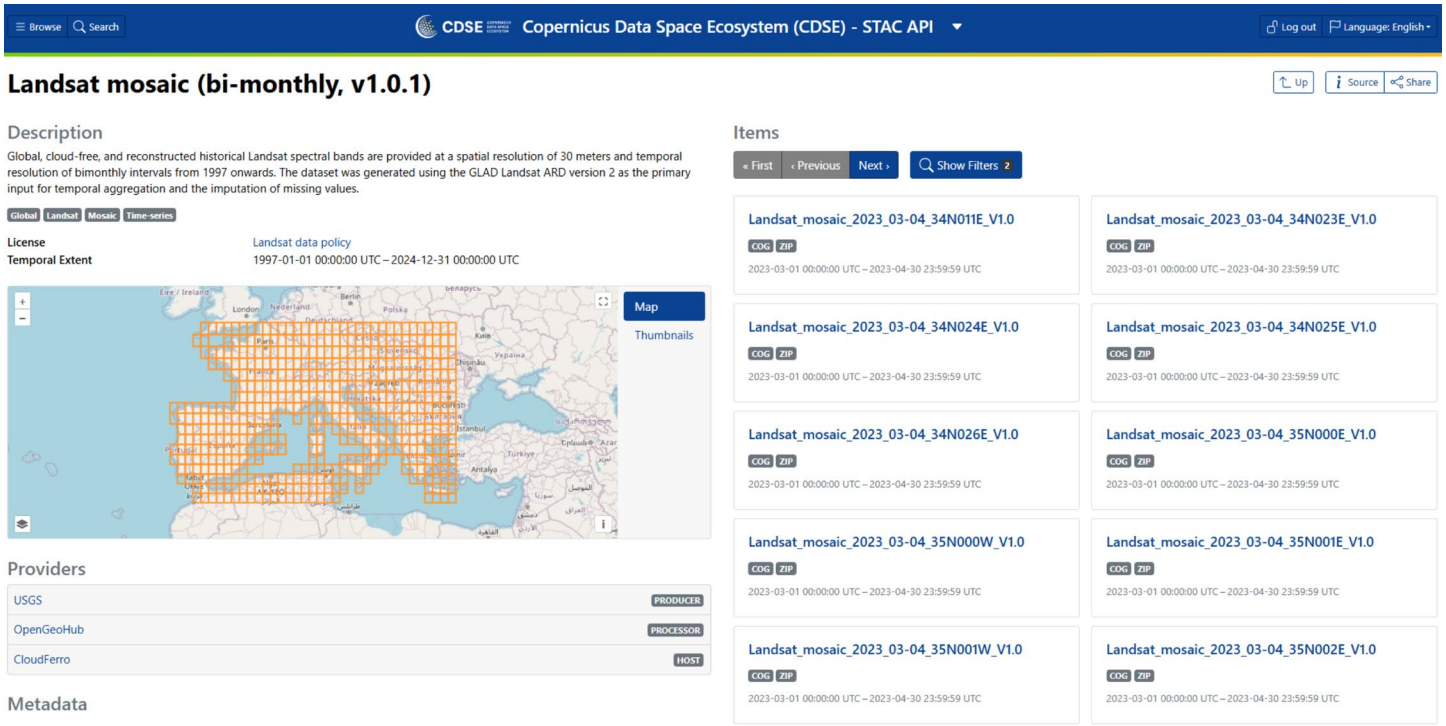


FIGURE 82: Landsat Mosaic

The second update enhances the existing Sentinel-2 L2A collection with two additional bands: Snow Probability (SNW) and Cloud Probability (CLD). These provide richer metadata to support more accurate cloud and snow masking in user workflows.

State-of-the-Art Support

Several technical upgrades were introduced to keep openEO aligned with the latest tools and standards.

Addressing the current hot topic, support for ZARR export was added, enabling users to save their output datacube into this format for easier integration with ecosystems such as Pangeo.

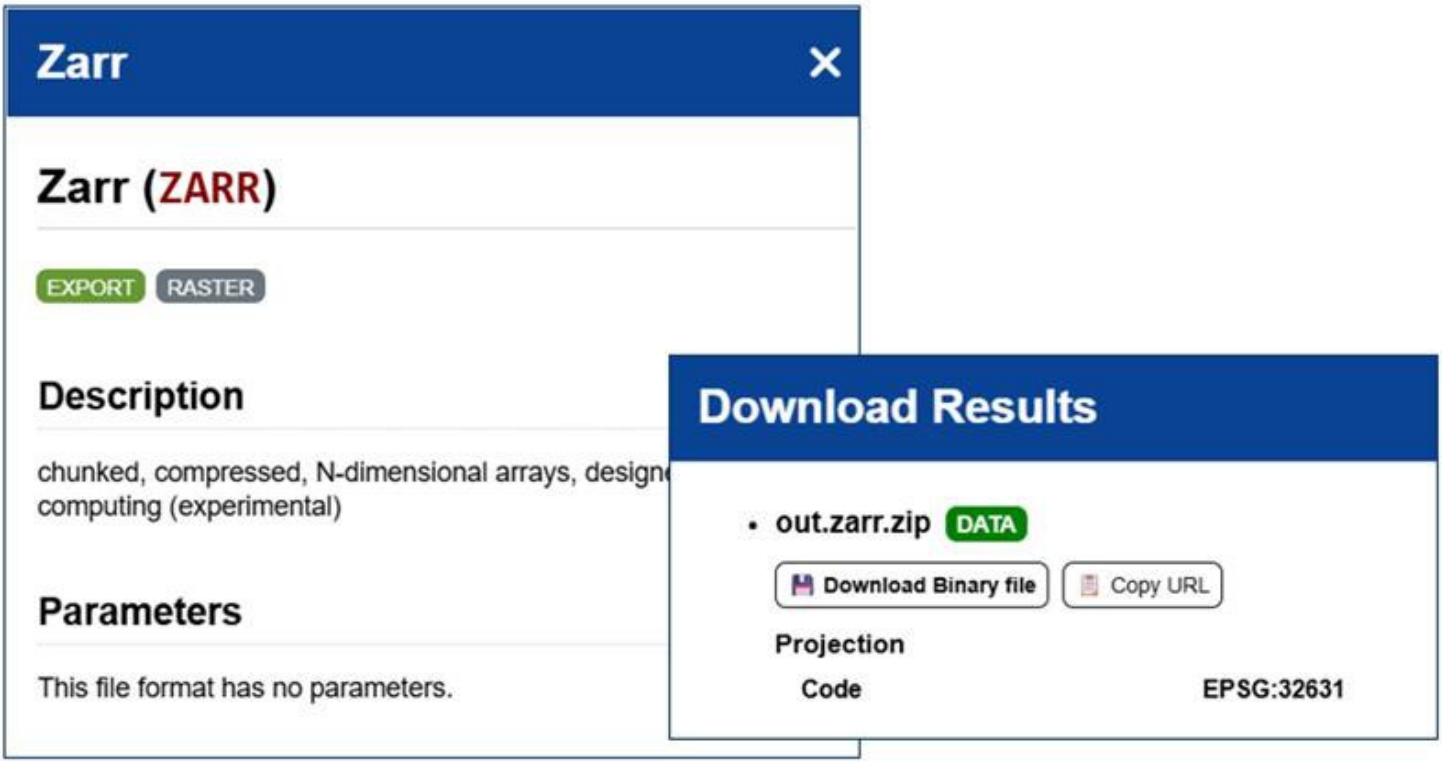


FIGURE 83: ZARR support in openEO

Moreover, on the runtime side, Python 3.11 is now the default for both batch and synchronous jobs, accompanied by major dependency upgrades including Apache Spark from version 3.5.7 to 4.0.1, NumPy from 1.x to 2.3.1, and xarray from 0.16.2 to 2024.7.0. Together, these updates deliver meaningful improvements in performance, stability, and compatibility across the platform.

Furthermore, openEO is now aligned with the newly released STAC 1.1 catalogue on CDSE. This alignment will bring faster integration of new datasets, ensure consistent pixel alignment across collections, and improve traceability through metadata.

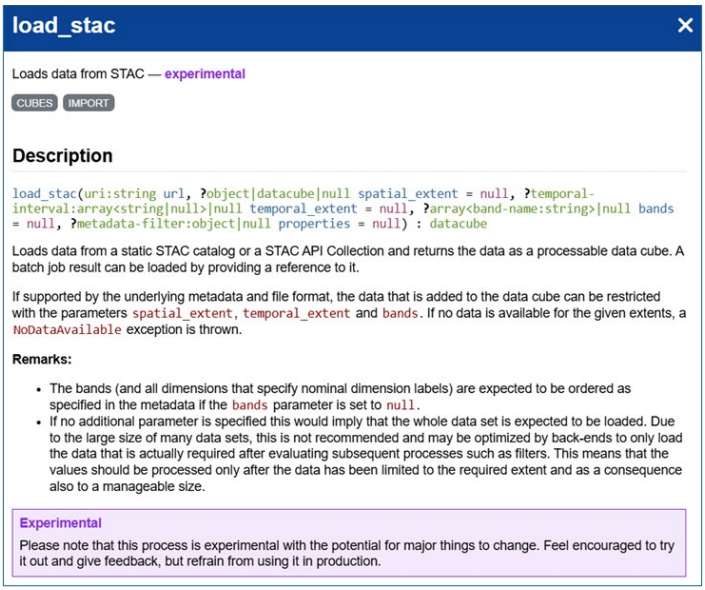


FIGURE 84: openEO's load_stac process

STAC Support

While openEO has produced output conforming to STAC standards, it now extends this support to external STAC catalogues via the load_stac process.

The process complements the existing way of easy, direct access to the collections offered by CDSE and federated endpoints. Users can now use the 'load_stac' process to load public external STAC collections and perform operations on them seamlessly.

With recent improvements to load_stac, the correctness and performance of STAC collections that make use of the projection extension were brought to the same level as built-in collections, or new formats such as ZARR. This makes it easier than ever to integrate new or custom datasets.

To help users get started, several new notebooks have been added to the openEO community examples, showcasing how load_stac can fetch externally hosted collections and process them within the CDSE infrastructure, or combine them with existing datasets for more advanced workflows.

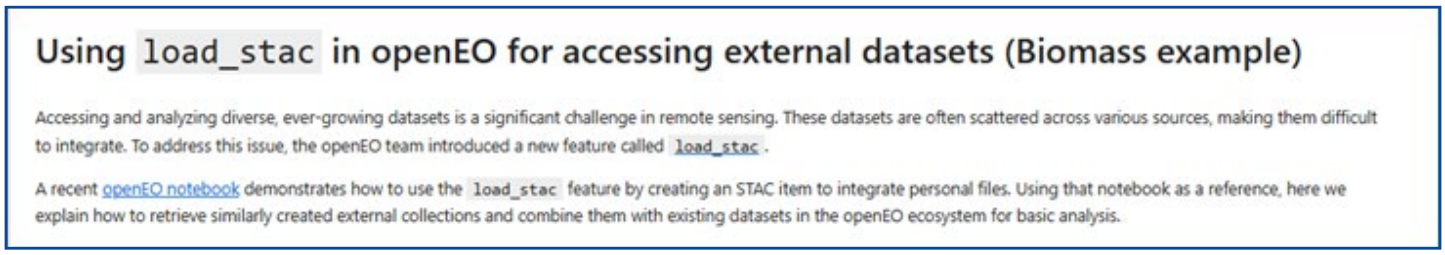


FIGURE 85: load_stac example available in openEO community example repository



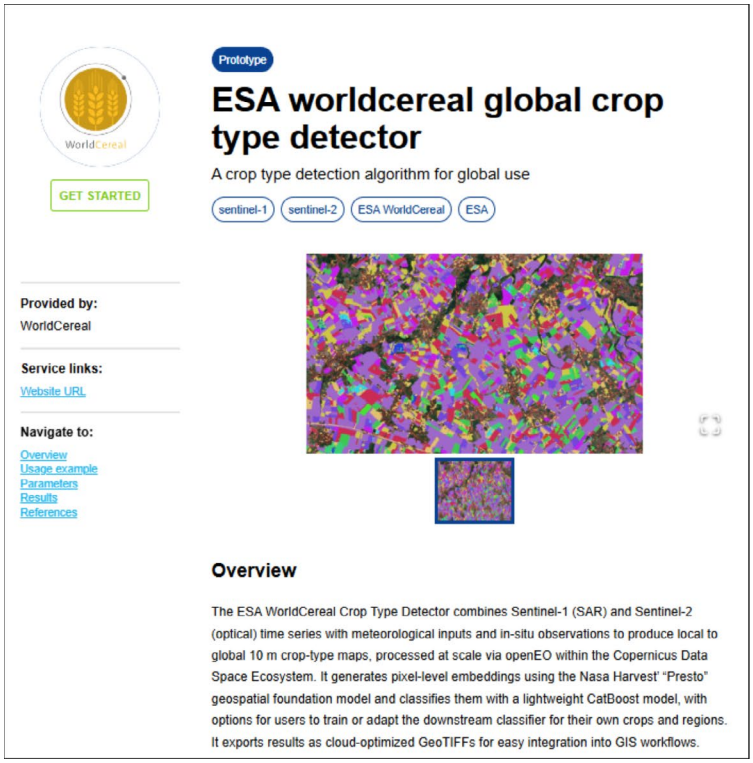
FIGURE 86: Webinar on Machine Learning Support offered by openEO

Machine Learning Support

openEO has demonstrated significant support for several large-scale operational projects that use various machine learning techniques. The team continues to support and adapt to the latest developments in this area. A main highlight was a widely attended webinar in February 2025 that introduced users to ML support offered by openEO and projects that leverage openEO's ML capabilities, including the integration of foundation models. The session attracted nearly 200 participants from around the world, reflecting the growing interest in openEO for ML applications.

Data preparation, known as a key step in any machine learning workflow, is streamlined in openEO through direct access to CDSE collections and the flexibility to combine and process them with external datasets. The API also extended its support for ONNX models, further enhancing interoperability.

Additionally, the inference workflow can be saved as a User-Defined Process and hosted in an openEO catalogue, providing scalable and reusable solutions. This approach has already been tested and implemented in the ESA WorldCereal project, where users can request on-demand crop-type and crop-extent maps.



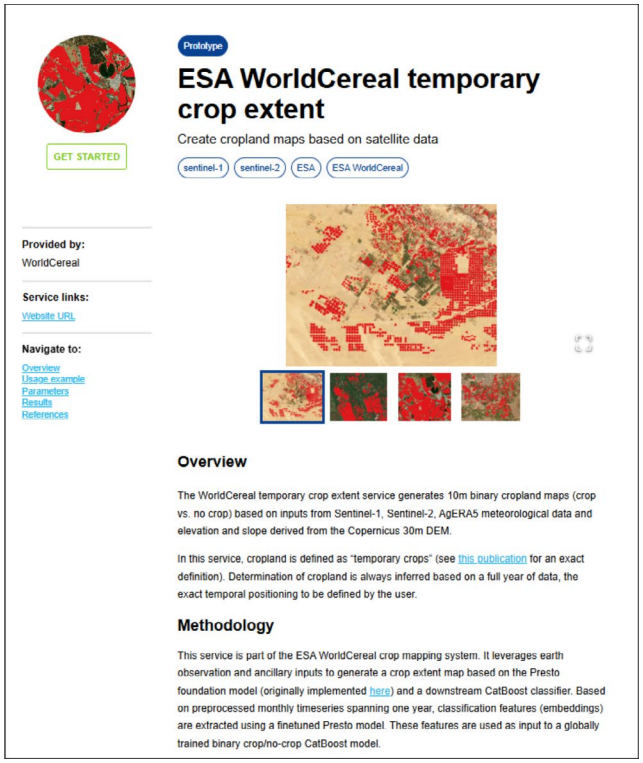


FIGURE 87: ESA WorldCereal available processes

New notebooks were also published this year, walking users through practical Random Forest applications such as forest fire mapping, covering the entire process of data preparation, training and testing using openEO processes.

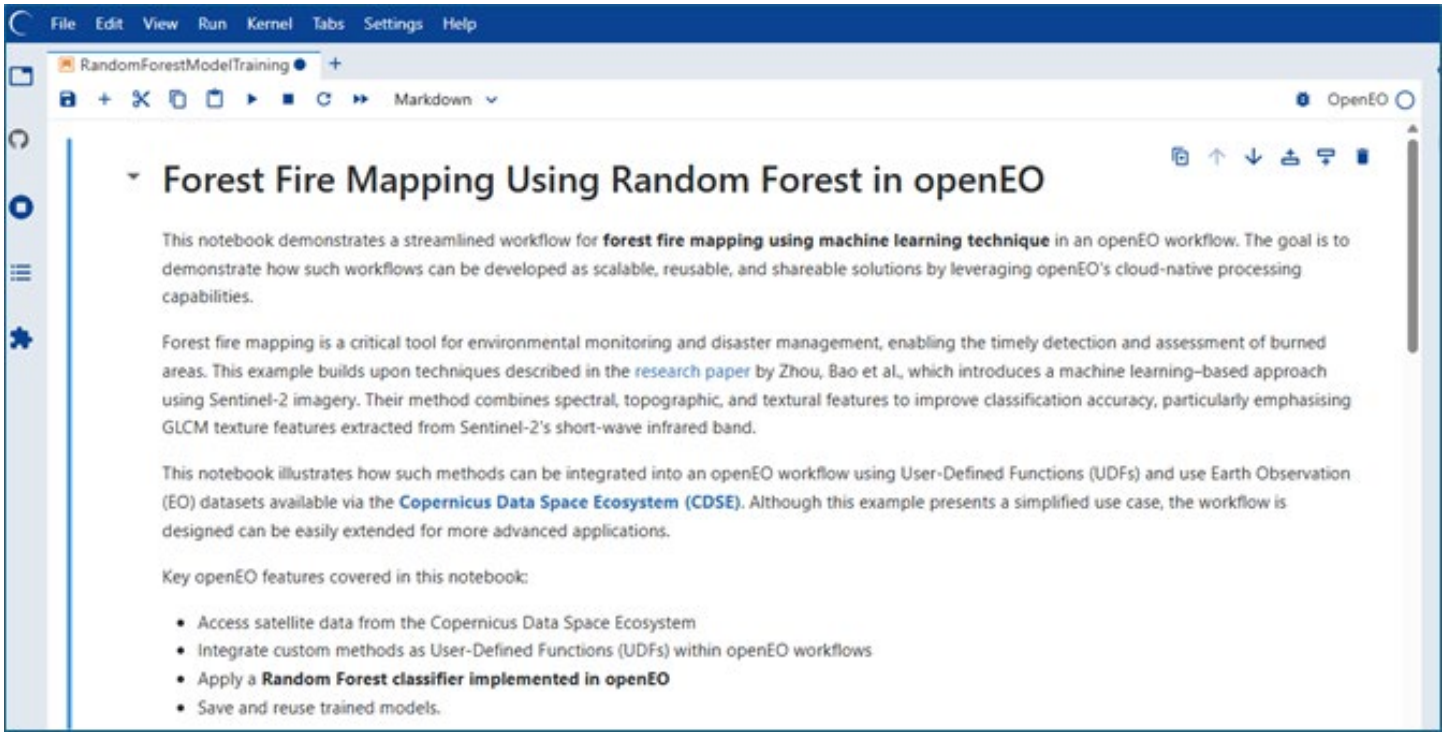
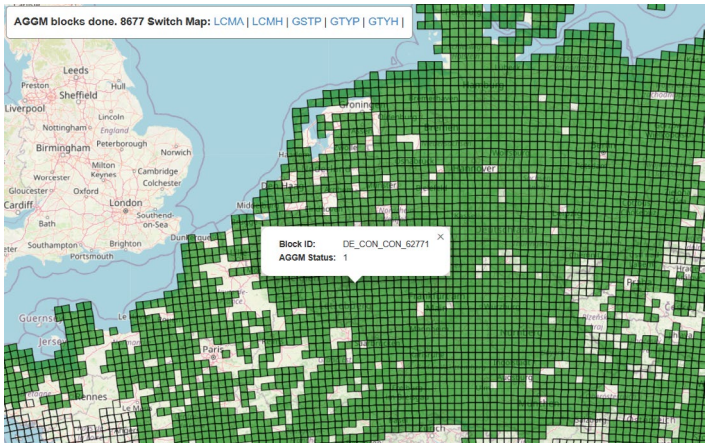


FIGURE 88: Random Forest usecase using openEO



Supporting scalability with MultiBackendJobManager

Large-scale processing workflows have been further optimised across several operational projects. Job cost tracking was introduced to the MultiBackendJobManager, which automatically adds cost information to the job manager dataframe, enabling users to monitor expenses throughout execution. ESA WorldCereal continues to serve as a flagship example. It leverages openEO's point and patch sampling capabilities to collect vast volumes of Earth Observation samples for training, while the job manager efficiently handles the massive number of jobs required to build a global reference data catalogue.

FIGURE 89: Using openEO's MultiBackendJobManager

openEO has also demonstrated its robustness across several other large-scale, highlighting its capacity to manage extensive and complex EO data processing workflows with efficiency and reliability.

openEO webeditor

The Web Editor has continued to evolve with community feedback. Users can now easily monitor the status of their processing workflows. Workflow creation is simplified through a drag-and-drop interface, making it accessible even to those without programming experience. Additionally, the reusable services catalogue was further expanded. Moreover, the interface provides an easy way to track User-Defined Processes (UDPs) created by the user.

To ensure fair resource use, running an openEO workflow is linked to credit usage, which depends on factors such as CPU, memory, and storage. The cost model was revisited and refined to include input pixels, offering greater transparency and accuracy.

New Domain Exploration

In 2025, openEO expanded its capabilities across multiple domains, introducing new tools and workflows that include both raster and vector datacube, as well as synchronous and rapid prototyping workflows.

openEO by TiTiler was officially released as a lightweight, high-performance backend implementation developed in collaboration between Development Seed and Sinergise, providing a fast, open-source alternative for synchronous processing and visualisation of Earth Observation data, and is now deployed in CDSE for demonstration purposes.

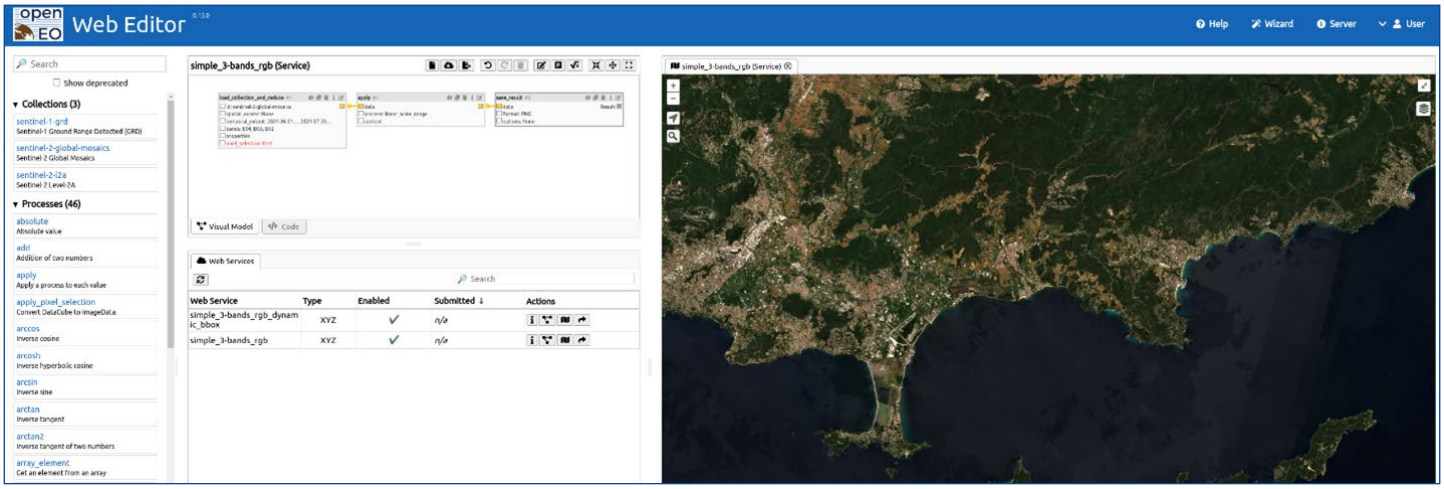
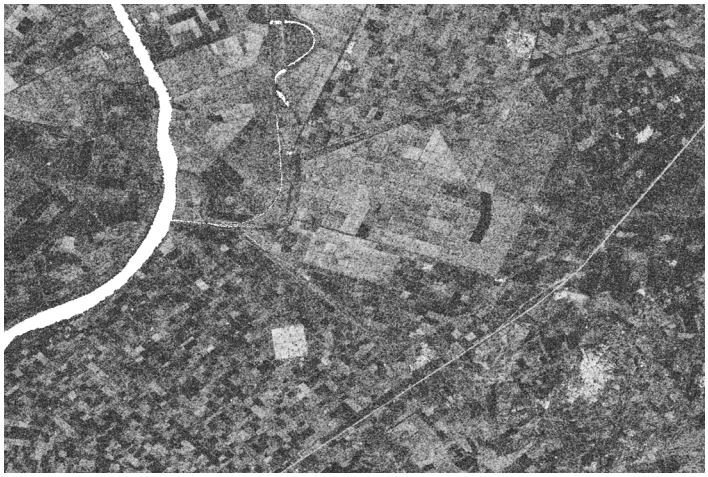


FIGURE 90: openEO by TiTiler



Complementing this, a synchronous Sentinel Hub openEO backend was developed with 82 native openEO processes implemented and is already powering the interactive visualisations in Copernicus Browser, with Sentinel-1 Mosaics, Sentinel-2, and Sentinel-2 Mosaics having quietly transitioned to this new backend. Together, these developments open new use cases around rapid prototyping and iterative development, further establishing openEO as a standard for streamlined EO processing on the platform.

FIGURE 91: Interferometric Coherence using openEO

openEO outlook for 2026

2025 has been a year of significant progress for openEO, both in depth and in breadth. We successfully integrated several new datasets, explored new processes and improved support for ML workflows.

Building on this momentum, in 2026, we will focus on making openEO even more user-friendly and the optimal choice for analysing EO datasets. A key priority will be the integration of recently released Copernicus Land Monitoring Service (CLMS) datasets. CLMS launched its new products from its Land Cover and Forest Monitoring (LCFM) suite in summer 2025, and in 2026, we aim to make these directly loadable as data cubes in openEO. It will allow users to combine the existing openEO processes for seamless analysis.

The team is also actively exploring how AI tools, such as an agentic setup, can best support users in creating and running openEO workflows. With this feature, we aim to make openEO more approachable for beginners and more efficient for experienced users.

In response to one of the most requested features from the community, a new version of the openEO QGIS plugin will be released in early 2026. Maintenance and plugin adaptation will be among the priorities this year.

Moreover, Machine learning support will remain an active area of development in 2026, as the team continues to refine and expand capabilities to support operational projects. Furthermore, optimising existing processes and exploring new ones will always be the team‘s highest priority, ensuring the quality and usefulness of the API for the open-science community.



Copernicus Sentinel data 2025: Noordwijk in the Netherlands

Usage statistics

The target audience for openEO users encompasses individual data scientists and researchers to software developers and engineers, operating in a wide range of different thematic areas. The statistics shown here represent jobs submitted via the openEO API, which can range from single-pixel processing to continental-scale processing and everything in between. Within the free-tier credit range, a typical use case is applying models and algorithms on a smaller, local scale using batch jobs. Only after thorough finetuning and iterations to their models, scale-up is typically done in larger-scale projects. On average, openEO users consume 1.6 million credits per month.

Usage statistics for all request types in openEO show a steady increase from January 2025 onwards. The increase seems to continue at a relatively constant rate in the first months of 2024, with expected seasonal variations for this type of service.

As the service is relatively new, there is not yet a large amount of repeated usage from operational processing workflows. Most organisations need time to adopt these new technologies in their projects and usually start on a smaller scale.

In 2025, openEO reached a significant milestone in community growth, with the number of unique users increasing to 4,650, compared to 2,100 in 2024. This strong year-on-year growth — more than doubling the user base — reflects the rapidly expanding adoption of openEO across the Earth observation and geospatial communities.

Figure 92 shows the evolution over time of batch jobs and total requests leading to an average of 52K batch jobs per month. Batch jobs are used for heavier work, such as larger regions of interest, longer time series and more intensive processing. The total number of requests gives a general indication of usage but is not necessarily comparable across different types of services. In openEO, most work is performed via batch jobs, which require only a limited number of requests to run.

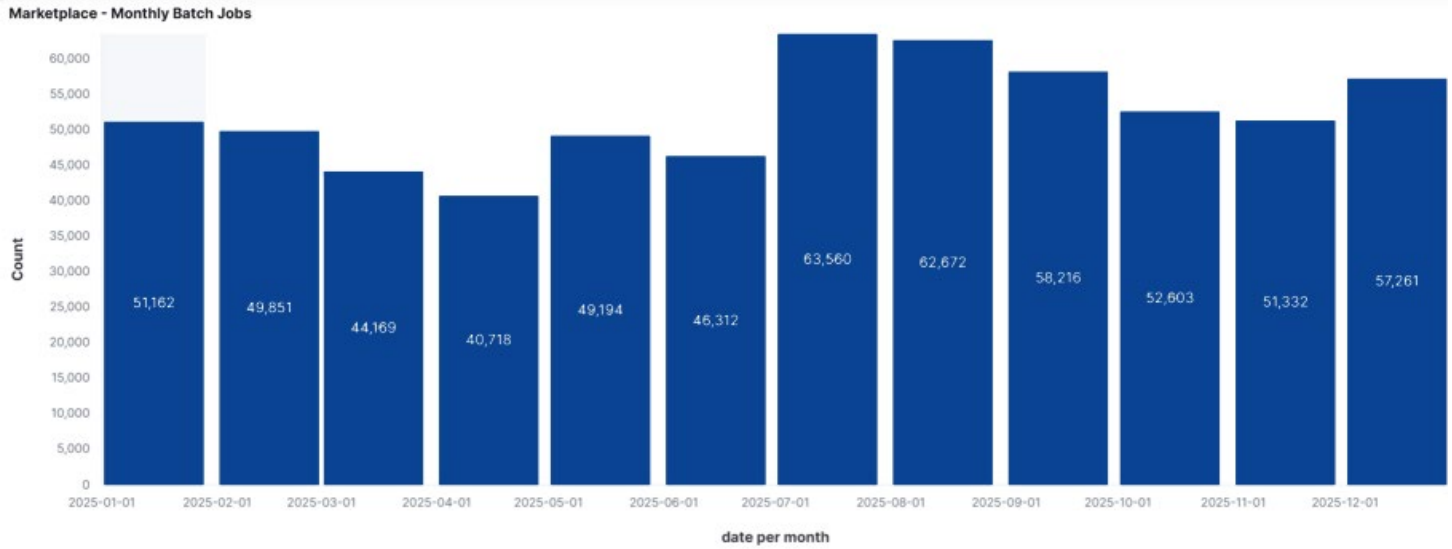


FIGURE 92: Trend of monthly batch jobs in 2025

7.2.3. Direct download vs streamlined access

In 2025, the CDSE delivered a total of 242.52 PB across all access channels combined, of which 178.98 PB (73.8%) was served through direct download and 63.53 PB (26.2%) through streamlined interfaces, primarily Sentinel Hub and openEO. Although direct download remained the primary access method by a significant margin, the share of the streamlined channel grew substantially over the course of the year, indicating a fundamental change in the way users engage with the platform. (Figure 93)

Streamlined access opened the year accounting for 22.5% of the total monthly volume in January – the lowest share recorded in 2025. From this starting point, the proportion increased steadily throughout the first half of the year, reaching 25.8% in June. The most significant increase occurred in July, when the proportion jumped to 29.2%, coinciding with the launch of the synchronous openEO backend and its integration into the Copernicus Browser. This level broadly held throughout the second half of the year, with the share fluctuating between 26.0% and 28.4%, before closing the year at its highest point of 29.8% in December. In absolute terms, the monthly streamlined volume almost doubled between January (4.13 PB) and December (7.98 PB), marking a 93% increase within a single calendar year. (Figure 93)

These findings are consistent with the underlying platform dynamics outlined in Section 7.2. The growing uptake of streamlined access reflects the increasing size of the Sentinel Hub user base, which surpassed 320,000 in 2025, as well as the rapid adoption of openEO workflows, particularly since the browser integration. Assuming this trajectory is maintained, streamlined access is on course to account for approximately 30% or more of total CDSE data delivery volume in 2026. (Figure 93)

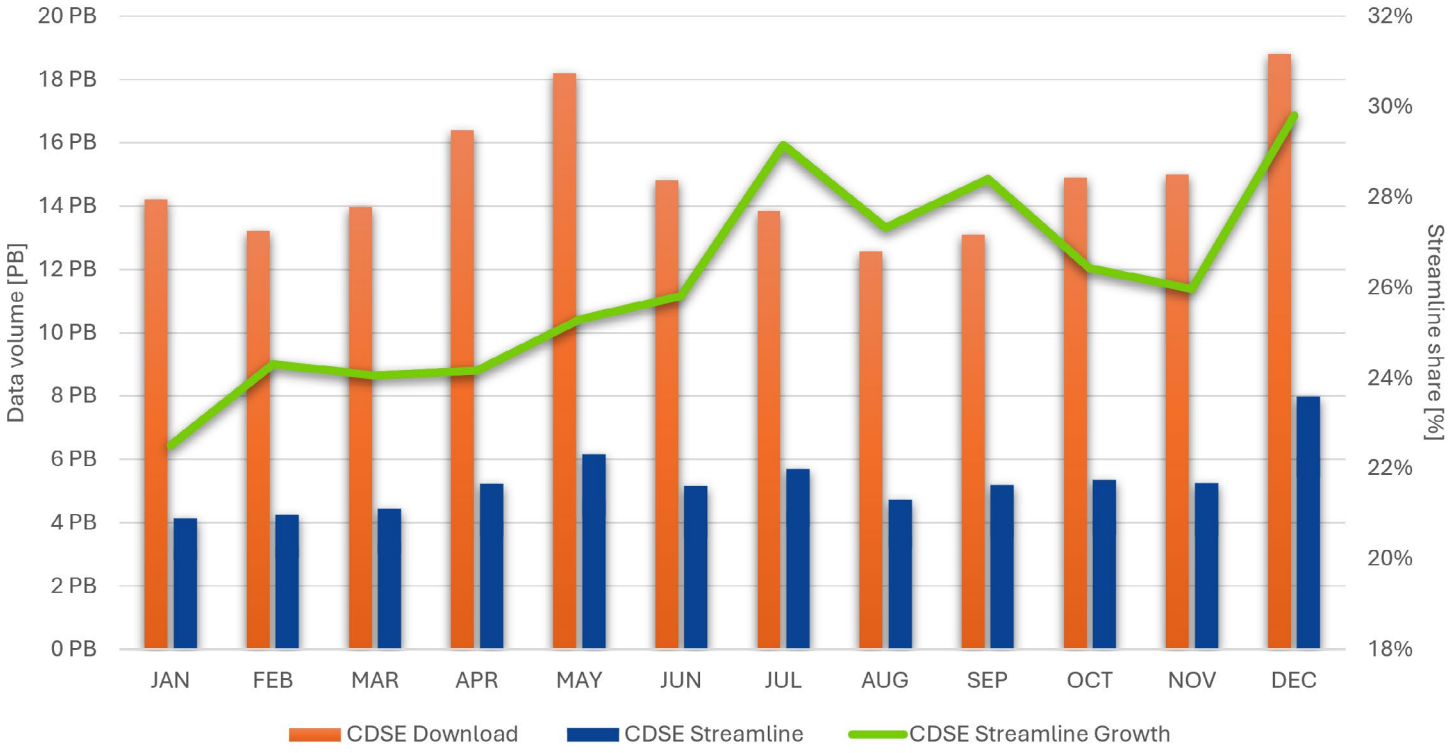


FIGURE 93: Monthly CDSE data access volume in 2025: direct download vs. streamlined access [PB] and streamline share growth [%]

8 USER ACTIVITY

In the previous sections we presented the number of registered users, related data download and service usage. In this section, we present a more detailed analysis of user activities and trends in service usage.

8.1. Visitor

Throughout 2025, the Copernicus Browser welcomed 5.9 million visitors, generating a total of 22 million views. This represents a massive surge in engagement, nearly tripling the 8.1 million views recorded in 2024. Figure 94 clearly shows the steady increase in activity as a growing global community discovers CDSE, utilizing Copernicus Browser for both raw data downloads and streamlined data access. Notably, every single month in 2025 outperformed the peak usage months of 2024. Since March, activity has remained consistently high at approximately 2 million views per month, with only a marginal seasonal dip during the summer (June – August).

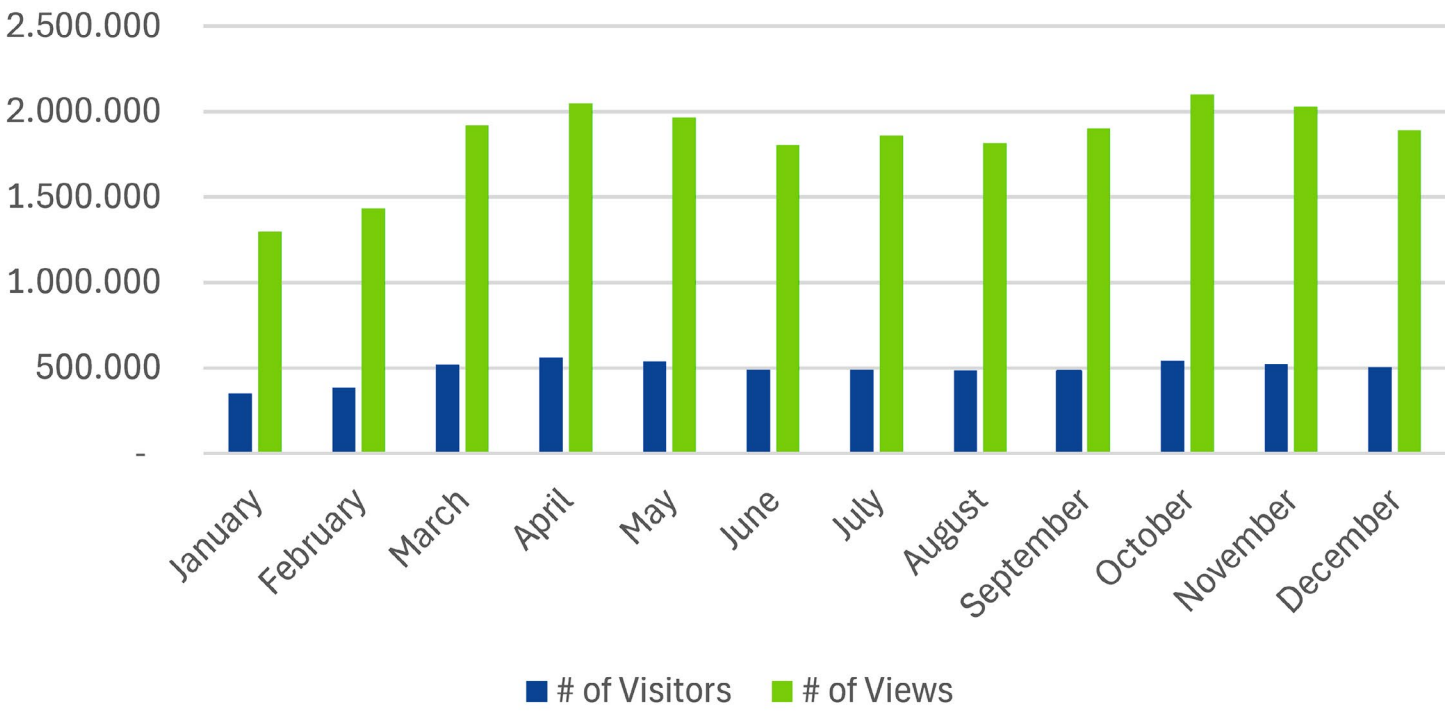


FIGURE 94: Growth of Copernicus Browser visitors and views in 2025

[1] A visitor is defined as a unique individual who visits the Copernicus Browser within a 24-hour period. To prioritize user privacy, the analytics service resets visitor identification daily.

Figure 95 breaks down the visitors in Copernicus Browser by continent. Europe provided the highest number of users each month, with clear peaks in March and April (with April being the strongest month at almost 250k visitors). Overall, user growth is most prominent for Asia, which almost doubled its user count from the start of the year until the end. All six continents (with Antarctica grouped with South America) saw growth from the start of the year to the finish.

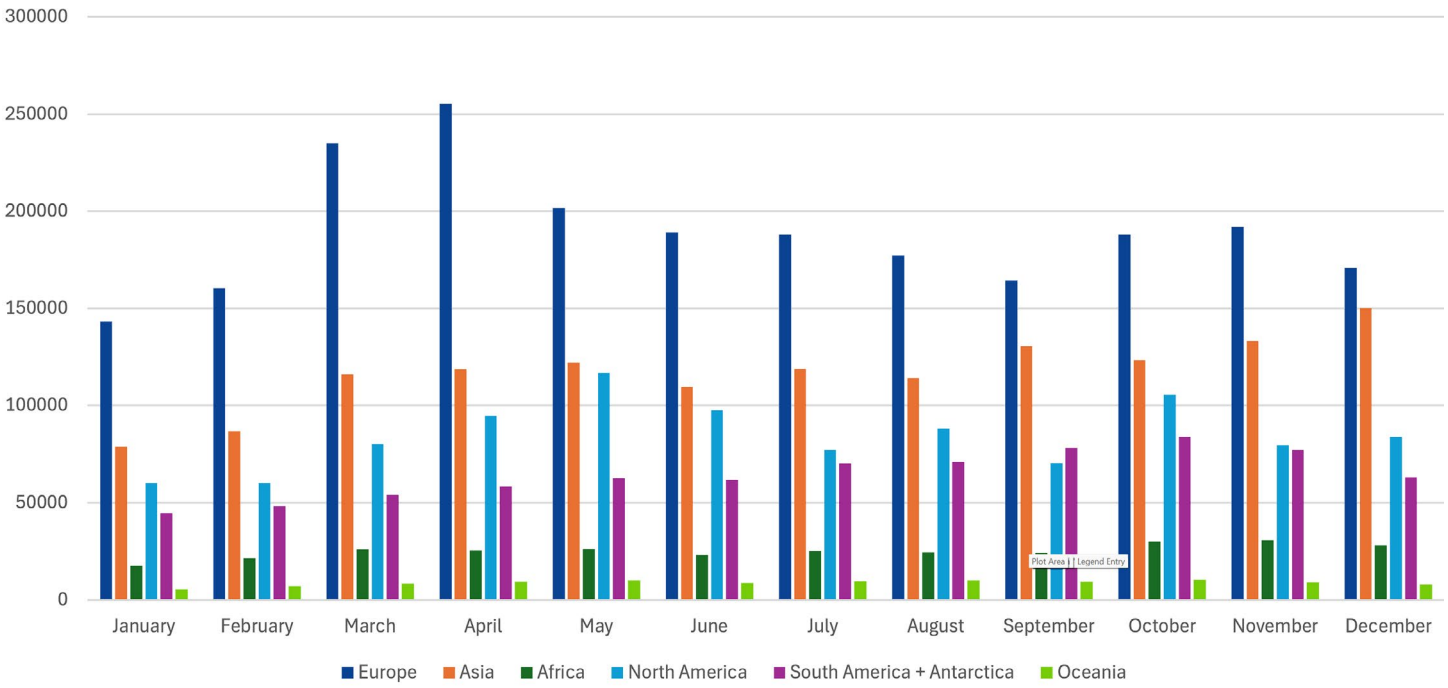


FIGURE 95: Trend of visitors per continent and per month in 2025



Copernicus Sentinel data 2025: Meteliu Regional Park in Lithuania

Figure 96 illustrates that the largest regional share of Copernicus Browser users originates from Europe, accounting for 39% of total traffic. This significant presence underscores the high level of acceptance and the clear value that European users find in the application. When analyzing the distribution within Europe, several nations stand out with more than 100,000 users each. While this group naturally includes larger countries such as France, Germany, Italy, Spain, and the United Kingdom, the strong engagement from smaller nations like Finland and Norway is particularly noteworthy. Such high levels of activity in these regions reflect a strong national awareness and a deep integration of Copernicus services into their digital and scientific workflows.

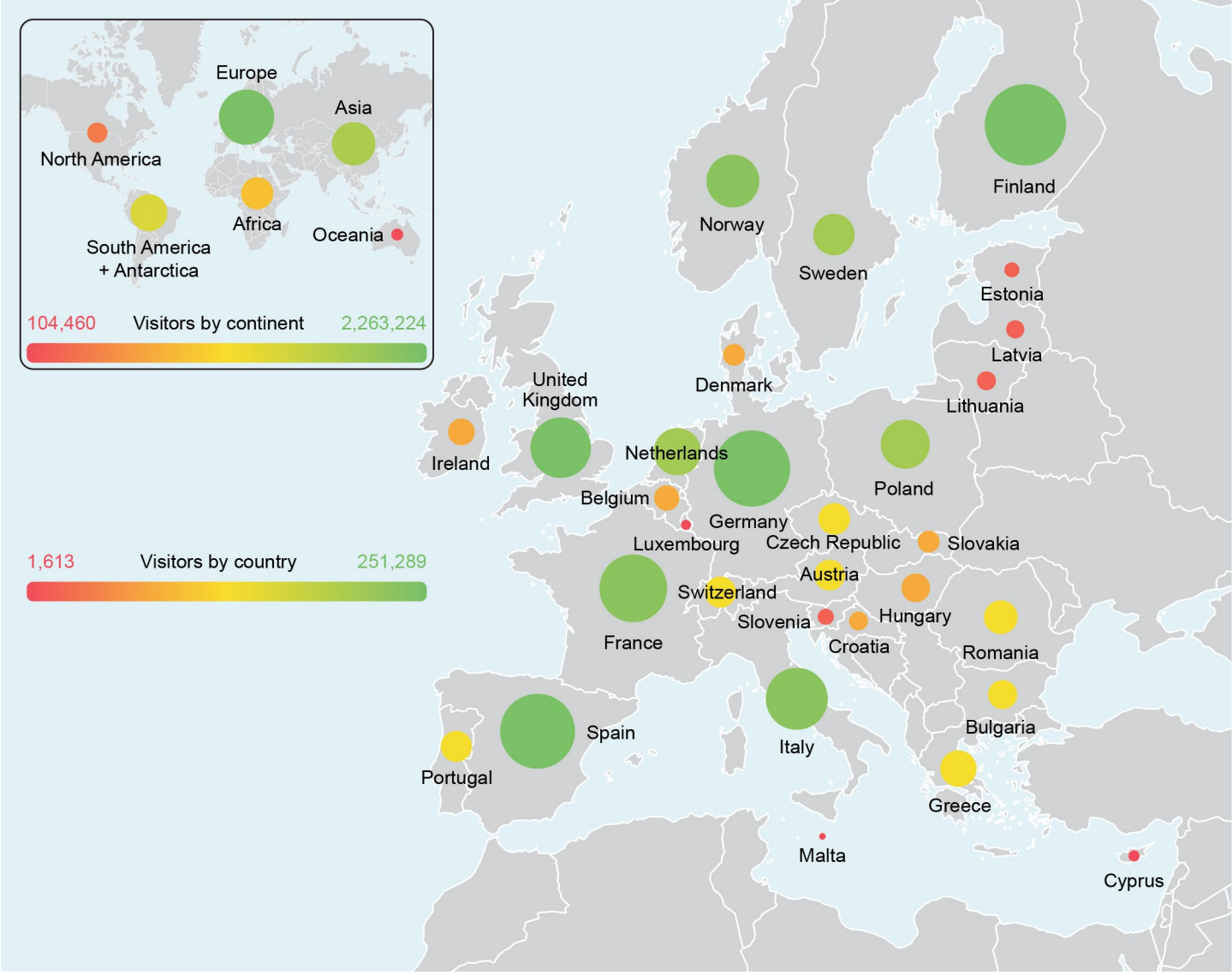


FIGURE 96: Total Copernicus Browser visitors per EU-ESA Member States and continents in 2025

8.2. User download profiles

This section provides an overview of the user download profile, showing how often users retrieved Sentinel mission data in 2025. By categorizing users according to the number of downloads, the analysis reveals different patterns of data access and engagement across missions, as well as the distribution of users within each category range. Table 31 summarizes the number of user profiles grouped by mission and download range. Each range corresponds to the number of times a single user downloaded a data package during the year. The distribution covers a wide spectrum of user activity, ranging from occasional users (1–10 downloads) and moderately active users (10–100 and 100–1,000 downloads) to the most intensive users (over 1,000 downloads).

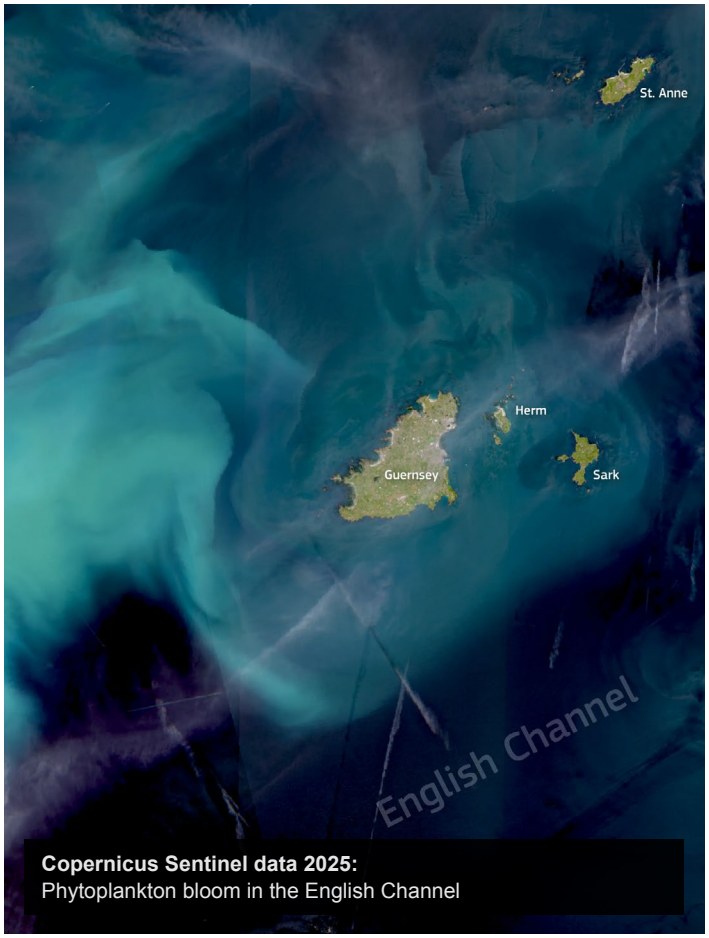
A total of 200,707 unique user download profiles associated with Sentinel missions were recorded in 2025. As in previous years, Sentinel-2 was by far the most accessed mission on the platform. It recorded 152,567 unique users downloading the data, representing 76% of all users across all missions, compared to 51% in 2024. The increase is particularly evident at the higher end of the download ranges: the 100–1,000 range reached 75,567 users (+27% year-on-year), and the 1,000+ range accounted for to 39,045 users, a 59% increase compared to 2024. These numbers leave little to no doubt that Sentinel-2 has become the backbone of operational Earth Observation workflows for a large and growing share of the CDSE user community.

Examining the overall distribution, the 100–1,000 download range was the largest category in 2025, covering 91,922 user profiles and accounting for 45.80% of all user profiles. This indicates how usage patterns have matured: fewer users are simply exploring the platform, and more are accessing data systematically and consistently.

Sentinel-1 recorded a particularly strong year. The 1,000+ range increased by 71.69%, reaching 7,750 users, the highest growth rate observed across all missions and download categories in that year. The 100–1,000 range increased by 16.50%, while the 10–100 range grew by 8.09%. The slight change in the 1–10 range (+0.36%) is perhaps a positive sign, indicating that users who previously accessed Sentinel-1 data only occasionally are now doing so more regularly. Taken together, these figures point to an increasingly active community of radar data users, likely driven by operational monitoring applications.

Sentinel-3 maintained a stable and steady profile throughout the year, with consistent growth across all ranges – between 8.5% and 10.5%. This consistent, low-variation pattern is characteristic of a well-established specialist user base that accesses the data predictably and methodically.

Sentinel-5P shows a different pattern to the other Sentinel missions. Following an expansion period, the number of users fell across three of the four download ranges in 2025. The most notable decrease is seen in the 1,000+ category (-16.5%) and the 100–1,000 range (-5.7%). The 10–100 range also declined slightly (-5.3%). The 1–10 range was the only exception, growing by 23.0%. While it is difficult to pinpoint a single cause, this shift may reflect changing research priorities, the conclusion of specific projects that previously drove high-volume access, or a natural consolidation of the user base around more targeted usage.



Copernicus Sentinel data 2025:
Phytoplankton bloom in the English Channel

Looking at the broader picture, the total number of unique user profiles across all missions has increased. This growth was concentrated in the higher download ranges, which is a meaningful indicator of platform usage patterns.

Compared with the 2022 data access report, prior to the introduction of CDSE, the user download profile has changed significantly. A lower number of users are downloading individual products, which may indicate a reduced need for single product downloads to local environments, potentially linked to the use of the Copernicus Browser for basic data visualisation. At the same time, an increase is observed in users downloading larger numbers of products, suggesting a growing integration of Sentinel data into operational workflows and processing chains.

While trends differ slightly between individual missions, the overall direction indicates a growing, diversifying and increasingly engaged CDSE user community, which is shifting from individual product access towards more sustained and operational use of Sentinel data within downstream applications. (Figure 97)

Range	Collection			
	S-1	S-2	S-3	S-5P
1-10	1,121	2,488	756	2,723
10-100	13,282	35,467	3,161	811
100-1,000	13,770	75,567	2,186	399
1,000+	7,750	39,045	1,520	661

TABLE 31: User download profile January-December 2025.

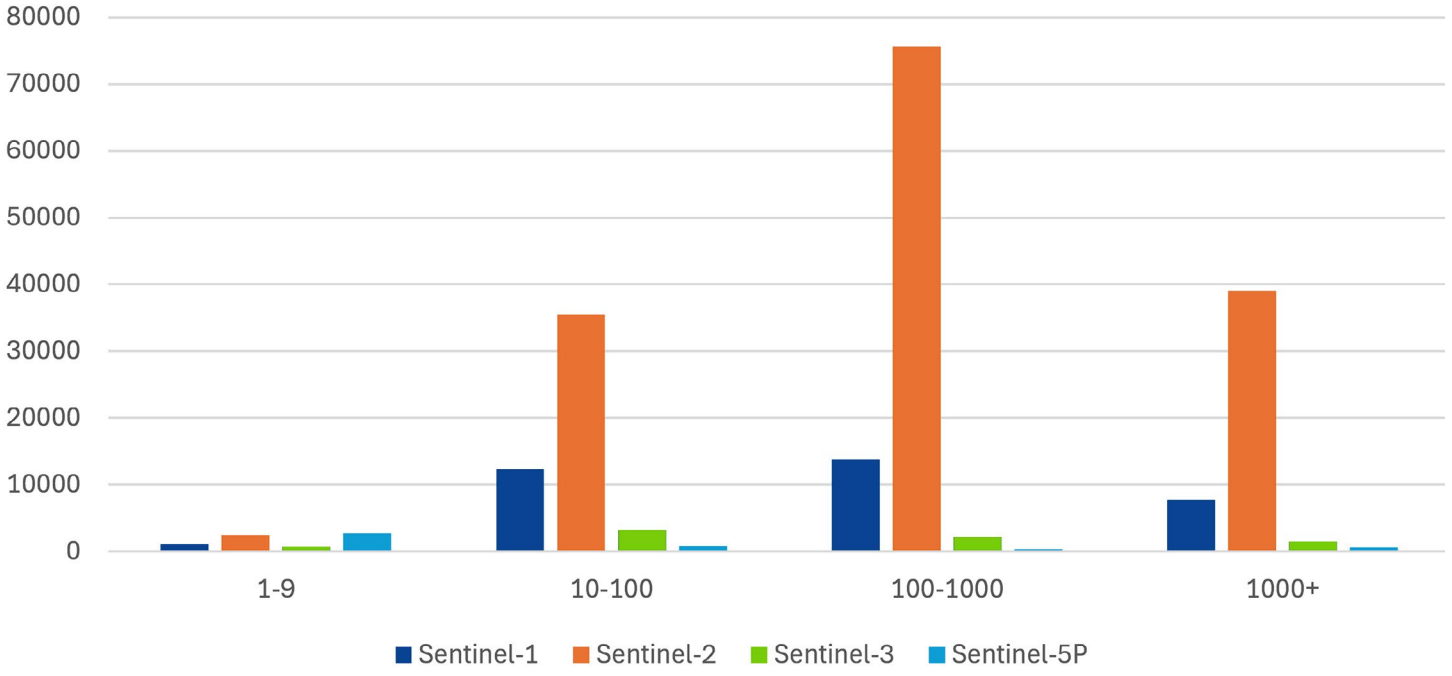


FIGURE 97: User download profile January-December 2025.

8.3. Monthly active users

Monthly active user statistics provide an overview of the number of unique users engaged in downloading Sentinel mission data throughout the year. Figure 98 presents the monthly count of active users per mission and illustrates access trends and fluctuations over the year that can be linked to both operational cycles and user preferences. Active users are defined as those who downloaded at least one user-level data from a given mission in a particular month.

Sentinel-2 continued to be the most widely used mission in 2025, consistently drawing strong engagement throughout the year. The monthly average reached 22,729 active users – a 26% increase on the 2024 average of around 18,000 users. Peak activity was recorded in November (28,509 users), followed closely by October (28,160 users), while the summer months, particularly August, saw a temporary dip in activity, which recovered in autumn. Year-on-year growth was positive in every month, ranging from approximately 16% in August to over 41% in April.

Sentinel-1 followed a similar overall trajectory, with monthly active user counts ranging from 4,287 in August to 6,587 in November. Figures remained broadly in line with 2024, growing at a more modest pace – between roughly 8% and 45% across all months. The year-on-year growth for Sentinel-1 averaged around 20%, reflecting the steady expansion of activity among radar data users.

Both Sentinel-3 and Sentinel-5P followed a broadly similar pattern for the rest of the year, with stable but slightly declining activity compared to 2024. Monthly figures remained within relatively narrow ranges, and most year-on-year changes were negative. Sentinel-3 typically had between 1,021 and 1,376 active users, while Sentinel-5P fluctuated between 599 and 833. In both cases, April and December were a positive exception with Sentinel-3 gains of 10.53% and 7.55% respectively, and Sentinel-5P increases of 19.90% and 12.26% respectively. The overall picture for these two missions – a well-established, specialist user base with limited growth dynamics – aligns with the consolidation trend already observed in the download profile analysis, suggesting that usage may have reached a degree of maturity, at least for the time being.

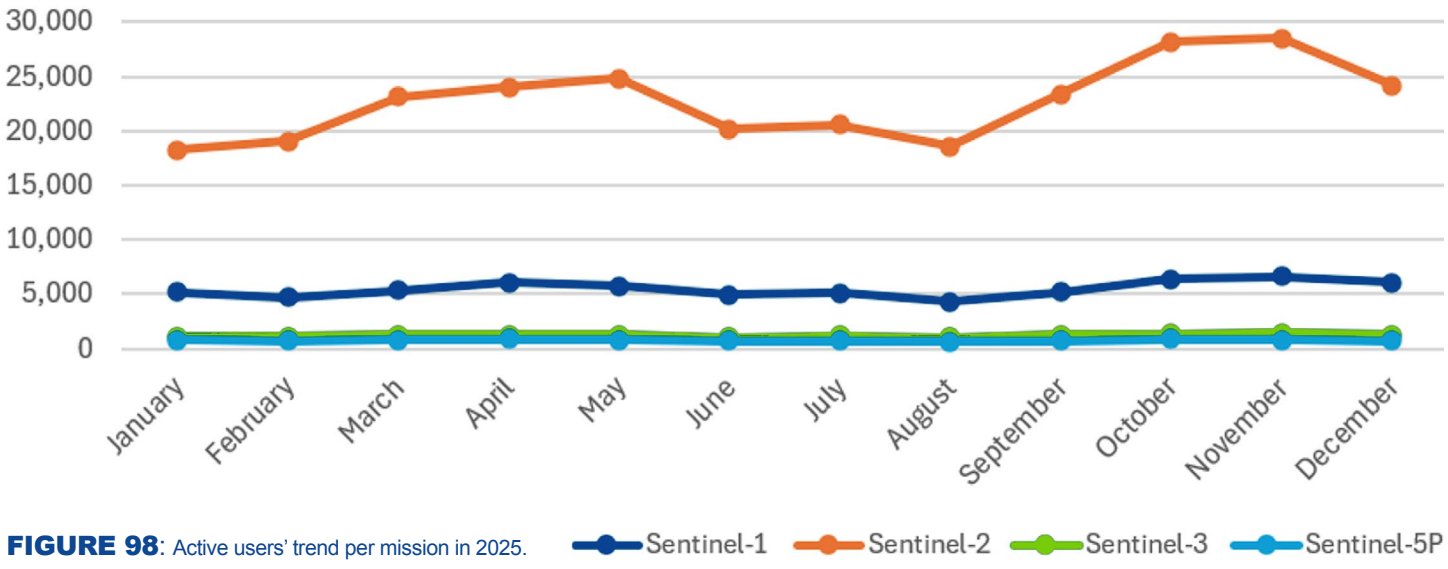


FIGURE 98: Active users' trend per mission in 2025.

Months from March to May showed elevated activity across all four missions compared to the first two months of the year. This elevated activity in April and May coincided with several significant events that took place in March 2025. Most notably, ESA announced that initial access to Sentinel-1C data would be available on the CDSE starting from 26th March, following the satellite's launch in December 2024. Opening up Sentinel-1C user data, even during the preliminary commissioning phase, undoubtedly triggered a surge in first-time downloads and exploratory access from users keen to work with the new sensor. At the same time, a full mission reprocessing campaign for Sentinel-3 OLCI Level-2 Land products and a broader initiative encouraging third-party providers to onboard their services to CDSE were both launched in late March, further amplifying platform engagement.

8.4. Monthly users per continent and country

This chapter undertakes an analysis of the geographical distribution of active users in 2025, with a focus on the identification of usage patterns across continents and countries. The collected statistics are based on self-declared information provided by users during the registration phase, which includes details such as country, thematic domain, and intended data usage. Since this information is not actively verified, the accuracy of the presented data depends on user input. Additionally, it is important to note that the number of active users does not reflect the volume of data downloaded. For example, a user who downloaded one data package is counted the same as a user who downloaded thousands of packages. It is also obvious to state that the number of users from different regions is also dependent on the population size (notably, for example, the population of Asia being over six times that of Europe).

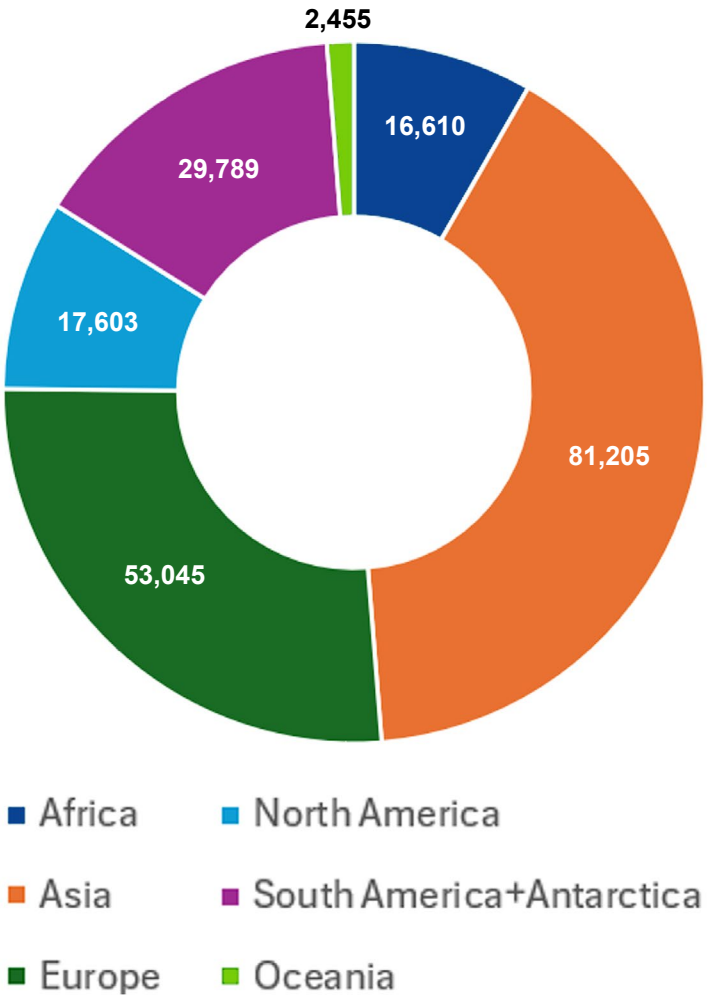


FIGURE 99: CDSE active users per continent for 2025.

In 2025, the global reach of the CDSE platform continued to expand, with user numbers growing across all continents – however at a more moderate pace than the surge seen in 2024. Asia retained its position as the most active region, with 81,205 users – a 31% increase on 2024 and a continuation of the strong upward trend that has characterized this region in recent years. Europe remained the second-largest contributor, adding 23% more users to reach a total of 53,045. South America and Antarctica followed behind with 29,789 users, marking a 28% increase. Africa also posted solid growth, climbing from 11,587 to 16,610 users (43% increase) – the highest relative increase among all continents in 2025. North America reached 17,603 users (17% increase), while Oceania, though still the smallest region by user count, grew by 34% to reach 2,455 users (Figure 99). Although the year-on-year growth rates were generally lower than in 2024, consistent expansion across every continent confirmed that the CDSE's global footprint was deepening and reaching established and emerging Earth observation communities worldwide.

At the global country level, China remained the leading country in terms of active users across all Sentinel missions in 2025, continuing its dominance from previous years. For Sentinel-1 particularly, China registered 6,592 users, holding its top position for another year. India and Indonesia also maintained their respective second and third places (no change). The United States held steady in fourth place (no change). Italy climbed one position to fifth place (+1 rank), swapping with Germany, which dropped to sixth (-1 rank). France remained in seventh place (no change). Japan moved up two spots to eighth place (+2 ranks), while Spain dropped one spot to ninth (-1 rank). The United Kingdom entered the top 10, climbing one spot to tenth place (+1 rank). (Table 32)

In the Sentinel-2 rankings, China again led with 16,248 users, but the most eye-catching shift was Indonesia's rise to second place (+2 ranks), overtaking both India and Brazil, who dropped to third and fourth place respectively (-1 rank each). The United States held onto fifth position. The standout mover in this ranking was Colombia, climbing three places to sixth (+3 ranks) – it's strongest showing to date. Germany maintained its seventh position (no change), while Spain dropped two spots to eighth (-2 ranks) and Italy dropped one spot to ninth (-1 rank). France closed out the top 10, climbing one position to tenth place (+1 rank). (Table 33)

In the global ranking for Sentinel-3, China retained the top spot with 1,236 users. The most significant change was the United States dropping five places to seventh (-5 ranks), which was the sharpest single-mission ranking decline among all countries and missions in 2025. India and Italy both moved up one position each (+1 rank), to second and third respectively. Spain climbed two spots to fourth (+2 ranks), while Germany held steady in fifth place (no change) and France climbed one spot to sixth (+1 rank). Indonesia continued its upward trend across missions, rising two places to eighth (+2 ranks), followed by the United Kingdom which dropped one spot to ninth (-1 rank) and Brazil which also dropped one spot to tenth (-1 rank). (Table 34)

The Sentinel-5P satellite displayed broadly similar dynamics. China remained in first place with 822 users, while India climbed one place to second (+1 rank) and Italy rose to third (+1 rank). The United States dropped two places to fourth (-2 ranks), mirroring the downward trend observed in Sentinel-3, while France and the United Kingdom made the most notable gains (+2 ranks each), jumping two places to fifth and seventh accordingly. Germany slipped one place to sixth (-1 rank). Indonesia slipped two places to eighth (-2 ranks), followed by Spain which climbed three places to ninth (+3 ranks), and Pakistan, which entered the ranking in tenth place (+4 ranks). (Table 35)

Sentinel-1 Global			
Country	**Active Users 2025**	**Ranking 2024**	**Change**
China	6,592	1	0
India	3,354	2	0
Indonesia	2,004	3	0
United States	1,606	4	0
Italy	1,147	6	1
Germany	1,120	5	-1
France	996	7	0
Japan	789	10	+2
Spain	717	8	-1
United Kingdom	717	11	+1

TABLE 32: Top 10 countries in the world by number of active Sentinel-1 users, and comparison of rankings in 2025 versus 2024.

Sentinel-2 Global			
Country	**Active Users 2025**	**Ranking 2024**	**Change**
China	16,248	1	0
Indonesia	11,411	4	+2
India	10,888	2	-1
Brazil	10,061	3	-1
United States	6,408	5	0
Colombia	4,810	9	+3
Germany	4,766	7	0
Spain	4,692	6	-2
Italy	4,299	8	-1
France	3,580	10	+1

TABLE 33: Top 10 countries in the world by number of active Sentinel-2 users, and comparison of rankings in 2025 versus 2024.

Sentinel-3 Global			
Country	**Active Users 2025**	**Ranking 2024**	**Change**
China	1,236	1	0
India	487	3	+1
Italy	483	4	+1
Spain	419	6	+2
Germany	361	5	0
France	343	7	+1
United States	337	2	-5
Indonesia	317	10	+2
United Kingdom	289	8	-1
Brazil	182	9	-1

TABLE 34: Top 10 countries in the world by number of active Sentinel-3 users, and comparison of rankings in 2025 versus 2024.

Sentinel-5P Global			
Country	**Active Users 2025**	**Ranking 2024**	**Change**
China	822	1	0
India	431	3	+1
Italy	257	4	+1
United States	233	2	-2
France	154	7	+2
Germany	126	5	-1
United Kingdom	118	9	+2
Indonesia	113	6	-2
Spain	93	12	+3
Pakistan	92	14	+4

TABLE 35: Top 10 countries in the world by number of active Sentinel-5P users, and comparison of rankings in 2025 versus 2024.

In the context of ESA/EU countries, Italy topped the Sentinel-1 rankings in 2025 with 1,336 users (+1 rank), overtaking Germany (1,127, -1 rank). France (1,104, no change), Spain (780, no change), and the United Kingdom (719, no change) maintained their positions in the top five. The remaining positions were remarkably stable, with Poland, Canada, Romania, Greece, and the Netherlands all holding their 2024 rankings unchanged. (Table 36)

For Sentinel-2, the most notable change was Germany reclaiming the top spot with 4,766 users (+1 rank), displacing Spain, which dropped to second place (4,692, -1 rank). Italy and France held their third and fourth positions respectively (no change), as did Poland, the United Kingdom, Canada, Greece, and the Netherlands. Portugal rounded out the ranking in tenth place (no change). (Table 37)

In the Sentinel-3 standings, Italy retained the lead (483, no change), while Spain climbed one place to second (419, +1 rank), displacing Germany, which dropped to third place (361, -1 rank). France, the United Kingdom, and Poland held their fourth, fifth, and sixth positions respectively (no change). Greece and Canada also held steady in seventh and eighth place (no change). A spectacular shift occurred at the bottom of the table, where Estonia surged five places to ninth (+5 ranks), while Portugal entered the top 10 in tenth place (+1 rank). (Table 38)

For Sentinel-5P, Italy remained the leading ESA/EU country with 263 users (no change). France climbed to second place (+1 rank), while Germany dropped one spot to third (-1 rank). The United Kingdom held fourth (no change) and Spain moved up two positions to fifth (106, +2 ranks), displacing the Netherlands, which dropped one spot to sixth (-1 rank). Poland dropped one place to seventh (-1 rank), while Greece held steady in eighth (no change). The lower end of the ranking saw a major breakout from the Czech Republic, which jumped eight places to ninth (+8 ranks), while Belgium entered the top 10 in tenth place (+1 rank). (Table 39)

In summary, the geographical breakdown for 2025 reaffirms the strong presence of Asian countries, particularly China and India, in accessing Copernicus data. Meanwhile, Europe continues to contribute consistently across all missions. Within the ESA/EU group, rankings remained relatively stable this year, with most changes limited to minor shifts – reflecting a mature and well-established regional user base, punctuated by a few notable surges from smaller member states.

Sentinel-1 EU/ESA			
Country	**Active Users 2025**	**Ranking 2024**	**Change**
Italy	1,336	2	+1
Germany	1,127	1	-1
France	1104	3	0
Spain	780	4	0
United Kingdom	719	5	0
Poland	664	6	0
Canada	466	7	0
Romania	438	8	0
Greece	397	9	0
Netherlands	233	10	0

TABLE 36: Top 10 ESA/EU countries by number of active Sentinel-1 users, comparing rankings in 2025 versus 2024.

Sentinel-2 EU/ESA			
Country	**Active Users 2025**	**Ranking 2024**	**Change**
Germany	4,766	2	+1
Spain	4,692	1	-1
Italy	4,299	3	0
France	3,580	4	0
Poland	2,834	6	0
United Kingdom	2,608	5	0
Canada	2,322	7	0
Greece	1,384	8	0
Netherlands	1,173	9	0
Portugal	1044	10	0

TABLE 37: Top 10 ESA/EU countries by number of active Sentinel-2 users, comparing rankings in 2025 versus 2024.

Sentinel-3 EU/ESA			
Country	**Active Users 2025**	**Ranking 2024**	**Change**
Italy	483	1	0
Spain	419	3	+1
Germany	361	2	-1
France	343	4	0
United Kingdom	289	5	0
Poland	130	6	0
Greece	111	7	0
Canada	94	8	0
Estonia	89	14	+5
Portugal	74	11	+1

TABLE 38: Top 10 ESA/EU countries by number of active Sentinel-3 users, comparing rankings in 2025 versus 2024.

Sentinel-5P EU/ESA			
Country	**Active Users 2025**	**Ranking 2024**	**Change**
Italy	263	1	0
France	144	3	+1
Germany	121	2	-1
United Kingdom	112	4	0
Spain	106	7	+2
Netherlands	88	5	-1
Poland	59	6	-1
Greece	55	8	0
Czech Republic	46	17	+8
Belgium	40	11	+1

TABLE 39: Top 10 ESA/EU countries by number of active Sentinel-5P users, comparing rankings in 2025 versus 2024.

8.5. Users per declared uses and thematic domains

This section provides an overview of how CDSE users intend to use Sentinel data, based on self-declared information collected during the user registration process. Upon creating an account, users are prompted to specify their country, a thematic domain, a type of data use, and the type of user or organization. These selections are made from predefined lists containing 17 thematic domains, 8 user/organization types, and 8 usage types. Users are also allowed to update their profile preferences after registration if their scope of interest or professional context changes.

It is important to emphasize that the information provided is not subject to independent verification and reflects only the user's declaration at the time of registration or subsequent update of preferences in the profile. Moreover, each user is allowed to select only one thematic domain and one purpose of data use, even if their work spans multiple domains or purposes. As a result, the statistics in this section may not fully represent the complexity or breadth of real-world data used by individual users or organizations.

Additionally, users who selected „Other" as their thematic domain, type of user, or purpose of data use are excluded from the analyses and visualizations presented in this chapter. While this limitation reduces the statistical representativeness of a small subset of accounts, it ensures consistency in reporting and comparability across defined categories. Despite these constraints, the declared data continues to offer valuable insights into how different sectors and communities around the world engage with Sentinel data.

Thematic domain	active users	active users
Air quality and atmospheric composition	2,525	2%
Arctic policy and polar areas	628	0%
Civil protection and humanitarian aid operations	1,770	1%
Climate Change	16,261	12%
Energy	1,969	1%
Environmental compliance	13,035	10%
Health	639	0%
International development and cooperation	582	0%
Land	48,108	36%
Marine environment, maritime affairs and fisheries	10,062	7%
Migration and home affairs	175	0%
Raw materials	1,304	1%
Research and innovation	34,024	25%
Security	1,076	1%
Tourism	1,144	1%
Transport	948	1%

TABLE 40:
Number and percentage of CDSE active users per thematic domain in 2025.



Copernicus Sentinel data 2025: Port of Rotterdam

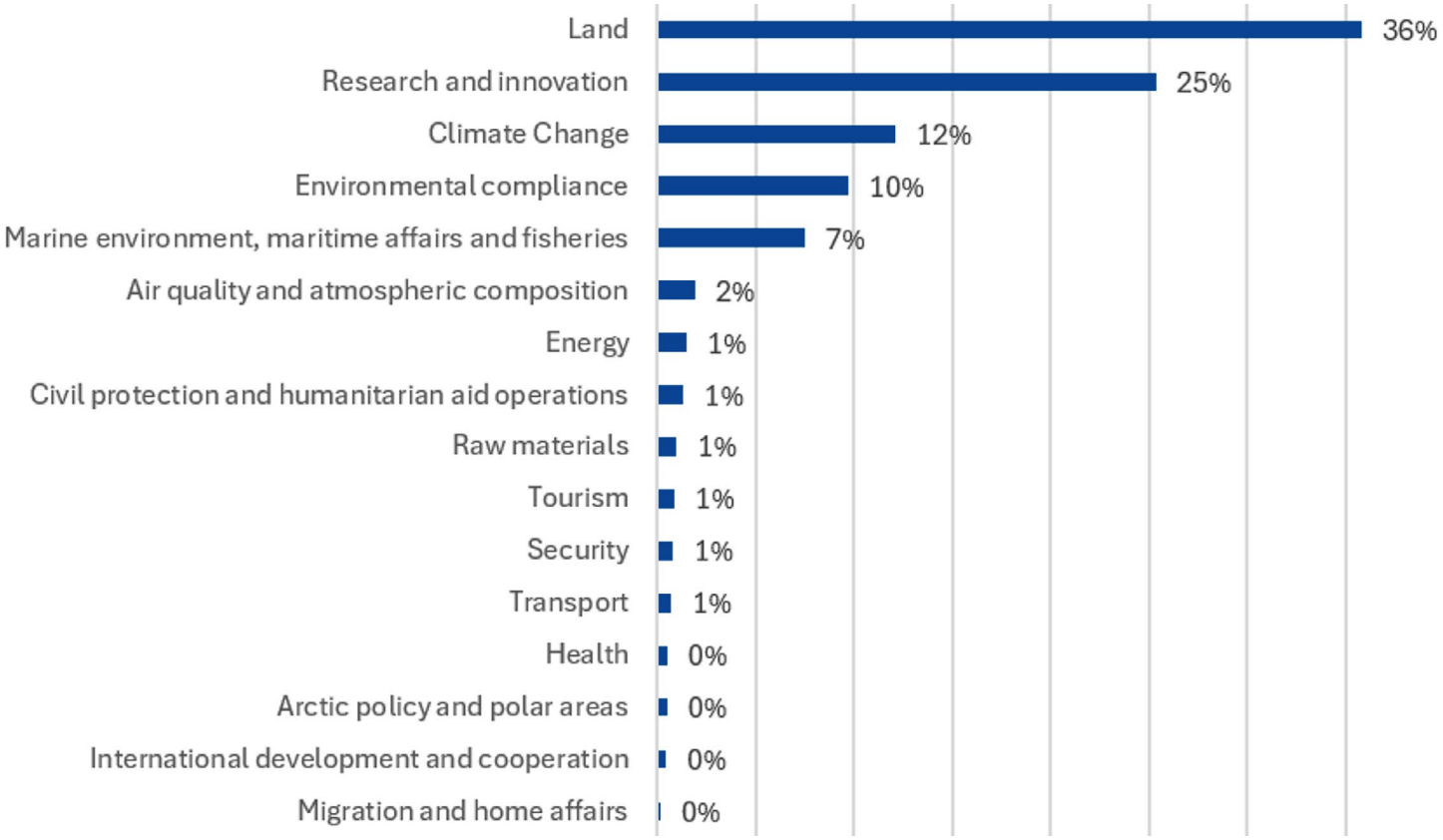


FIGURE 100: Percentage of CDSE active users per thematic domains.

In 2025, the number of active CDSE users continued to grow across all thematic domains, reaching a total of 134,250 – a 25% increase compared to 2024. The top five thematic areas remained unchanged in terms of both composition and ranking: Land (48,108 users, 36%), Research and innovation (34,024 users, 25%), Climate Change (16,261 users, 12%), Environmental compliance (13,035 users, 10%) and the Marine environment, maritime affairs and fisheries domain (10,062 users, 7%). Together, these five areas accounted for 90% of the user base – the same percentage as in 2024 – confirming a continued and stable concentration of user interest around environmental and scientific themes. (Table 41 and Figure 100)

Within the top five, Land recorded the strongest absolute growth, registering 8,296 new users (+21%), followed closely by Research and innovation, which acquired 8,019 new users (+31%). Together, these two domains accounted for over 60% of all new users in 2025, underlining their central role in driving platform growth. (Table 41 and Figure 100)

Further down the ranking, some of the smaller domains achieved impressive results. Tourism grew by 53% year-on-year, the highest relative increase of any category, although it remains one of the smaller communities on the platform. Other categories that recorded strong relative gains include: Raw materials (+45%), Security (+40%), International development and cooperation (+36%), and Transport (+36%). Meanwhile, Energy grew by 32% and moved up one position in the rankings, pushing Civil protection and humanitarian aid operations down one place. Taken together, these figures suggest a gradual expansion of the CDSE user base into areas that have traditionally been on the fringes of Earth observation. At the other end of the spectrum, Migration and home affairs remained the smallest declared domain with just 175 users and a growth rate of only 5%. (Table 41 and Figure 100)

The number of downloads per Sentinel mission within each thematic category provides a complementary view of user activity and reveals some patterns that are not immediately obvious from user counts alone. Overall, the total number of downloads across Sentinel-1, -2, -3, and -5P reached 4.53. billion in 2025 – a 101.29% increase compared to 2024, significantly outpacing the 25% growth in the number of active users and pointing to an intensification of data use across the platform. (Table 42)

Research and innovation once again dominated in absolute terms, generating over 1.96 billion downloads in total, with Sentinel-2 alone accounting for 1.68 billion – a 149% year-on-year increase. Land remained the second largest domain, producing nearly 1.16 billion downloads, led by Sentinel-2 (961 million, +69%). Despite having more users than the research and innovation community, the land community downloaded considerably less data overall, reinforcing the observation from previous years that raw user numbers and data consumption do not always move in step. (Table 41)

Several smaller domains produced download volumes that stood out in relation to the size of their user base. Climate change, for example, represented just 12% of users but generated over 466 million downloads, with particularly striking growth in Sentinel-1 and Sentinel-5P, at +458% and +407%, respectively. This brought the latter to 18.7 million downloads. The Marine environment, maritime affairs and fisheries sectors posted strong gains across Sentinel-2 and Sentinel-3, reaching a combined total of over 385 million downloads. Environmental compliance recorded exceptional growth in Sentinel-3 (+2430%) and Sentinel-2 (+679%), despite accounting for only 10% of user base. (Table 41)

Thematic activity	Sentinel-1	Sentinel-2	Sentinel-3	Sentinel-5P
Air quality and atmospheric composition	899,876	29,232,050	18,082,329	42,913,137
Arctic policy and polar areas	3,291,089	13,161,116	1,762,987	23
Civil protection and humanitarian aid operations	8,815,364	6,724,013	67,271	547
Climate Change	63,855,252	194,697,324	188,957,047	18,677,489
Energy	39,216,468	18,879,649	11,836,460	121,682
Environmental compliance	5,880,476	217,891,188	20,834,738	1,435,415
Health	69,735	4,474,798	486,962	1,665,533
International development and cooperation	1,723,759	4,182,235	695,291	22,719
Land	88,987,543	961,206,236	94,626,272	26,405,763
Marine environment, maritime affairs and fisheries	79,571,858	262,440,695	43,632,280	70,924
Migration and home affairs	31,282	608,594	405	1,420
Raw materials	457,425	12,939,327	152,853	194
Research and innovation	107,063,646	1,677,174,544	182,800,592	20,558,953
Security	3,658,529	18,247,366	3,402	19,678
Tourism	381,678	20,748,136	1,587,580	1042
Transport	479,552	3,879,847	15,619	13,373

TABLE 41: Number of downloads performed for Sentinels -1, -2, -3 and -5P for each thematic domain during 2025.

The 2025 breakdown of active users by declared organization type shows a continued concentration in the two dominant groups, with a slight redistribution compared to the previous year. Research and education organizations remained by far the largest segment, representing 61.3% of all users – a modest drop of 2.18% from 2024 – confirming the central role of the academic and scientific communities on the platform. The number of Natural persons using CDSE for personal interest continued to grow, reaching 23.0% – an increase of 2.85% – suggesting that Earth observation data is gradually finding its way beyond institutional walls. Together, these two groups accounted for 84.3% of all active users, which is broadly in line with the 83.7% recorded a year earlier. The shares of other groups, including public authorities, businesses, charities, and NGOs, changed by less than 1 percentage point in either direction. (Figure 101)

In terms of downloads, the total across all user types reached 9.62 billion in 2025 – an increase of 46.2% year-on-year, a notably stronger acceleration compared to the growth recorded in 2024. The distribution across user groups shifted in a few meaningful ways. International public organizations remained the largest contributor, accounting for 43.7% of all downloads – an increase of 12.7% – largely driven by increased activity from the JRC Big Data Analytics Platform (JRC BDAP), the Earth Observation Data Centre for Water Resources Monitoring GmbH (EODC), the National Centre for Space Studies (CNES) and the Copernicus Australasia Regional Data Hub. These organizations combined share within the group increased by almost 6.8%. Research and education organizations placed second, accounting for almost 32.0% of downloads – an increase of 8.9% – largely due to a sharp rise in downloads by the German Aerospace Center (DLR), which alone accounted for an increase of 6.18% within the group. Together, these two groups accounted for over 75% of all downloads on the platform. (Figure 101)

The Business/Commercial/Professional – Non-SME group saw the sharpest shift in the opposite direction, with their share of total downloads falling by 18.5% to just 2.55%. This was mostly due to two high-volume users that were prominent in 2024: Amazon Web Services (AWS) and Google Earth Engine together accounted for 18.58% of all downloads that year, and their combined share dropped by 18.31% in 2025. SMEs remained relatively stable at 12.06%, while Natural persons and Charities and Public authorities were modest contributors at 4.36% and 3.47%, respectively. Sentinel-2 continued to dominate across all groups, accounting for 83.1% of all downloads – a slight decrease from 86.1% in 2024, suggesting a gradual diversification towards other missions. (Figure 101)

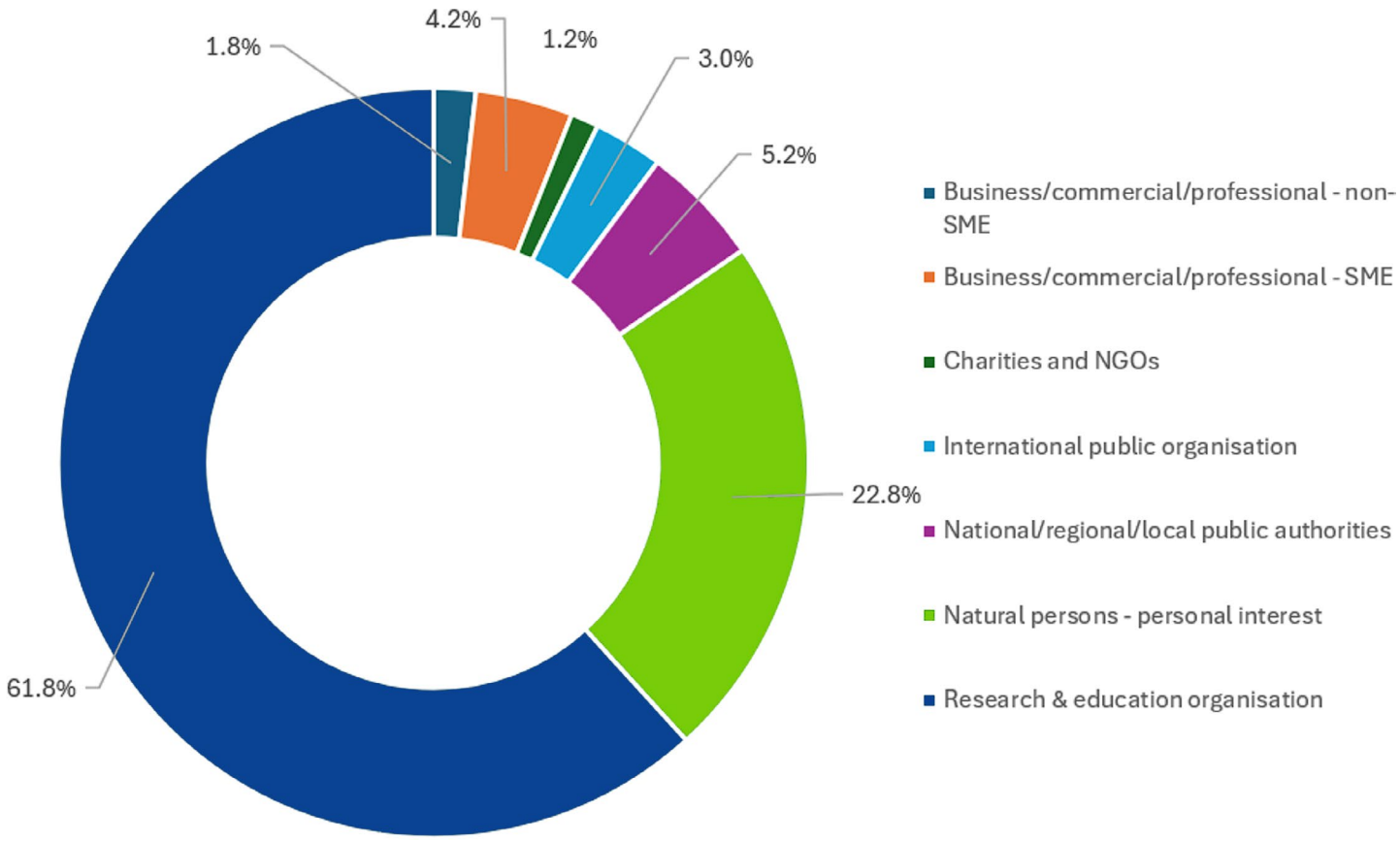


FIGURE 101: Percentage of CDSE active users per user type in 2025.

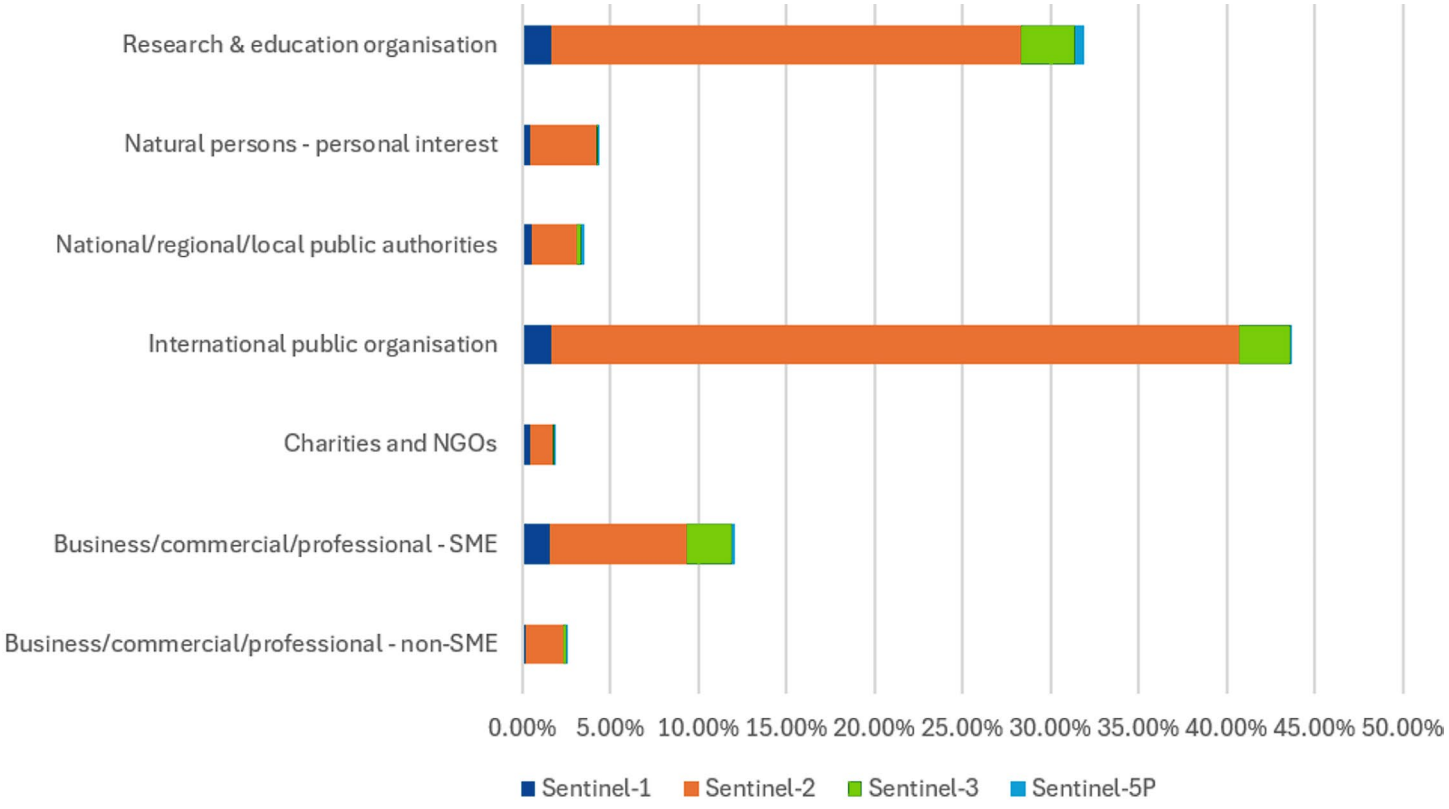


FIGURE 102: Percentage of downloads performed for Sentinels 1, 2, 3, and 5P for each type of user during 2025.

In 2025, the distribution of active CDSE users by purpose continued to reflect the platform's strong educational and research focus. Users who declared education as their primary purpose made up just over half of the user base at 50.25%, which was an increase of 1.46% compared to 2024. Research remained the second largest group at 33.17%, slipping by 1.90%. Together, these two categories accounted for 83.42% of all active users, which was broadly in line with the 84% recorded the previous year. The proportion of Natural persons using data for non-commercial purposes grew by 0.69% to 6.35%, while the public sector held steady at 5.95%. The business sector and Charities and NGOs remained marginal at 3.18% and 0.79%, respectively. (Table 42 and Figure 103)

As is often the case, the download figures tell a somewhat different story. The total number of downloads across all declared purposes of use increased by over 128% year-on-year, which is significantly higher than the growth rate in user numbers. Research dominated with 64.18% of all downloads (over 3.1 billion), an increase of around 3.09 percentage points compared to 2024. This was largely driven by Sentinel-2, which accounted for 53.62% of all downloads across all groups. The business sector maintained its position at 14.81% (716 million downloads), with Sentinel-2 once again being the primary driver. The public sector increased its share to 9.55% (+2.45 percentage points for Sentinel-2 alone), reaching almost 461 million downloads in total. Despite representing half of all active users, education accounted for just 6.98% of downloads – a slight decline across most missions – once again illustrating that the largest user communities are not necessarily the heaviest consumers of data. Charities and NGOs reached 2.92%, while downloads for Natural person for non-commercial purposes and Media and public relations purposes remained at 1.53% and 0.02%, respectively. (Figure 104)

Domain	# of active users	% of active users
Businesses sector	4.939	3%
Charities and NGOs	1.224	1%
Education	78.099	50%
Media and public relations purposes	474	0%
Natural persons for non-commercial purposes	9.873	6%
Public sector	9.252	6%
Research	51.553	33%

TABLE 42:

Number and percentage of CDSE active users per purpose of use in 2025.

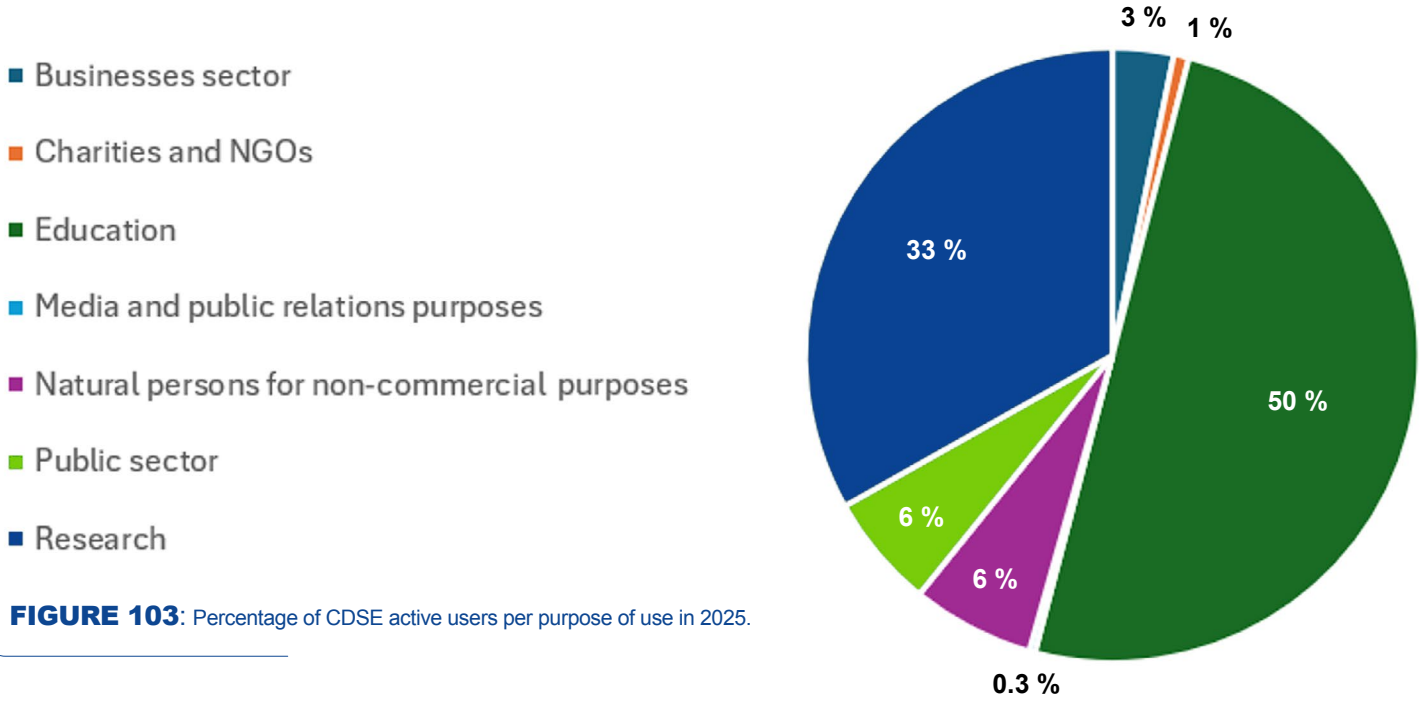


FIGURE 103: Percentage of CDSE active users per purpose of use in 2025.

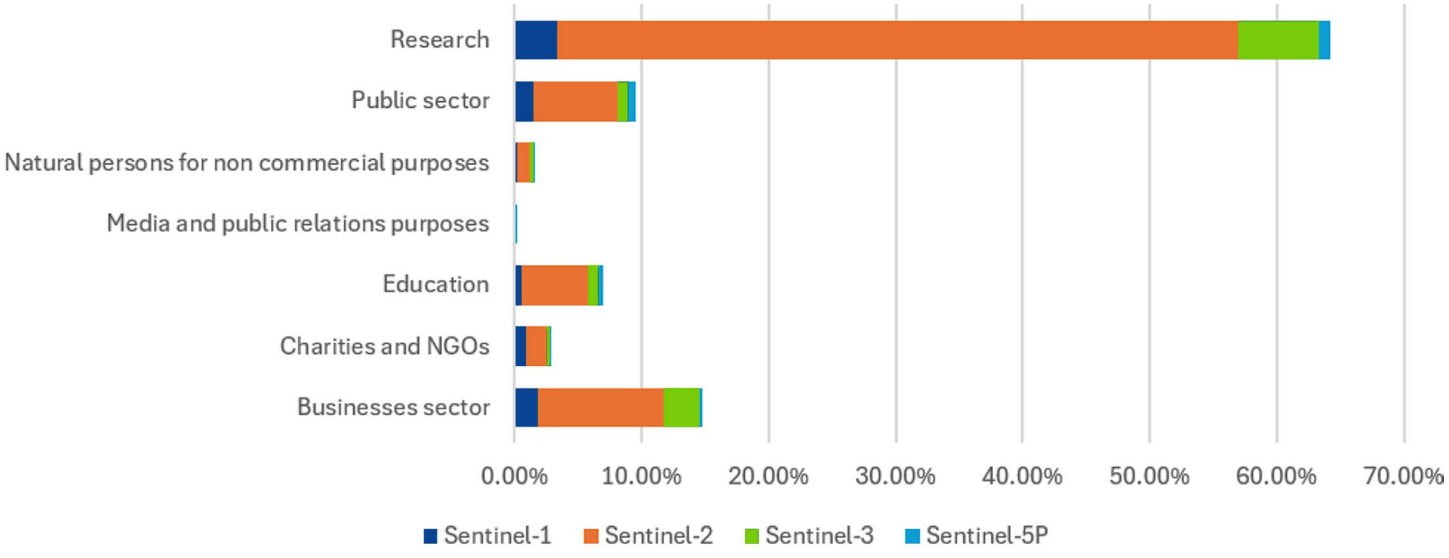


FIGURE 104: Percentage of downloads performed for Sentinels 1, 2, 3, and 5P for each purpose of use in 2025.

9 COLLABORATIVE AND INTERNATIONAL PARTNERS

The access to Copernicus Sentinel data which ESA provides is complemented by an ever-growing number of national and commercial re-distributors which also provide online access to the data. These redistribution points include sites in the Member states of the EU/ESA which are provided in the framework of the Collaborative Ground Segment, and the sites which are provided by international partners in the framework of international agreements. Here below Table 44 sets out the links to the Collaborative National Sites. Please note that the list may not be comprehensive, and the content of each site is outside the responsibility of ESA and the consortia managing the ESA data access systems.

This Chapter covers the re-distribution activities of the ESA/EU Collaborative Ground Segments and the International Partners.

9.1. Copernicus Sentinel Collaborative Ground Segment Partners

ESA Member States and other Copernicus Participating States are complementing the exploitation of the Copernicus Sentinel missions and supporting the redistribution of Copernicus Sentinel data by establishing additional data access points and, in some cases, developing new user-level data. These national actors access the Sentinel Data from the CDSE directly, or in some cases from the legacy Data Hub service that has been ported to provide backward compatibility to prior interfaces by running within the CDSE cloud infrastructure. The national sites are part of an overall network known as the Collaborative Ground Segment (CollGS).

Following the signature of a CollGS agreement with the nominated national contact point, ESA passes a dedicated set of credentials to the national partner to provide it with privileged access to Copernicus Sentinel Data. This optimised access, with a high quota for simultaneous downloads, enables the CollGS partner to stock its national data centre as quickly as possible with Copernicus products. ESA also provides technical support to the national contact point to help it optimise its access to the data.

In 2025, ESA signed a new CollGS agreement with the Spanish Space Agency (AAE), replacing the agreement previously signed with the Spanish Centre for the Development of Industrial Technology (CDTI). AAE is now developing the Copernicus Portal for Spain (COPS), with the Instituto Geográfico Nacional/Centro Nacional de Información Geográfica(IGN/CNIG).

ESA also signed in 2025 a CollGS agreement with Cyprus, which nominated ERATOSTHENES Centre of Excellence to be the National Point of Contact for the agreement and to develop the Copernicus data centre for Cyprus.

A total of 21 CollGS agreements had accordingly been signed with ESA by the end of 2025.

Within the CollGS, each national partner follows its own strategy for the Copernicus Sentinel data it chooses to make available through its site, and the length of time for which it makes the data available. Some sites offer a complete mirror of all available data from one or more of the Sentinel missions, while others offer a very specific sub-set of user-level data types and/or coverages of particular geographical regions. Some sites are primarily aimed at offering their users access to download the data to their own systems, while other sites offer instead, or in addition online processing services, so that users can engage with the data directly online without first needing to download it. The objectives of each site are only briefly indicated here, and the reader is invited to investigate each in detail via the URLs provided.

CollGS National Partner	Access URL(s)	Primary purpose of the site
Austria	https://dhr.geosphere.at	Data download - to provide free access to Sentinel data for different use cases (research, commercial, education, personal, other).
Belgium	https://www.terrascope.be	Primarily local processing services and cloud services but the platform also provides download options – to provide easy access to Sentinel data, derived products via download, web services and cloud processing.
Cyprus	Data centre in the process of being set up	
Czech Republic (x2)	https://dhr1.cesnet.cz https://dhr2.cesnet.cz	
Estonia	https://ehdatahub.maaruum.ee/copsi/home	Online processing – to provide Sentinel data to Estonian users in the Baltic region.
Finland	https://finhub.nsdc.fmi.fi	Data download - to serve the Finnish users.
France	https://geodes.cnes.fr	Data download and online processing - French data distribution platform for Sentinel-1 and -2 data.
Germany	https://code-de.org/	Data download and online processing – to provide Copernicus data to German users, especially authorities, offering German federal, state and municipal authorities processing capabilities for EO data (mostly Copernicus).
Greece	https://sentinels.space.noa.gr/copsi/home	Data download – to provide fast and secure discovery and access of Sentinel data over the region of the Mediterranean and Black Sea: South & South-eastern Europe, Middle East & North Africa. From 2026 onwards, the Hellenic Mirror Site will support the National Governmental Services and the National Hub developed by the Ministry of Digital Governance. In this new capacity, the Hellenic Mirror Site will serve as the primary data source of Copernicus data to the National EO Governmental Services and Microsatellites Program.
Hungary	https://fir.gov.hu/ https://efold.gov.hu	Data download and online processing – to provide the Hungarian governmental sector and public with a continuous online archive of Copernicus Sentinel data and localised products derived from the Sentinel data.
Luxembourg	http://www.lsa-datacenter.lu	Data download – to provide download access to data from Copernicus Sentinel -1 and -2.
Norway	https://colhub.met.no	
Poland	https://copernicus.imgw.pl	Data download – to provide a rolling archive for the area of Poland and approx. 500 km around.
Romania	https://sentinels.rosa.ro/	
Spain	Data centre in the process of being set up	
Sweden	https://digitalearth.se/ https://explorer.digitalearth.se/	Data download and online processing – to increase the use, access to and analysis of earth observation data (in particular satellite data) to Swedish authorities and public actors.
UK	https://www.ceda.ac.uk/ https://jasmin.ac.uk/	Data download and online processing - for scientific research.

TABLE 43: Collaborative National Mirror sites active during 2025.

CollGS Partner Reports

The CollGS partners provide information about the activity on their national sites in the previous calendar year via an annual questionnaire which ESA sends out. The statistics presented in this section are based on the 12 partners who both had active national platforms during 2025 and who provided the requested information. This year, reports were not provided for the sites in the Czech Republic, Norway, or Romania, and it is highlighted that this affects the average values in each section, so that it is difficult to make an accurate comparison with the average values calculated last year and identify trends.

It is also highlighted that the statistics from the Austrian site vary considerably to previous years because the data hub relay which the site operated was shut down on 10 August 2025, so the statistics run up to that date, and it was no longer possible for the team to provide statistics on the number and activity of users of the data hub relay. The Hellenic Mirror Site operated by the National Observatory of Athens (NOA) was also impacted by the closure of the Data Hub Relays and the overall phasing out of the legacy DHuS software. The Greek Data Hub Relay was closed on 30 June 2025, and NOA had to rebuild the architecture of the Hellenic Mirror Site from scratch to ensure long-term stability, so the statistics reported here run only until 30 June 2025.

The other 10 reports received cover the full calendar year from 1 January 2025 to 31 December 2025.

Table 44 presents the data on the registered and active users on the national mirror sites, as reported in the annual questionnaires. In this table, and in subsequent figures and tables in the section, statistics are only shown for the CollGS partners which provided their reports, and where a CollGS partner did provide a report but was unable to provide a particular statistic, this is shown as 'np'.

CollGS Partner	Overall no. of Registered Users since Start of Operations	% Increase since Y2024	No. of Active Users in 2025	% of Registered Users who were active in 2025	No. of Users having accessed the platform in 2025
Austria	-	-	-	-	-
Belgium	35,105	59%	192	1%	582
Estonia	676	21%	-	-	-
Finland	1039	14%	33	3%	4
France	3,965	276%	1505	38%	-
Germany	5,975	5%	96	2%	814
Greece	877	1%	25	3%	-
Hungary	18,440	6%	532	3%	-
Luxembourg	486	15%	51	10%	-
Poland	73	15%	9	12%	34
Sweden	60	20%	-	-	100
UK-1	-	-	-	-	-

TABLE 44: Summary of active national Copernicus data centres.

Overall, there was an average growth in the number of users registered on CollGS sites of 43% with respect to 2024, but this figure is heavily influenced by the big increase in the number of registered users on the French site, which rose by 276% compared to 2024. Again taking the mean average, roughly 9% of the users registered on the CollGS sites were active during 2025. These overall figures mask huge differences in the way users interact with the national sites, however, and while it is interesting to look at the statistics as a whole, the figures from each CollGS will necessarily be different, partly due to the different dates for which each site was operating this year, but also because partners are free to design their own criteria for registering and accessing the data: some of the CollGS are completely open to all types of users, while others are only open to a few selected users.

Usage Category

Figures 105 and 106 below show the percentage of registered users from each national mirror site assigned to each 'user category' (research, commercial, education, other) and to each 'usage field' (specific field for which the data is used e.g. land, marine, atmosphere etc). The graphs only present the sites which provide the breakdown of their registered users into these categories in their reports.

It is highlighted that these categories are selected by CollGS users when they first register for access to the national site, so the statistics mask any changes which might have occurred in the meantime in the purposes and applications for which users download the data. It is also highlighted that the German site offers its users a different set of categories to choose from on registration, so the statistics provided have been transferred into the standard CollGS categories for the purpose of this Report.

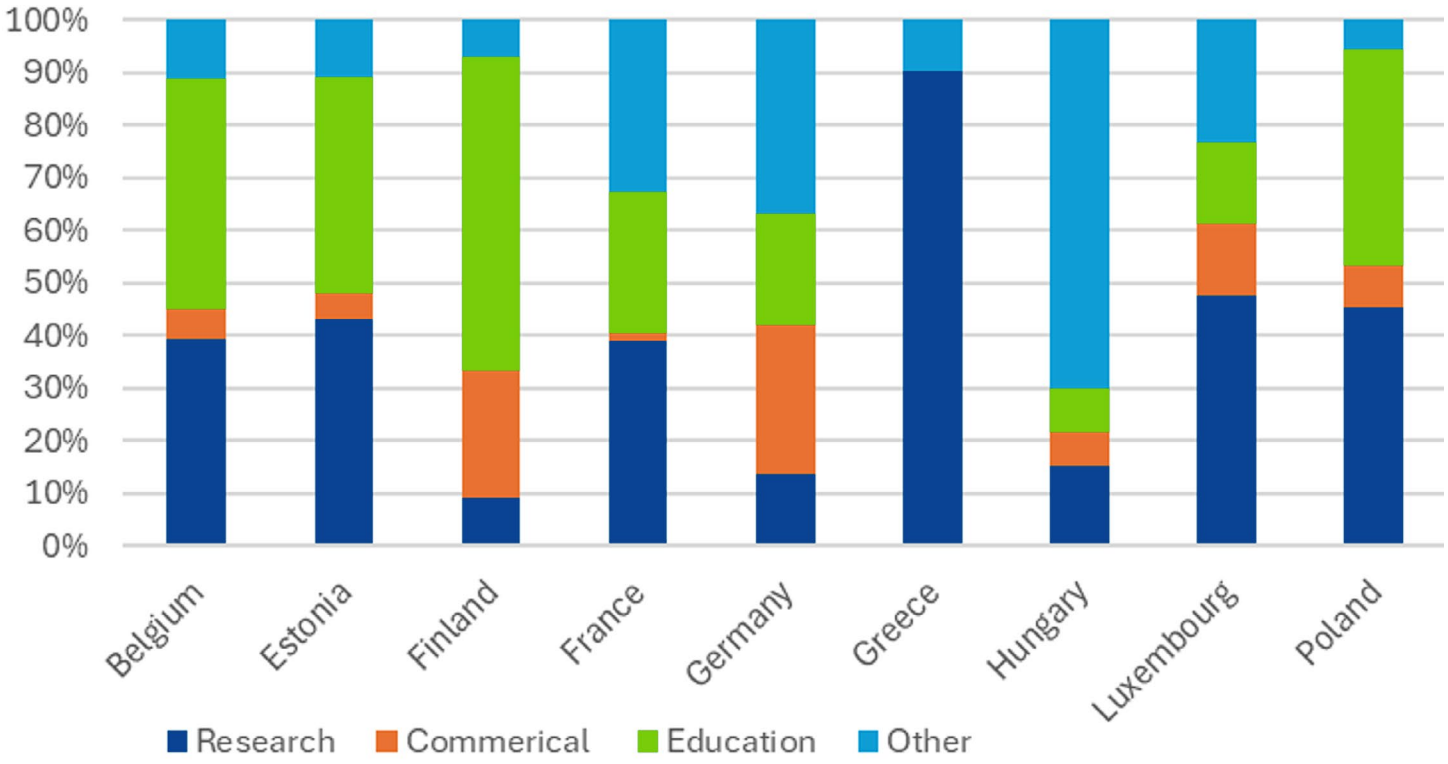


FIGURE 105: Percentage distribution of national site users by category of user.

Users which placed themselves in the 'Research' category made up the largest group of registered users by the end of 2025, at 38% of the total number of registered users across all national platforms. The largest number of users categorising themselves as 'Research' was on the Greek site, with 90% of its users having selected this category. By contrast, Finland had the lowest proportion of registered users in the 'Research' category, with only 9%, while its 'Education' category was as high as 60%.

Overall, 'Commercial' users made up 10% of the total number of registered users across the sites, although in Germany they constituted as high as 28% (including private individuals), and in Finland 24%.

The Hungarian site still stands out as the site with the highest proportion of users who categorised themselves as 'Other', at 70%, and this appears in line with the one central aim of the site being to provide the governmental sector with access to Copernicus data.

Usage Field

By the end of 2025, the group of registered users which described themselves as 'Land' users was still the largest group of users on most of the CollGS sites, though at 44% of the total number of registered users, it constituted a significantly lower proportion of the users than the 58% reported in 2024. This could be in large part because the Czech site did not submit its report this year, and in 2024 the Cech site had reported that roughly 70% of its users were those who had selected 'Land' applications on registration. However, in 2024, 7 out of the 16 national sites had reported that more than 50% of their registered users were in the `Land' usage field, while in 2025, only 2 of the 9 sites to submit these statistics had proportions of 'Land' users above 50% (Belgium 59% and Estonia 58%).

The `Other` application category continues to represent a significant share among users of the CollGS sites, with 27% of all users in 2025 having selected 'Other' as the main application for which they download data (slightly up from 26% in 2024). For the Luxembourg site, the 'Other' application category of users was the highest proportion of its registered users, at 35%.

The Luxembourg site was also the site with the highest proportion of users who use the data for 'Atmosphere' applications, at 21% (slightly down from 23% in 2024). The Greek site also had a high proportion of 'Atmosphere' users, with 20%, and for Poland it was the second highest category of users, at 19%.

'Emergency' and 'Security' users remained the smallest groups, both constituting an average of 2% of the registered users across all sites, the same as in 2024. This year none of the sites had proportions of either 'Emergency' or 'Security' users above 7%.

Climate` and `Marine' users constituted slightly higher proportions this year, however, with both rising to an average of 7% of registered users across all sites, from 3% and 4% respectively in 2024. Estonia had the highest proportion of 'Marine' users at 16%, the second highest category of its registered users, while Poland had the highest proportion of 'Climate' users, with 18% of its users falling in this category.

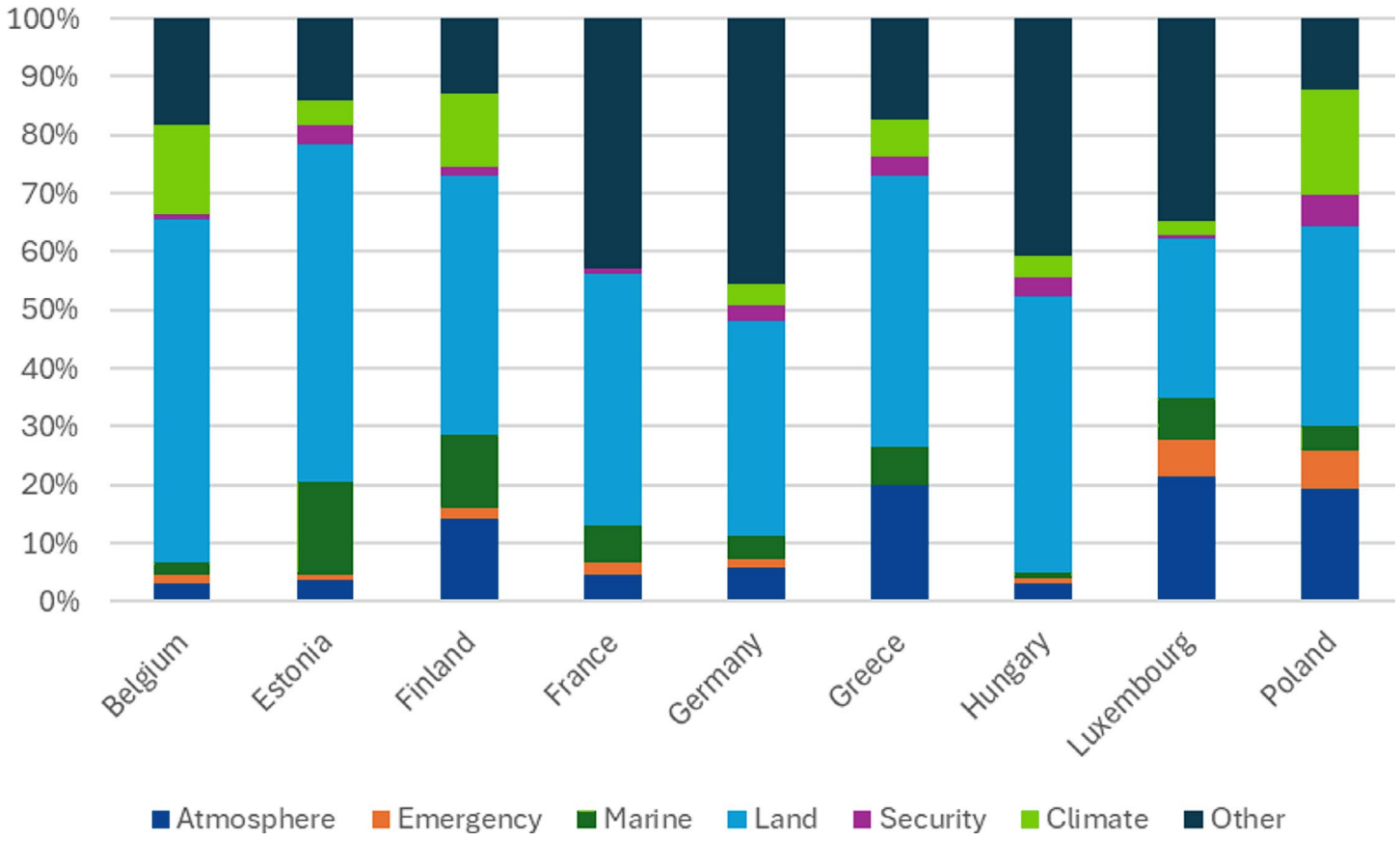


FIGURE 106: Percentage distribution of national site users by usage field.

9.2. CollGS Publication and Download Activity

Table 45 and Table 46 show, where available, the total volume of Copernicus Sentinel data both published on and downloaded from the national sites during 2025, together with the percentage change with respect to 2024.

In 2025, the volume of data published on a CollGS site increased by an average of 51%, but with big variations between the sites. For instance, the Estonian site increased its publication volume by as much as 370%, while the Austrian site published a volume 52% lower than in 2024 (for reasons discussed above). Overall, the average data publication across all sites was 2.4 PB per site, slightly down from 2.5 PB in 2024.

The total volume of data downloaded from all sites over the year was 9.34 PB, significantly down from the 14.5 PB in 2024, although of course it is recalled that this total is heavily influenced by fewer reports having been received from partners this year, by not all partners being able to report the download volumes this year, and by the Greek and Austrian operations finishing half way through the year.

At the level of individual sites, it can be seen that the total volume of data downloaded from the Belgium and German sites actually massively increased compared with the total volumes downloaded in 2024, and the high values create a distorted average increase across all sites of 396% for 2025.

CollGS Partner	2025 Published Volume (TB)	% Increase from 2024	2025 Downloaded Volume (TB)	% Increase from 2024
Austria	891	-52%	4,796	-20%
Belgium	212	4%	44	3574%
Estonia	62	370%	-	-
Finland	182	224%	29	-15%
France	9,899	9%	347	-80%
Germany	329	-11%	78	152%
Greece	290	-46%	3	-
Hungary	29	-	3	-
Luxembourg	16,027	-9%	3,455	-43%
Poland	119	61%	521	-
Sweden	90	43%	-	-
UK-1	1,074	-34%	59	41%
Total (PB)	**29.20**	**-22%**	**9.34**	**-35%**
Average 2025 (PB)	**2.43**	**51%**	**0.93**	**396%**

TABLE 45: Overall publication and download volumes on national sites in 2025.

It is also highlighted that the data download volumes discussed in this section are only one way of measuring the 'output' of a particular national site, partly because each site is aimed at a different set of users, each with their own particular data needs and onwards use of the data, and partly because several CollGS sites now provide on-demand processing of data, and/or online visualisation and processing, removing the need for data download. While the cutting-edge uses of Copernicus Sentinel data provided by the national sites are not explored further in this section, the interested reader is invited to explore the individual Collaborative Ground Segment portals. The executive summaries of the 'Collaborative Ground Segment Workshops' also describe each partner's initiative, and these are available to download here:

https://sentinels.copernicus.eu/missions/collaborative/workshop

	2025 Published Volume (TB)				2025 Downloaded Volume (TB)			
CollGS Partner	**Sentinel-1**	**Sentinel-2**	**Sentinel-3**	**Sentinel-5P**	**Sentinel-1**	**Sentinel-2**	**Sentinel-3**	**Sentinel-5P**
Austria	0.00	887.51	3.15	0.01	1,435.41	2,581.57	649.39	130.10
Belgium	16.50	194.17	1.72	0.09	43.50	0.72	0.09	0.14
Estonia	37.79	9.78	14.20	0.38	-	-	-	-
Finland	125.94	53.91	-	1.74	26.42	0.42	0.01	2.08
France	3,193.00	6,706.00	-	-	330.00	17.00	-	-
Germany	85.43	158.42	43.97	41.31	70.31	8.14	0.00	0.00
Greece	104.72	124.46	27.67	32.68	1.36	0.88	0.34	0.26
Hungary	14.00	6.00	9.00	-	1.00	2.00	-	-
Luxem-bourg	2,313.76	13,713.51	-	-	55.88	3,399.50	-	-
Poland	39.98	25.04	22.76	30.81	183.04	15.91	2.40	320.03
Sweden	35.14	54.80	-	-	-	-	-	-
UK-1	743.70	32.80	211.10	151.50	7.85	0.17	0.53	50.91
Total	**6,710**	**21,901**	**334**	**259**	**2,155**	**6,026**	**653**	**504**
% increase/ decrease	**-5%**	**-26%**	**-74%**	**-43%**	**-34%**	**-42%**	**-22%**	**88%**

TABLE 46: Overall publication and dissemination volumes on national sites in 2025.

In terms of publication volumes, the total volume of data published across all sites decreased for each of the Sentinels, with the highest decrease being a 74% lower volume of Sentinel-3 data published in 2025 than seen in 2024. However, looking at the publication volumes at the level of the individual sites, it is clear that the difference with respect to the previous year is primarily due to the lower number of reports received this year, and to the Greek and Austrian reports covering only half a year. For instance, although the publication volume of Sentinel-3 data was lower in 2025 than in 2024 on the sites in Greece, Finland, and the UK, the publication volumes of Sentinel-3 data were actually significantly higher on all of the other sites, with increases of as much as 1395% and 69% on the Estonian and German sites respectively, and although overall the Austrian site published a much lower volume of data overall, it actually published 3.15 TB of Sentinel-3 data in 2025, whereas it had not published any Sentinel-3 data in 2024.

There were also notable increases in the publication volumes of Sentinel-1 data at the level of the individual sites. Having not previously published any Sentinel-1 data, Sweden published 35.14 TB of Sentinel-1 data in 2025. Poland, Luxembourg, Hungary, France and Finland also all published significantly higher volumes of Sentinel-1 data in 2025 than they had in 2024: 94%, 59%, 56%, 52% and 261%, respectively. There were, however, lower publication volumes of Sentinel-1 data on the Belgian, German and the UK sites in 2025: -48%, -31%, and -34%, respectively.

In terms of download volumes, it is interesting to see that the total volume of Sentinel-3 data downloaded by users across all sites did not decrease compared to 2024 by nearly as much as total the publication volume across all sites, suggesting a strong desire for Sentinel-3 data among CollGS users.

By contrast, the download volumes for Sentinel-1 and Sentinel-2 data decreased by higher percentages than the publication volumes, suggesting a weakened uptake of data from those missions among CollGS users in 2025. Again, though, it is important to note that the overall figures mask significant differences on the individual sites. For instance, the overall dramatic increases in data download volumes noted earlier for the Belgian and German sites were provoked almost entirely by massive increases in the volume of Sentinel-1 data downloaded from both sites in 2025, with the volume of Sentinel-1 data downloaded from the Belgian site rising from 0.51 TB in 2024 to 43.5 TB in 2025, a huge 8429% increase; while the volume from the German site rose from 1.69 TB in 2024 to 70.31 TB in 2025, i.e. by 4061%.

Notably, the total volume of Sentinel-5P data downloaded from all CollGS sites did not decrease compared to 2024, and it was actually 88% higher than the 2024 total Sentinel-5P download volume. This can primarily be attributed to increased Sentinel-5P download volumes from the Polish and UK sites. The 2024 value for Poland was zero because it was not able to submit the figure that year, so the 320.3 TB of Sentinel-5P data which was downloaded this year represented an enormous increase in this year's report from Poland. The volume of Sentinel-5P data downloaded from the UK site in 2024 was 16.91 TB, and this rose by as much as 201% to 50.91 TB in 2025, making it the only mission for which more data was downloaded from the UK site in 2025 than in 2024. The Austrian site is the other platform which saw high interest from its users in Sentinel-5P data, with as much as 130.10 TB of Sentinel-5P data downloaded from its site in 2025. Given the extremely low publication volumes of Sentinel-5P data in both 2025 and 2024 on the Austrian site, it is interesting to note that the high download volume must have been downloads of historical Sentinel-5P data, published in 2023 and/or before.



Copernicus Sentinel data 2025: Protected marine area in French Polynesia

Figure 108 illustrates the proportion of data from each of the missions published on a national site, next to the proportions of Sentinel data downloaded from that site. This makes it easier to see the interest of the users in each of the missions compared to the data offer on the national platform, highlighting any potential discrepancies. This year, indeed, some notable differences can be seen on most of the sites in the proportions of data from each of the Sentinels offered on the national sites, and the respective proportions of data downloads.

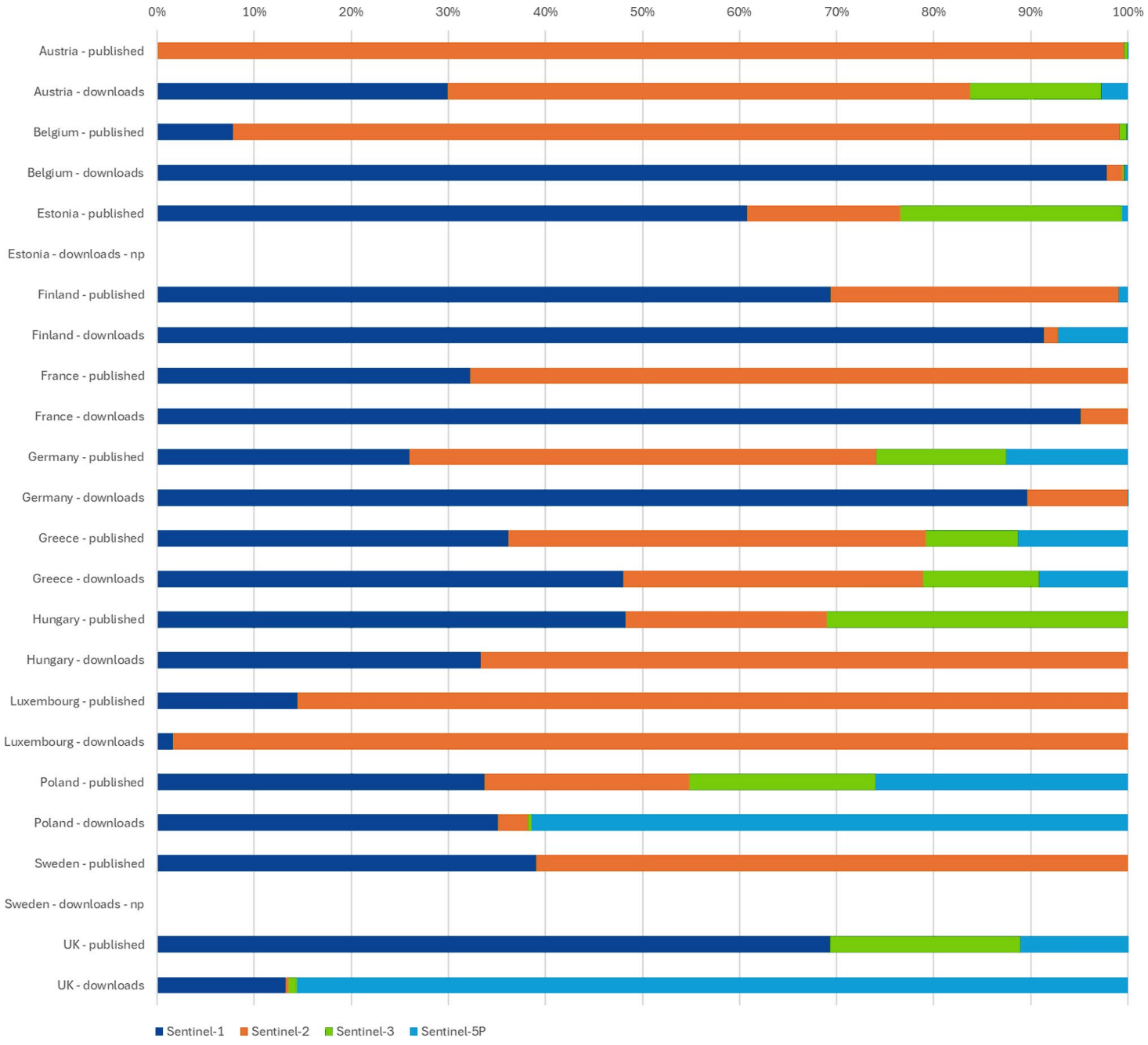


FIGURE 108: Percentage publication and dissemination volumes per Sentinel on mirror sites in 2025.

9.3. International Technical Agreements

The Copernicus programme has a strong international dimension. In support of the international data sharing principles of the Group for Earth Observation (GEO), and in line with the Copernicus programme's policy of full, open and free-of-charge access to Copernicus data and information, the European Commission has entered into 14 Cooperation Arrangements with international partners to advance the mutually beneficial exchange of satellite data, in-situ data and support for calibration/validation activities.

ESA is entrusted with ensuring the exchange of satellite data under these cooperation arrangements, and for that purpose enters into technical operating arrangements (TOAs) with the agencies nominated by the partner countries. Under the TOAs, the nominated agencies are able to download Copernicus Sentinel data, initially from the International Data Access Hub and now from the CDSE, and to transfer the data to their national data access sites for use by their own user communities.

During 2025, the Ministry of Economy, Trade and Industry of Japan (METI) joined the list of Copernicus International partners. METI will make Copernicus Sentinel data available on its Tellus satellite data platform. ESA also completed an exchange of letters with NOAA to extend the existing ESA-NOAA Copernicus TOA, which was set to expire at the end of 2025, for an additional 5 years.

Also in 2025, the Copernicus regional data centre established by the Philippines Space Agency became operational, and is now fully open to the public, supporting the creation of value-added information and the development of new data products and downstream services in the Philippines. Moreover, Geosciences Australia completed the transfer of their Copernicus Australasia Regional Data Hub to the new DISCOVER platform, and the University of Chile officially opened the CopernicusLAC Chile data repository. It should be noted that these changes in platforms affect the statistics which have been provided in the reports, because fresh statistics are now generated by the new platforms, creating a break with the previous statistics provided.

Table 36 below presents an overview of the 16 Copernicus international partner sites which are currently operational, or which are in the process of being established. The partners are listed in order of the date on which they signed the TOA with ESA.

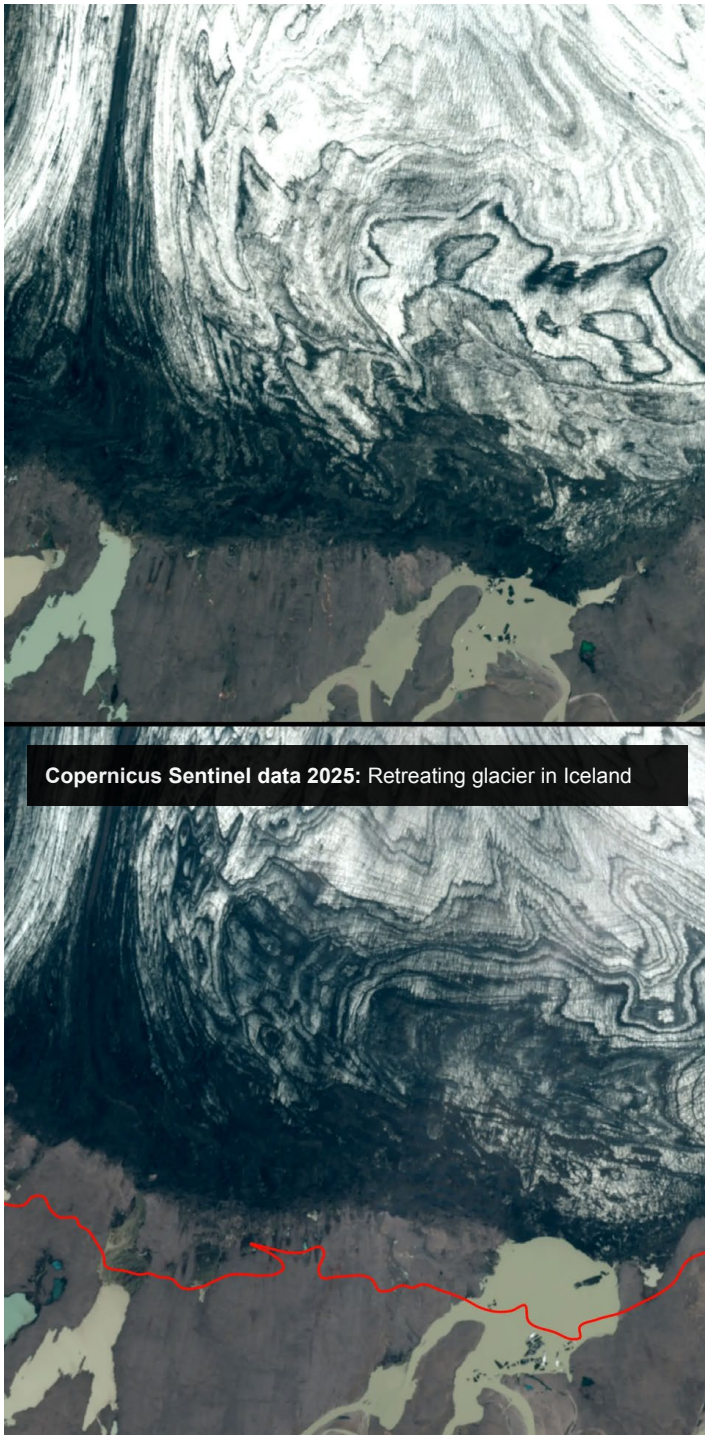
International Partner	TOA signature date	Purpose of the national data access site
United States National Aeronautics and Space Administration (NASA)	18 February 2016	The aim of NASA's mirror site is to re-use and re-disseminate Copernicus Sentinel data, to increase distribution capacity, and maximise the benefits to Earth Science research and applications. The site is primarily intended to enable users to download the data. NASA started distributing Sentinel-1 user-level data from its Alaska Satellite Facility data portal, Vertex, on 12 December 2015. In addition, Sentinel-3 OLCI data is made available as part of the OceanColor Web; all user-level data from 16/02/2016 to the present being available for re-dissemination. As well as the Sentinel-1 and -3 user-level data, during 2018 data from the Sentinel-5P mission began to be published on the NASA Sentinel Gateway (NGS). The relevant websites are: S1: https://vertex.daac.asf.alaska.edu S2 (HLS which are data derived from Sentinel-2): https://lpdaac.usgs.gov/products/hlss30v015/ S3:https://oceancolor.gsfc.nasa.gov and https://ladsweb.modaps.eosdis.nasa.gov/missions-and-measurements/olci/ S5P: https://disc.gsfc.nasa.gov

International Partner	TOA signature date	Purpose of the national data access site
United States National Oceanic and Atmospheric Administration (NOAA)	1st signed 7-Mar-2016 – update signed 19 December 2017	NOAA provides access to satellite data for understanding and managing oceans and coasts. It makes available the oceanographic user-level data from the Copernicus Sentinel missions. Data is made available on the CoastWatch – OceanWatch site. For Sentinel-1, published user-level data include those over the US, Arctic and Antarctic. The data is then processed into wind speed and the original data is not generally mirrored. NOAA publishes a collection of Sentinel-2 MSI over a limited region. Sentinel-3 marine data has also been made available from May 2016, received from EUMETSAT's Multicast Terrestrial. The site is primarily intended to enable users to download the data and to visualise it online. https://coastwatch.noaa.gov NOAA also makes Sentinel-1 data available on its STAR Water Surface Conditions (WSC) site: https://www.star.nesdis.noaa.gov/socd/mecb/sar/index.php
Australia Geoscience Australia (GA)	24 March 2016	GA publishes Copernicus Sentinel data on its Copernicus Australasia Regional Data Hub. The aim of the Hub is to provide free and open access to data from the Sentinels for the South-East Asia and South Pacific region. In June 2025, GA opened the Copernicus Australasia Regional Data Hub on its new web portal DISCOVER, which is based on the Gael Store Service software solution VISION. DISCOVER is now the main access point for the Copernicus Australasia Regional Data Hub, with its archive of Sentinel-1, -2, -3 and -5P data, replacing the previous Sentinel Australasia Regional Access (SARA). As with the previous SARA system, the interface provides an intuitive map-based data search, download capability and an Application Program Interface (API) for advanced user interaction. DISCOVER is hosted at the National Computational Infrastructure and operated by the Copernicus Australasia Regional Data Hub consortium formed by Geoscience Australia, CSIRO, WA Land Information Authority, NSW Government Department of Environment, and the Queensland Government Department of Environment and Science. https://discover.copernicus.gov.au/
Serbia The BioSense Institute – Research Development Institute for Information Technologies in Biosystems	25 January 2019	BioSense is revamping its regional data access mirror site/analysis hub, which is aimed at improving access to and the exploitation of Copernicus Sentinel data in the Republic of Serbia and the wider Balkan area. The relevant websites are: https://biosens.rs and https://agrosens.rs.

International Partner	TOA signature date	Purpose of the national data access site
Brazil Brazilian Space Agency (AEB) and the National Institute for Space Research of Brazil (INPE)	14 March 2019	Since 1 December 2021, INPE has been incorporating Copernicus Sentinel data into its regional data access/analysis STAC server, to facilitate the access to and exploitation of Copernicus Sentinel data in Brazil. The goal is to access original data, cover the Brazilian territory, and generate added-value products. The Brazil Data Cube project develops EO Data Cubes from Sentinel-2 data, for the extension of Brazil. Since 2023, these products have been generated directly from the local interfaces to the Mirror Site at INPE. The updated list and descriptions of the Sentinel data cubes can be found using the link http://www.brazildatacube.org/en/data-cube/. Sentinel collections are available for searching and using the STAC protocol, and can be browsed at in the https://data.inpe.br/stac/browser/. For Sentinel 2 data, the bands are made available in COGeotiff format. The website is linked to other initiatives to provide the means to offer processing services.
Ukraine State Space Agency of Ukraine (SSAU)	28 March 2019	SSAU has established a regional data access mirror site, the 'Data Hub System – Ukraine', to facilitate access to and the exploitation of Copernicus Sentinel data in Ukraine. SSAU publishes on the Data Hub System – Ukraine all available Copernicus Sentinel data over Ukraine and the immediately surrounding regions. The site is primarily intended to enable users to download the data. http://sentinel.spacecenter.gov.ua/
India Indian Space Research Organisation (ISRO)	11 April 2019	ISRO has established a regional data access site called Bhoonidhi, which provides access to all data from Sentinels -1 and -2 over India and the immediately surrounding regions, together with data from other EO missions, such as Landsat-8. The site is primarily intended to enable users to download the data. https://bhoonidhi.nrsc.gov.in
Chile University of Chile	20 August 2019	The University of Chile (UdeChile), through the Center for Mathematical Modelling (CMM) and its specialised units, in particular the National Laboratory for High Performance Computing (NLHPC) and its Image Processing Working Group, now operates a Copernicus Regional Centre for Latin America and the Caribbean, which is a centre dedicated to the storage, processing, and distribution of Copernicus satellite data and the provision of services of regional interest for the benefit of all countries in Latin America and the Caribbean (LAC). 2025 was the year of the official release of the CopernicusLAC Chile official data repository. https://www.copernicuslac-chile.eu/en/ UdeChile develops Land Cover and Land Use classification products built primarily from Sentinel-2 imagery. The products comprise a first-level classification for the LAC region, and a second-level classification for the urban areas of the capital cities of the LAC region. UdeChile plans to publish the full catalogue of official products covering the LAC region and to extend the value-added Land Cover and Land Use products, as well as the newly added Marine Observation products further, in temporal coverage and granularity.

International Partner	TOA signature date	Purpose of the national data access site
Colombia Institute of Hydrology, Meteorology and Environmental Studies of Colombia (IDEAM)	26 December 2019	IDEAM intends to establish a regional data access/analysis site to facilitate access to and the exploitation of Copernicus Sentinel data in the Latin American region. The current area of interest is limited to Colombia. The initial aim of the site is to provide data to create annual reporting of deforestation of the country.
Tunisia Sahara and Sahel Observatory (OSS)	30 Dec 2022	OSS operates a regional Earth Observation centre which it uses as a platform for improving access to, and the exploitation of Copernicus Sentinel data in the North Africa region, and by OSS's partners in GMES and Africa. OSS also publishes LULC maps, crop maps, bulletins and anomaly reports. The website is http://misbar.oss-online.org/
Democratic Republic of Congo Commission Internationale du Bassin du Congo-Oubangui-Sangha (CICOS)	22 March 2023	CICOS is incorporating Copernicus Sentinel data into the Earth Observation products and tools which it makes available for users in the field of hydrological forecasting, weather forecast, vegetation cover, land use (Habitat), monitoring of bush fires and the flooded areas forests in the Congo Basin. CICOS is also in the process of developing its own local Copernicus Sentinel data centre.
Panama National Institute for Government Innovation (AIG)	10 May 2023	AIG is developing a data centre providing regional access to Copernicus Sentinel data, as part of DG-INTPA's Regional Copernicus Centre in Panama initiative ('CopLAC').
Philippines Philippine Space Agency (PhilSA)	11 December 2023	PhilSA has developed a local Copernicus data centre for supporting the creation of value-added information and the development of new data products and downstream services in the Philippines. This activity is being developed as part of the European Commission's National Copernicus Capacity Support Action Programme for the Philippines ('CopPhil'). PhilSA started making Copernicus Sentinel data available to pre-operational users from 10 September 2024, and the site was officially opened on 16 September 2025. https://infra.copphil.philsa.gov.ph/
Canada Canadian Space Agency (CSA)	27 May 2024	CSA offers Copernicus Sentinel data access through the Earth Observation Data Management System (EODMS), which is managed by Natural Resources Canada. ESA and CSA have also established contingency conditions to facilitate the sharing of satellite data in the event of a failure and / or interruption in the operations of the Sentinel-1 mission (ESA) or the RADARSAT Constellation Mission (RCM). The website is: https://eodms-sgdot.nrcan-rncan.gc.ca/index-en.html
Nigeria National Space Research and Development Agency (NASRDA)	25 July 2024	NASRDA is establishing a regional Copernicus data centre, to facilitate the exploitation of Copernicus Sentinel data in West Africa.
Japan Ministry of Economy, Trade and Industry of Japan (METI)	7 July 2025	METI is in the process of setting up the interface with the CDSE for providing access to Copernicus Sentinel data via its Tellus EO satellite data platform. https://www.tellusxdp.com/en-us/

TABLE 47: International Partners summary.



Copernicus Sentinel data 2025: Retreating glacier in Iceland

The international partners send ESA annual feedback on the status of their sites and the uptake of Copernicus Sentinel data from those sites. This year, statistics were received for the sites operated in Australia, Brazil, Chile, India, the Philippines, Tunisia, Ukraine and the US (NASA and NOAA), and the input provided is summarised in Tables 48 and 49 below. Where information was not available in their reports this is shown as 'np'. No statistics could be provided for the Serbian data centre because it was still being renovated in 2025. Statistics were also not available for Colombia, Congo, Japan, Nigeria, and Panama, where the data centres are still under construction. Canada does not operate a user registration system, so it is not able to collate the statistics requested.

The Tunisian platform is still being developed, and OSS aims to enable users to download images and develop derived products, with continental extent and thematic-driven, from the platform next year. However, OSS was already able to provide statistics on registration figures and publication numbers for the year.

Table 48 presents information about the number and type of users on each of the operational sites. On each site which submitted this statistic, the number of registered users increased in 2025. There was an average increase in the number of registered users across all sites of 190% per site, although it should be noted that this average is heavily influenced by the massive 1032% increase seen on NOAA's Coastwatch site. The Brazilian site does not yet have a user registration system, although INPE is working towards setting it up, so there are not yet any statistics for registered users, active users, or category of user for the Brazilian site. Australia's Copernicus Australasia Regional Data Hub does have a user registration process but it does not record the registered user for all download events, so statistics are not available on the number of active users.

For most of the sites, the majority of registered users comes from the research and education sector, with the exception of NASA's site, on which 92% of the registered users come from international public organisations. India and Australia also have high proportions of registered users from the category 'Business/commercial/professional - non-SME', with 20% and 19% respectively.

International Partner	Operations start date	No of registed users since start of operations	% increase since 2023	Pricipal user catergories (% of registered users, unless otherwise stated)
Australia	26 June 2021	2,515	14%	3%-International public organisation 16%-National/reginal/local public authority 35%-Research & education organisation 4%-Business/commercial/professional – SME 19%-Business/commercial/professional – non-SME 2%-Charity or NGO 21%-Private Individual 3%-Other
Brazil	12 January 2021	np	np	np
Chile	09 July 2024	391	133%	7%-International public organisation 14%-National/reginal/local public authority 39%-Research & education organisation 8%-Business/commercial/professional – SME 2%-Business/commercial/professional – non-SME 3%-Charity or NGO 18%-Private Individual 10%-Other
India	26 January 2020	4,078	96%	2%-International public organisation 18%-National/reginal/local public authority 61%-Research & education organisation 20%-Business/commercial/professional – non-SME
Philippines	16 September 2025	320	n/a	2%-International public organisation 34%-National/reginal/local public authority 36%-Research & education organisation 5%-Business/commercial/professional – SME 2%-Business/commercial/professional – non-SME 1%-Charity or NGO 7%-Private Individual 13%-Other
Tunisia	01 January 2023	950	14%	np
Ukraine	01 January 2020	336	20%	88%-Research & education organisation 3%-Business/commercial/professional – SME 10%-Other
US-NASA	12 December 2020	228,433	22%	92%-International public organisation 2%-National/reginal/local public authority 5%-Research & education organisation 1%-Business/commercial/professional – SME 0.4%-Other
US-NOAA	01 May 2016	110,340	1032%	np

TABLE 48: International Partner general characteristics and statistics for 2025.

International partner	S1	S2	S3 Land	S5P	Total	% of registered users active
Australia	np	np	np	np	212	8%
Brazil	np	np	np	np	np	np
Chile	1	168	-	n/a	168	43%
India	579	1,866	n/a	n/a	2,445	60%
Philippines	34	142	20	-	172	54%
Tunisia	np	np	np	np	np	np
Ukraine	2	16	4	1	23	7%
NASA	50,486	4,510	852	1,971	57,819	25%
NOAA	77,651	32,507	182	-	110,340	100%

TABLE 49: No. of active users on the site in 2025 (an active user is a user which has made one or more successful downloads during the year)

The table above shows the number of active users in the year, for each site which was able to submit this statistic. NOAA's site saw a big increase in activity this year compared with last year (it being noted that active users are measured according to IP address), with 100% of registered users being active in the year. NOAA reported noted an increase in IP block addresses, suggesting multi-threaded cloud connections, and that there was a jump in November 2025 in the number of downloads of NOAA's Sentinel-1 derived Normalized Radar Cross Section product, which accounted for 91% of all Sentinel-1 data access. NOAA publishes multiple value-added products on its site: for Sentinel-1, it creates Normalized Radar Cross Section, Sea Surface Wind, Ice, Oil; and for Sentinel-2, NOAA provides Chlorophyll products NOAA/NOS Chlorophyll and inland lake projects came online for coverage of Florida, Ohio, Oregon, and California.

The proportion of registered users which were active was also very high on the sites in India, the Philippines and Chile.

The table below summarises, per partner, the number of published and downloaded data since the start of operations.

International partner	No. of Copernicus Sentinel user-level data published on the site since the start of operation					No. of Copernicus Sentinel user-level data downloaded from the site since the start of operation				
	S1	S2	S3 Land	S5P	Total	S1	S2	S3 Land	S5P	Total
Australia	1,837,829	9,804,566	9,062,173	296,443	**21,001,011**	5,538,550	8,841,821	13,203,015	-	**27,583,386**
Brazil	37,843	1,136,506	30,882	n/a	**1,205,231**	np	np	np	n/a	**np**
Chile	272,554	1,153,802	357,915	n/a	**1,784,271**	3	1,125	-	n/a	**1,128**
India	95,902	1,218,963	n/a	n/a	**1,314,865**	184,910	682,168	n/a	n/a	**867,078**
Philippines	9,549	20,778	15,442	9,274	**55,043**	15,186	34,333	754	-	**50,273**
Tunisia	704	14,358	1,502	n/a	**16,564**	1,335	17,422	2,122	n/a	**20,879**
Ukraine	108,616	386,475	314,256	64,868	**874,215**	2,912	3,120	78	15	**6,125**
US-NASA	106,168,762	44,349,843	21,263,832	2,276,718	**174,059,155**	791,501,618	3,410,435,045	14,255,956	45,266,288	**4,261,458,907**
US-NOAA	2,076,612	809,803	4,595,684	n/a	**7,482,099**	1,291,382	940,530	2,396,947	n/a	**4,628,859**

TABLE 50: International Partner publication and download statistics for 2025.

The NASA site has the most striking download statistics with over 1.5 billion downloads since the start of operations. Australia and Tunisia also register a large volume of downloads with respect to size of the data holdings. However, the number of downloads from the international partners is not necessarily the full measure of use, and depends on the focus of the operations, with some partners offering hosted processing capabilities and focusing less on pure re-distribution.

The table 51 summarises, per partner, the volumes of published and downloaded data in 2024 and, where applicable, also the percentage change with respect to the end of 2023.

Overall, the average volume of data published per site in 2023 was 2,262 TB, but this figure masks big differences in the approach of each data site with respect to the amount of data they chose to make available to their users.

International partner	No. of Copernicus Sentinel user-level data published on the site in 2025 [TB]					No. of Copernicus Sentinel user-level data downloaded from the site in 2025 [TB]					Change in download volume since 2024
	S1	S2	S3 Land	S5P	Total	S1	S2	S3 Land	S5P	Total	
Australia	681	922	9	19	**1,632**	1,421	1,297	226	np	**2,945**	**11%**
Brazil	np	np	np	n/a	**np**	np	np	np	n/a	**np**	**np**
Chile	714	692	113	n/a	**1,519**	0.01	0.01	-	n/a	**0.01**	**-96%**
India	28	308	n/a	n/a	**336**	16	160	n/a	n/a	**176**	**-5%**
Philippines	7.8	11.5	6.1	6.5	**32**	1.4	0.33	0.004	-	**1.75**	**n/a**
Tunisia	n/a	7.9	n/a	n/a	**7.9**	n/a	7.88	n/a	n/a	**7.88**	**n/a**
Ukraine	39	34	18	16	**106**	0.003	0.056	0.001	0.000	**0.06**	**-46%**
US-NASA	3,563	1,046	4,055	1,457	**10,120**	94,070	16,684	703	3,526	**114,982**	**25%**
US-NOAA	118	78	85	n/a	**280**	23	70	11	n/a	**103**	**80%**

TABLE 51: International Partner publication and download statistics for 2025.

The table above summarises, per partner, the volumes of published and downloaded data in 2025 and, where applicable, also the percentage change with respect to the end of 2024.

Overall, the average volume of data published per site in 2025 was 1,754 TB, but this figure masks big differences in the approach of each data site with respect to the amount of data they chose to make available to their users.

By far the highest volume of data published on an international partner site in 2025 was again on NASA's site, which published over 10,120 TB of additional data in 2025, though this was 26% less than the volume published in 2024. Overall, by 31 December 2025 NASA had published a total of 40,612 TB of data across its sites since December 2015. Users of NASA's site continued to be very active and despite the lower publication volume in 2025, they downloaded 25% more data in 2025 than the volume they had downloaded in 2024, making a total of 400,135 TB of data downloaded from NASA's sites since NASA started publishing Sentinel data. The team attributed the significant increase between last year's and this year's numbers for the Sentinel-2 products to the high file distribution for their OPERA products, which use Sentinel-2 data.

The overall volumes of data published and downloaded in 2025 are broken down by Sentinel in the table, to show the focus of each site in terms of the Sentinel missions which are made available to their users, and the respective interest of the users.

The Indian site continues to publish only Sentinel-1 and Sentinel-2 data, and this year Tunisia's site distributed only Sentinel-2 data. Meanwhile, Australia, Chile, the Philippines, Ukraine and both the US sites all continued to publish data from Sentinels -1, -2 and -3, and the Philippines has joined the group of countries which also publish Sentinel-5P data (the others are Australia, Ukraine and US-NASA). Geoscience Australia again reported that although Sentinel-5P data is being published on the Australian site, the volume of Sentinel-5P data downloads is currently not yet being recorded.

More information about the Commission's international cooperation on EO data exchange under Copernicus can be found at:

https://www.copernicus.eu/en/international-cooperation-area-data-exchange

10 OUTREACH AND ENGAGEMENT

Democratizing access to Earth Observation is impossible without active outreach. CDSE aims to engage and inform practitioners across the various research and application fields of Earth Observation, but also to continuously approach new users. Therefore, communication takes place at several levels, from highly technical content for code developers in GitHub repositories to common language introductory tutorials distributed on YouTube. Subscribed users are kept informed of new developments and datasets, and new users are attracted through social media. The most important step forward in CDSE outreach in 2025 was the increase in content contributed by users – including webinars, use cases, code samples and gallery features. Additionally, conferences and in-person trainings always represent important outreach channels as they offer high visibility, person-to-person consultation and an opportunity to learn from our peers.

10.1. Communication objectives in 2025

Main communication goals:

- Grow the user base of openEO, positioning it as the main CDSE API for server-side processing
- Open and grow the ecosystem of service providers in CDSE
- Establish CDSE as a platform for knowledge exchange
- Change perception of CDSE from „a source of raw data“ to „a platform for processing raw data and downstream data products together“
- Keep registered users engaged through regular interactions via the newsletter and the gallery, making sure all users are aware of new datasets and capabilities

Specific goals towards individual communities:

- Introducing Earth Observation and CDSE to national statistics offices as a tool for generating sustainability indicators
- Focus strongly on the agriculture community as a user group involved in broad area management
- Keep the research community engaged, promoting CDSE as an opportunity for state-of-the-art investigations without the costs of hardware, software or data acquisition
- Connect with education community, providing a knowledge base for teachers to create a multiplicator effect
- Promote the free to commercial pathway towards industry companies

10.2. Communication channels

In 2025, the outreach team aimed to present a consistent set of messages across multiple communication channels. These were organized according to the perceived preferences of various user groups from introductory to highly technical and followed upgrades in the data and service offer.



Copernicus Sentinel data 2025: Sentinel-5A on its way home

Website

The main landing page explains what CDSE is and what the main components are, and the site provides up-to-date news on service status (including disruptions), new datasets and functionality. The blog post guides provided the backbone of detailed information, complemented by use cases and short gallery items, also referring to operational uses of imagery. „Straight to the point with Copernicus Land Monitoring Services data“ is an example of such a blog post guide, providing an overview of the newly released Copernicus Land Monitoring Services portfolio, explaining data sources, properties and use cases. The website also connects users directly to the dashboard, documentation, the gallery and most importantly, Copernicus Browser. In 2025, a full user experience review of the website was carried out, clarifying scope and defining user stories, improving accessibility and adding a new branding scheme that clearly positions CDSE as part of the Copernicus Program but with a distinct identity. Additionally, this redesign also introduced the full register of CDSE services, including both core services and commercial or public services provided by third parties. This Ecosystem Services Registry is being promoted as a community of providers building on CDSE and continues to attract new members. As an attractive entry point to exploring satellite imagery, a new rotating globe visualisation was created.

According to our analytics, the website gained more than a million unique visits in 2025. We registered a growing number of visits directed to our page by AI. About 25% go directly to Copernicus Browser, 3% to documentation and 2% to the gallery.

CDSE Gallery

Every month, 2-4 prominent, visually appealing satellite images are shared in the gallery. These highlight new datasets, explain short use cases and celebrate the beauty of the data. Each gallery feature includes a direct link to Copernicus Browser, so that the users can zoom in and explore the scene in different times, scales and visualisations. The gallery features often connect to important events or international days, such as World Environment Day, launch of the Biomass satellite or the 50th anniversary of ESA. In 2025, the gallery was complemented by a monthly series of desktop backgrounds, which show the data products across the full screen of the user. We took care to maintain a majority of positive messages and success stories. The gallery also provides a welcome opportunity to provide feedback to our power users: we invited several people who share attractive imagery from CDSE online to contribute new gallery features. In fact, a small online community of satellite imagery artists is beginning to form around CDSE. Some gallery features also included short tutorials, explaining how to measure the sun angle from the shadow of a mountain, how to find sailboats in Sentinel-1 images or how to observe the seasons of rice cultivation.

Our most popular gallery item is arguably the December desktop background, contributed by Michael Paperin from Brockmann Consult. It combines an eye-catching demonstration of ocean physics with a visual impression of a galaxy in space. On April Fool’s Day, we also released a prank image which was not a satellite picture at all!

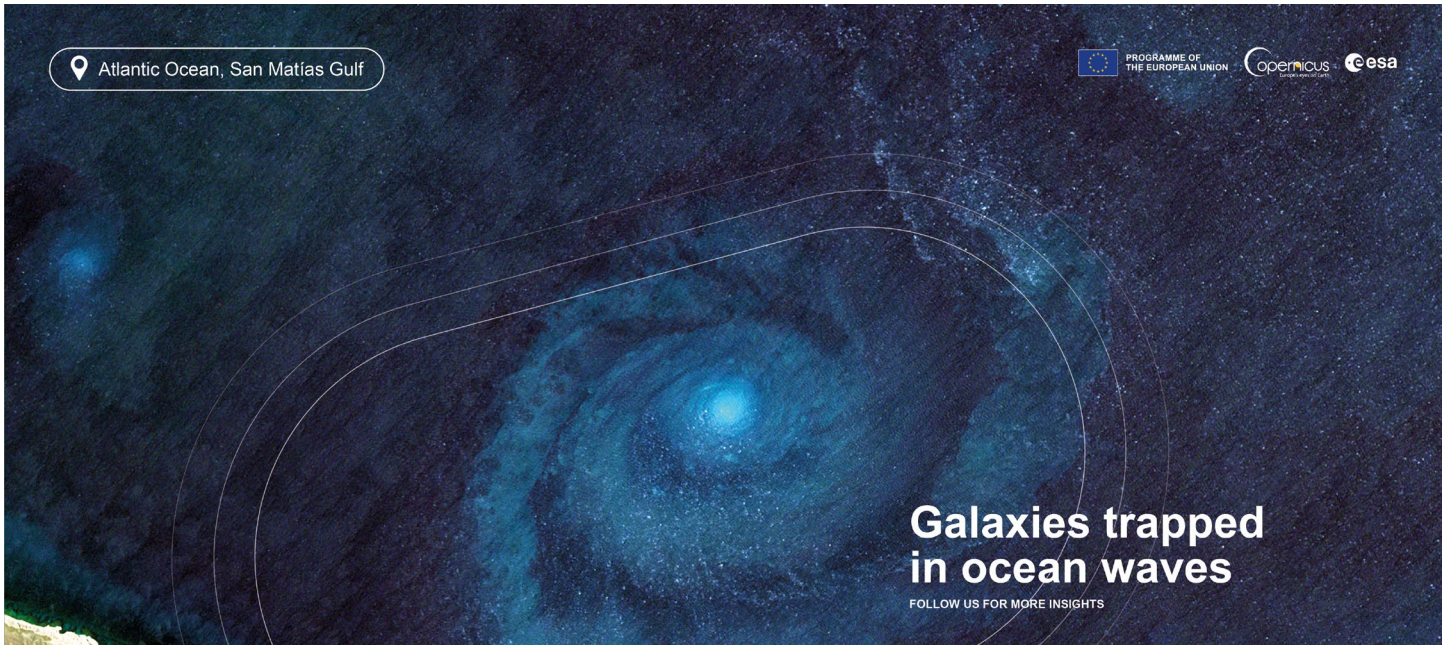
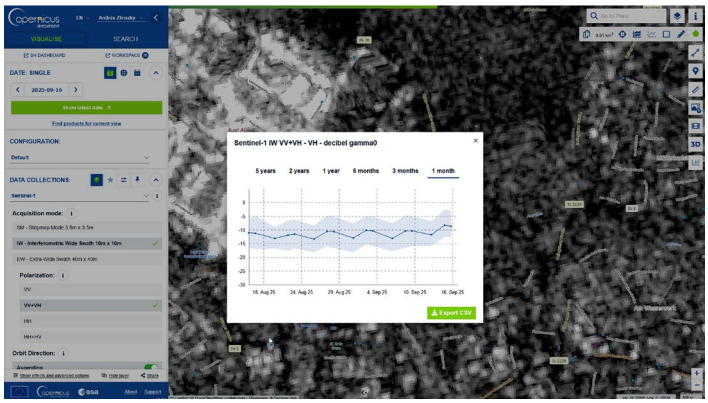


Image source: https://dataspace.copernicus.eu/gallery/2020-8-19-december-2025-desktop-background, Galaxies trapped in ocean waves, contributed by Michael Paperin from Brockmann Consult.

Use Cases

Six new use cases were published in 2025, contributed by both the CDSE team and external authors. These serve to showcase the potential of the platform for building advanced solutions. In particular, the machine learning and crop monitoring use cases demonstrate how the platform enables end-to-end processing across large areas in an operational context. The use case on the Sentinel Hub Processing unit calculator fills an important knowledge gap previously reported by our users, while the guide to CLSM data provides a reference point for getting started with this data collection.

The case „Satellite Data for Economic Insights: Monitoring Automotive Production in Germany with Sentinel-1“ is an outstanding example: it was provided by researchers from DLR, and explains how Sentinel-1 data can be used to estimate the number of cars in production parking lots of factories, providing a public indicator of output. This included a description of the economic relevance of the approach, links to the presented visualisation in Copernicus Browser, and a Jupyter Notebook repository that the readers could test and adapt themselves.



Documentation

CDSE documentation remains the most important source of information for developers. In 2025, the Frequently Asked Questions section was substantially extended, a beginner’s guide to Sentinel Hub was added, and the Copernicus Land Monitoring Service collections explained in detail. The structure of dataset presentation was also re-organized to make it easier to find relevant information. More and more users are collecting information with AI. Our tests for retrieving information about CDSE using AI were mostly successful, showing that CDSE documentation is organized in an AI-compatible format and is preferred by LLM-s as an authentic source.

Social Media

The main community building platforms of CDSE in 2025 were LinkedIn and YouTube. LinkedIn allowed us to broadcast our messages to the wider earth observation community, generating 282,000 total impressions to 5,300 followers. It also allows us to showcase solutions and datasets built by our users. The most liked and shared items were photos of our presence at the Living Planet Symposium, job announcements and case studies by our users. We plan to grow visibility by creating mini-tutorials, quizzes and sort videos while keeping a personal touch on our presence.



On YouTube, we shared recordings from a total of six webinars, reaching 3,400 viewer in total. For more professional users, we uploaded the full recording of a university training course presented in 2024 at MATE University, a total of more than 8 hours of tutorials. We also shared the recordings of the CDSE User Review Forum presentations. Additionally, some gallery features were extended with short video tutorials, and overview „teaser" videos were created for the Cassini Hackathon and Copernicus Land Monitoring Service. Some CDSE tutorials are also provided by external partners who recorded presentations that took place at their venues, such as the Big Data From Space Conference tutorials on openEO and Sentinel Hub. The most popular videos are the ones addressing a large user community (QGIS, Jupyter) or providing an introduction to beginners (e.g. a short guide to Copernicus Browser). The most popular webinar was clearly Unlocking Machine Learning Potential Using openEO by Jeroen Dries from VITO, which now has more than 800 views.

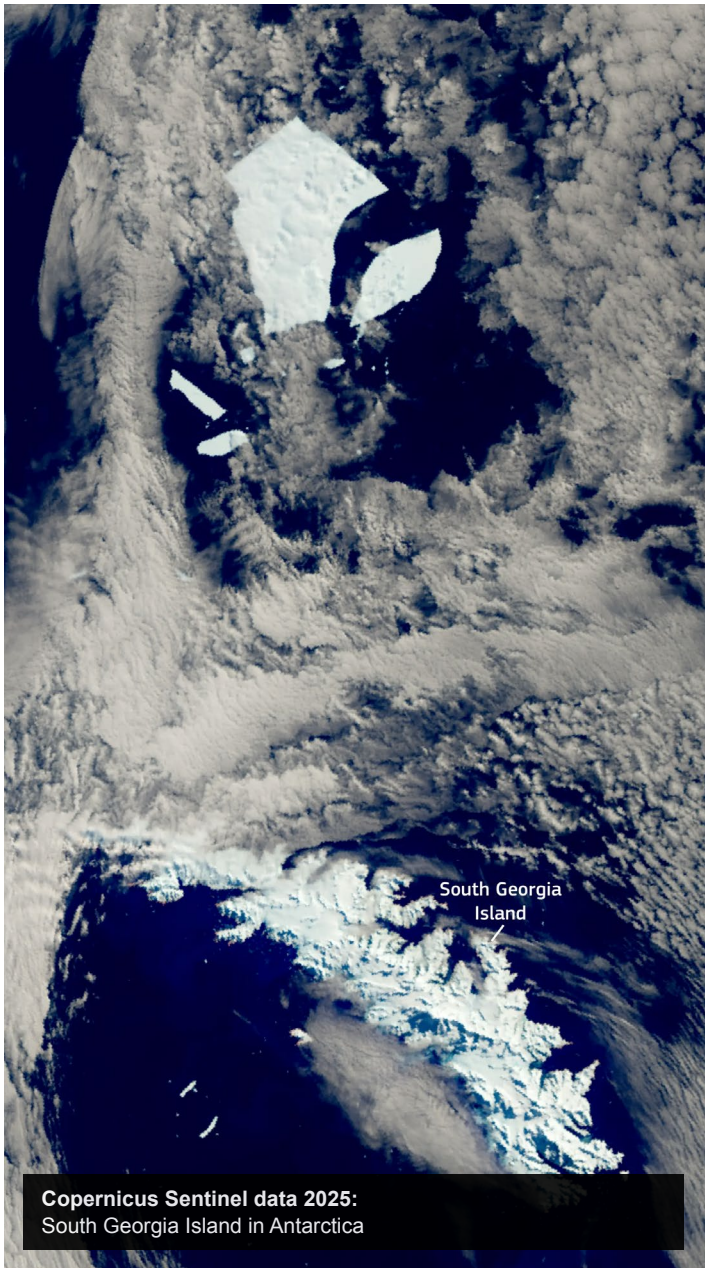
Newsletter

Copernicus Spotlight was introduced in 2024 and by the end of 2025 reached 78,259 subscribers, and an open rate above 30%. The newsletter has a consistent structure, presenting new datasets, new functionalities, new training materials, recent events, upcoming events and an image of the month. The newsletter also advertises opportunities for users to contribute. While it is more of a curated link collection of released material than an explanatory document, it provides a systematic overview of the progress of the project each month. According to feedback we received, readers appreciate how this way of communication saves them time and helps stay up to date on new developments – in the user survey, this was the second highest rated source of information on CDSE (after the website itself).

> *Wow -- just a note to remark, to whoever assembles these newsletter: this is PHENOMENAL! What a great collection of stuff, crisply & sensibly presented. I receive a lot of communication of this kind (introducing new offerings, new technical capabilities, etc.) and it's usually so-so -- this is really excellent. Bravo and thank you!*
> *Robin*
> *Oakland, CA*

Scientific publications

The CDSE team published a total of 4 peer-reviewed conference abstracts published online, 3 for the EGU conference (available here, here and here) and one for the Big Data from Space conference (available here). A total of 876 publications from 2025 mention Copernicus Data Space Ecosystem, according to Google Scholar. The most prominent one is arguably Mohr, et al. „Federated and reusable processing of Earth observation data." Scientific Data 12.1 (2025): 194. Published in Nature Scientific Data, this paper explains how openEO supports cloud processing connecting different backends, including CDSE.



Copernicus Sentinel data 2025:
South Georgia Island in Antarctica

10.3. Conferences and training events

In total, the CDSE team participated in 46 conferences and 35 training events.

We took care to ensure a balance of different domains, with governance and agriculture represented strongest, in addition to Earth Observation and software development. Conferences always serve as a forum for knowledge exchange in both directions, where CDSE is visible but also where the CDSE team learns the needs and expectations of the users directly. In-person interactions build the community and are the most efficient way of consultation.

The most successful conferences were the ones where we engaged a new audience, presented a consistent set of messages, and had the opportunity to deliver hands-on training courses. The release of Copernicus Land Monitoring Service datasets was good news for many different user communities, allowing us to bring a strong message and high visibility. In 2025, our presence at events was boosted by our strong and consistent branding: we used the new logos, wore team T-shirts and prepared instantly recognizable, attractive booth backwalls wherever possible.

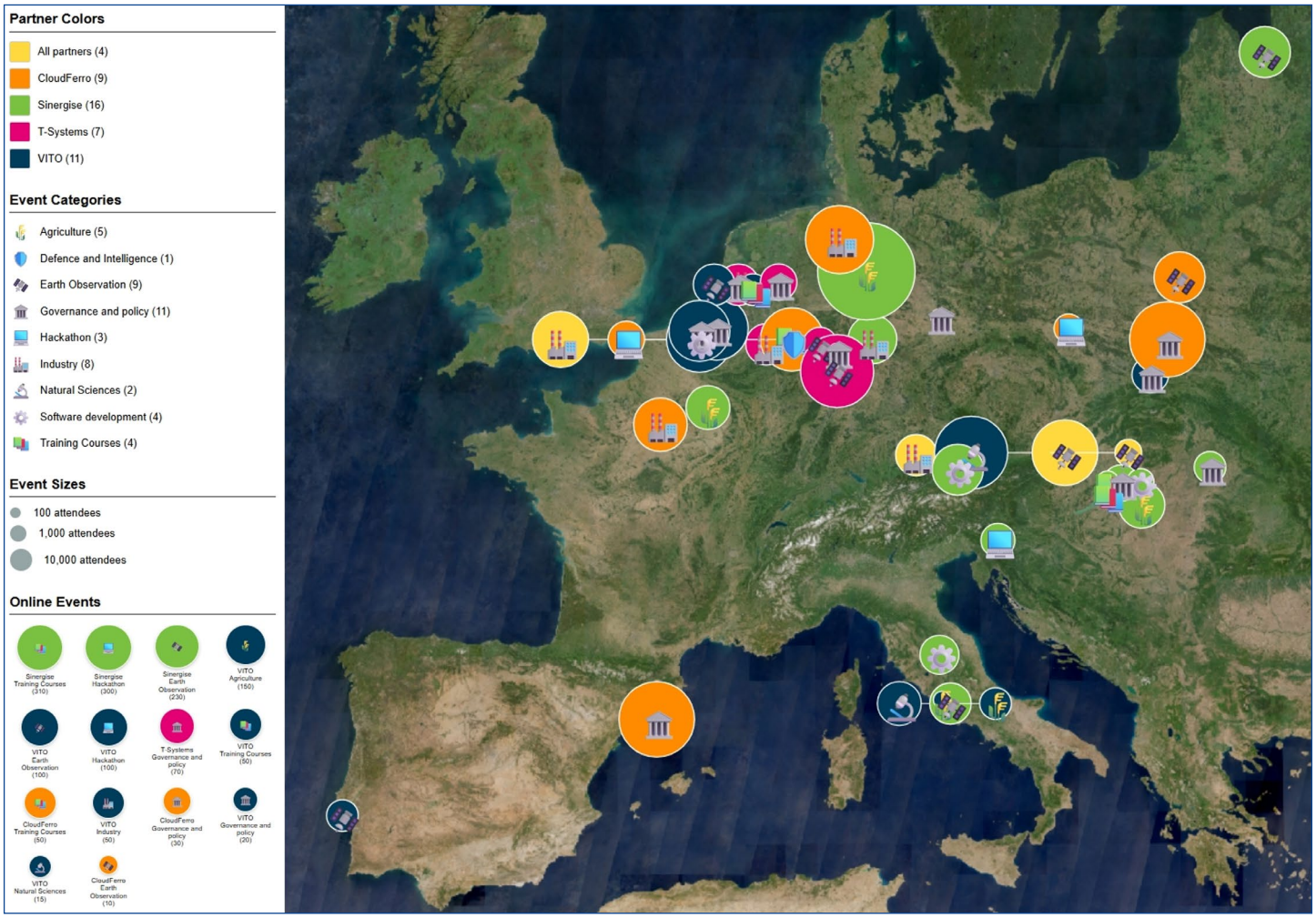


FIGURE 108: Events and conferences attended by the CDSE team.
Colours represent attending partners, logos represent event domains, circle size is scaled to the number of attendees.
(Background map: Sentinel-2 Quarterly Mosaic generated and available in CDSE)

Agriculture

In the agricultural sector, the most important new events in 2025 were the ones representing the African community – this region was not directly addressed before. Here a significant demand is recognized for knowledge sharing, and with openEO WorldCereal, CDSE contributes to a flagship product which is ready for operational use across all levels of the agriculture value chain. Copernicus Land Monitoring Services provide valuable data that attracts agricultural service providers to CDSE who might not be ready to provide data processing on their own. At Agritechnica, the largest agricultural trade fair in Europe, we discussed our data and compute offering with various companies providing earth observation services and received particularly strong attention from institutions teaching modern agriculture.

Defence and Intelligence

Defence and Intelligence is a rapidly growing sector where sovereign cloud solutions, public imagery for open source intelligence and machine learning analytics are of strong interest. The CDSE team aimed to participate at the most important events of the sector, interacting with national agencies and industry to understand their needs and requirements.

Governance and policy

From local to international level, decision support is one of the core interests of the Copernicus Programme and therefore also CDSE. We participated in a series of events and workshops, mainly national events in the consortium members home countries and municipal level workshops. These occasions provided very valuable feedback beyond the information that would be publicly shared at a conference and provided welcome opportunities for consulting on solutions and tools. The free offering of CDSE is also accessible for cities and small regions. The combination of high frequency optical imagery with environmental parameters from Copernicus Land Monitoring Services fills the gaps between ground observations in space and time. Copernicus Contributing Mission VHR mosaics are also relevant as often the most recent source of imagery. The knowledge gained during these consultations and workshops has laid the foundation for outreach to governments in a more systematic way in 2026.

Earth Observation

Events of the Earth Observation sector are central to CDSE, and especially the conferences organized by ESA provided welcome opportunities to demonstrate our services. CDSE is actively shaping the Earth Observation market by democratizing access to data and providing the tools for cloud analysis. In addition to conference talks, these events often hosted demonstrations, tutorials or trainings where newcomers could get acquainted with CDSE and experienced developers could learn about the newest offerings. Trainings about Copernicus Land Monitoring Services datasets, analysis-ready data products and web publishing services attracted a large audience. Wherever CDSE was represented by a booth, users always showed a lot of interest and provided valuable feedback.

Industry

CDSE serves as a foundation for operational solutions in many industry sectors. This year, the launch of the Ecosystem Service Registry provided additional incentive for engaging with companies. CREODIAS was advertised as the infrastructure for upscaling CDSE-native processes, and Copernicus Land Monitoring datasets were promoted as the source of new analytical solutions.

Natural Sciences

Climate, Environment, Conservation sciences are important for the contribution of CDSE to global sustainability. We recognize that many operational solutions start as an experiment, just as many government experts or startup company founders start as scientists. The European Geosciences Union General Assembly was probably the largest event where CDSE was presenting ecosystem in 2025, with more than 20,000 participants. Here we organized a session about data spaces. The guest keynote presentation by Prof. Wolfgang Wagner was particularly well attended. We showed that the free data offering and public processing capacity empowers even young researchers without their own funds to carry out regional-scale research. We learned that CDSE is already intensively used for teaching remote sensing at university level and provided a hands-on training to schoolteachers about classroom use of Copernicus Browser.

Software development

CDSE and especially openEO are of high interest for the open-source software development and geoinformatics community. Our visibility in this sector ensures that new downstream solutions are created based on our APIs and that new software libraries and tools are compatible with CDSE.

Training courses

Experts of the CDSE outreach team were invited to contribute to several training courses. In fact, we would have needed more capacity to serve every event where our participation was called for. We trust that the trainings we chose to deliver have a strong multiplicator effect: we mainly worked with groups of university teachers or government agency employees. The most important training events where the OpenGeoHub Summer School and the ESTP training course. The former is a highly prestigious training event in the open-source remote sensing community, while the latter was presented to officials of national statistics offices who can work with CDSE to provide environmental indicators for their respective countries.

Hackathons

Copernicus Data Space Ecosystem is an ideal tool for hackathons: beginners can already create meaningful results in a short time in Copernicus Browser, while experts can work in the CDSE Jupyter Lab to develop end-to-end solutions. For the European Big Data Hackathon, a set of custom data collections was onboarded and a specific virtual machine configuration was defined. This event was specifically for National Statistics Offices and European Master in Official Statistics students, providing CDSE visibility in this sector. Cassini Hackathons have been regularly hosted on CDSE, and every year, they represent a strong peak in processing unit consumption and accessed data volume. The tutorials we prepared for supporting this contest were visible to >1,000 participants.



Copernicus Sentinel data 2025: Stelvio National Park in Italy

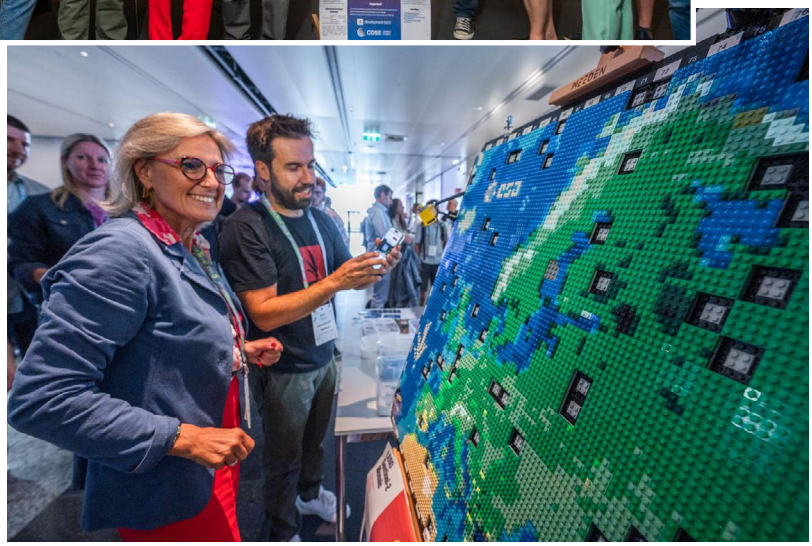
10.4 ESA Living Planet Symposium

Our most successful conference in 2025 was the ESA Living Planet Symposium. CDSE was represented at the No.1 conference of the earth observation sector by a trio of booths (CloudFerro, VITO, T-Systems/Sinergise). The centerpiece of the booth was an interactive LEGO visualization hosted by Development Seed in openEO and built by the participants themselves – including Simonetta Cheli, Director of the ESA Earth Observation Programme. This was very well received, and the more than 650 tiles were successfully completed before the end of the event. We launched the Copernicus Land Monitoring Service datasets and celebrated the registry of the 400,000th user during the event. The large number of CDSE experts present meant that even the most technical questions could be answered, and we had space to host many discussions in parallel.

We also contributed a series of demos to the ESA Booth, and presented oral talks, agora sessions, demos and tutorial sessions at the conference – 54 contributions in total. Additionally, CDSE also hosted the User Review Forum as one of the LPS sessions, offering presentations by our power users and space to discuss challenges and requirements. The harmonized, cross-cutting content delivered through many channels and levels ensured a high rate of interest and many new subscribers.







11 DATA ACCESS SYSTEM PERFORMANCE ANALYSIS

Performance analysis has played a key role in the continuous improvement of the CDSE. This section outlines the approach and the results from this continuous analysis process. Up-to-date system health and performance metrics are available in the Copernicus Dashboard.

11.1. Service availability

Service availability, in general, is defined as the percentage of a given period during which performance is above or below the committed threshold. In particular, the CDSE measures availability on the basis of two different measurements: the Performance Metric for Query (PMQ) and the Performance Metric for Immediate Access (PMIA). The PMQ measures availability of the catalogue interfaces and is continuously checked by a system health-check probe from central monitoring. The Service is considered unavailable when the PMQ average performance drops below the threshold for 5 seconds and is resolved when the average performance is re-established. The PMIA measures the download performance via the APIs, with unavailability declared when the download performance drops below 20 MBps. In this way, service availability is measured as the availability of system operation at a specific level, rather than periods of total availability or unavailability of the system. To determine overall service availability for the year, a monthly key performance indicator (KPI) is derived. This KPI takes the lower of the two metrics (PMQ or PMIA) as the availability level for that month. The final annual value is based on the average of the monthly indicators.

Service availability reached a notably high level in 2025, averaging 99.4% for the year – an improvement of 0.7 percentage points on the average for 2024 (98.7%). This figure was derived as weighted average of two metrics over the year. Throughout the year, the PMIA was the limiting factor in eleven out of twelve months (averaging 99.37%), while the PMQ consistently outperformed it (averaging 99.68%). The PMQ was lower than the PMIA only in September, when the former reached 100% and the latter came in at 99.9%. Availability reached or exceeded 99.5% in nine of the twelve months, with a subsequent month (March) recording 99.1%, meaning ten months saw availability at or above 99%. Only February (96.5%) and April (98.9%) fell below this level, and together these two months accounted for the entire shortfall relative to what would otherwise have been a near-perfect year. (Table 52)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2025	99.50%	96.50%	99.10%	98.90%	99.90%	99.90%	99.90%	99.90%	99.90%	99.90%	100.00%	99.60%
2024	99.40%	99.30%	99.40%	96.80%	99.30%	99.20%	99.20%	98.80%	99.00%	99.50%	98.70%	95.50%

TABLE 52:
CDSE monthly service availability (KPI-03) in 2025 and 2024.
Monthly availability values (%) derived as the lower of the Performance Metric for Query (PMQ) and the Performance Metric for Immediate Access (PMIA).

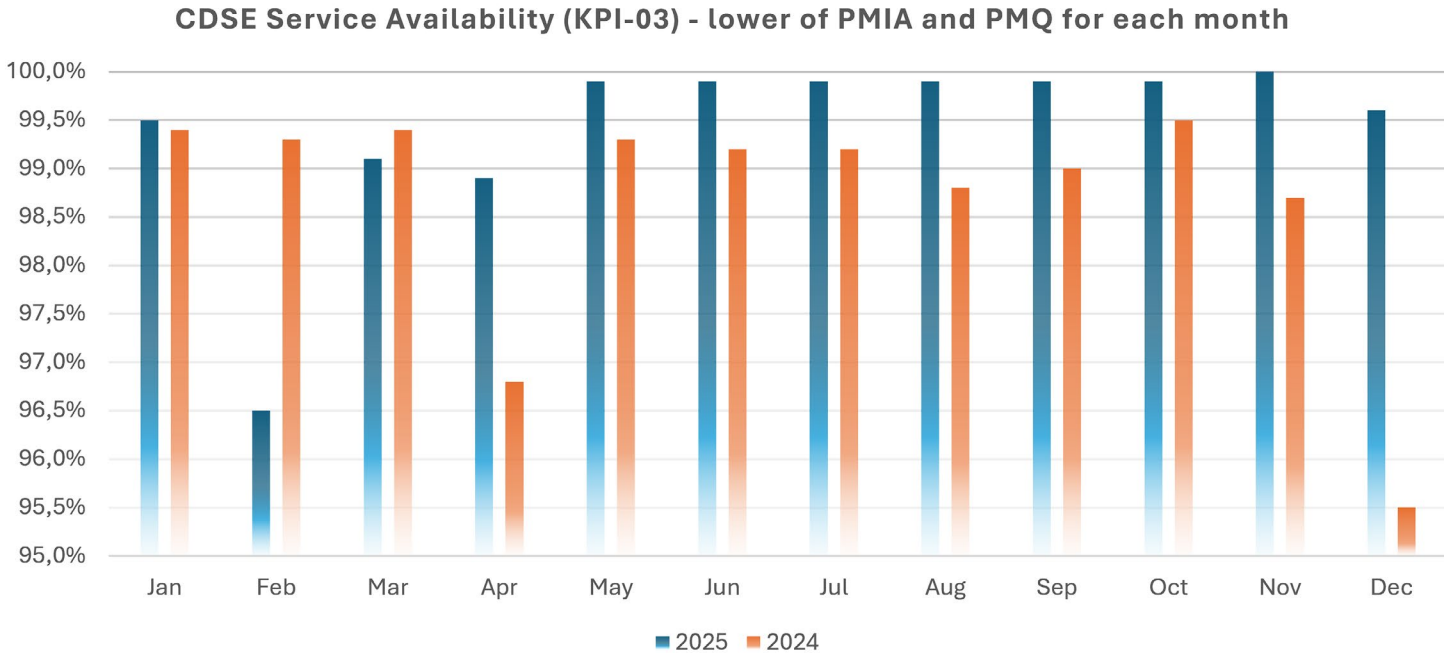


FIGURE 109: CDSE monthly service availability (KPI-03) in 2025 and 2024.

The dip in February to 96.5% was the most significant deviation, driven by two separate network incidents which temporarily prevented users from accessing CDSE data. The first incident, which occurred on 5 February, disrupted access to the Copernicus Browser, catalogue downloads and openEO. The second incident, which was more prolonged, began on 11 February, affecting EOData access for over a day. Full access was restored and product publication resumed on 12 February at 19:00 CET. Missing products were synchronized on 13 February, followed by checksum recalculation for all products published during the affected period. These two events are the main cause of February's availability shortfall. (Figure 109)

April's availability level of 98.9% was affected by two separate incidents that occurred during the month. The first occurred on 3 April, when openEO experienced a network issue that temporarily disrupted the service, but this was resolved on the same day. The second incident occurred on 23 April, when storage issues caused openEO jobs to fail. This required intervention before full functionality could be restored. While both incidents were relatively short-lived, their combined effect on the PMIA metric was sufficient to bring the monthly availability figure below 99%. (Figure 109)

The second half of the year was particularly strong: from May through to November, monthly availability did not fall below 99.9%, with November achieving a perfect 100% service availability. December closed the year at 99.6%, reflecting a brief and isolated reduction in download performance with no structural cause. This progress was achieved through several corrective and preventive actions. Following the February incidents, network redundancy configurations were reviewed and improved to reduce the risk of similar access disruptions in the future. The openEO issues in April prompted enhanced monitoring of storage capacity thresholds and faster escalation procedures for infrastructure-level faults. Overall, the 2025 results demonstrate a clear improvement in platform stability and resilience compared to the previous year, most notably through the absence of any major service interruption comparable to the April 2024 outage. (Figure 109)

11.2. Network analysis

An important metric for evaluating the CDSE's performance is the volume of outgoing network traffic, reflecting user download activity and internal platform operations, such as data dissemination and reprocessing. Figure 110 illustrates the daily outgoing traffic in gigabits per second (Gbps) in 2025, delivering insights into usage patterns and periods of increased system activity.

The 2025 statistics reveal a slightly higher and more dynamic traffic profile than in 2024. The average monthly outgoing traffic increased to around 31.2 Gbps – up from 29.1 Gbps in 2024 – with monthly values ranging from 26.2 Gbps in December to 39.3 Gbps in June. Seven out of twelve months exceeded 30 Gbps, compared to six in 2024. The first half of the year was notably more active than the second, driven by a combination of new mission data releases, large-scale reprocessing campaigns, and growing user demand. January also saw a significant increase compared to the same month in 2024 (28.0 Gbps versus 23.4 Gbps), reflecting the strong momentum of the platform carried over into the new year. (Figure 110)

The 2025 profile shows two notable traffic peaks and one significant drop. The first peak occurred on 19 March, when daily traffic reached almost 60 Gbps, before dropping back the following day. This spike coincided closely with the commencement of Sentinel-1C data dissemination on 26 March 2025, a highly anticipated release that likely triggered intensive pre-access preparations and early download activity. It also occurred concurrently with the launch of the Sentinel-3 OLCI Level-2 Land full mission reprocessing campaign, which began making products available on CDSE on 10 March 2025. The second, more sustained peak was observed from 13 to 17 June, with daily values peaking at approximately 67 Gbps on 13 June and remaining above 53 Gbps until 17 June. This period aligned with the release of Sentinel-1 ETAD Processor v3.0 on 11 June, the continued publication of Sentinel-3 OLCI Level-1 reprocessed products, and growing uptake of Copernicus Land Monitoring Service (CLMS) data, which launched on CDSE in May. The drop observed on 12 February, when traffic fell to a daily minimum of 13.3 Gbps, directly reflects the EOData access incident described in chapter 11.1. Service Availability. During this incident, users were unable to download data for an extended period. This sharp reduction in outgoing traffic was a natural consequence of limited access, with outgoing traffic levels returning to normal once the issue was resolved later that day (Figure 110). Several large-scale data operations contributed to sustained traffic throughout the year, including:

- Resume of Sentinel-2A data acquisition and the launch of the extended campaign to complement the nominal two-satellite (Sentinel-2B/2C) constellation (February–March),
- Release of Sentinel-1C data and the gradual publication of calibrated SAR products in CDSE (since March),
- Full mission reprocessing of Sentinel-3 OLCI Level-1 and Level-2 Land products (March–October),
- Launch of the Copernicus Land Monitoring Service (CLMS) datasets on CDSE, providing access to a variety of global product types (since May),
- Full mission reprocessing of Sentinel-5P SO_2 products using the COBRA algorithm (June),
- Reprocessing of Sentinel-2 Collection-1 Phase 2 (January–September),
- Publication of reprocessed Sentinel-6 Baseline Collection 008 products (September),
- Publication of Landsat-8 and Landsat-9 Collection 2 Level-1 data (since September),
- Upgrade of the Sentinel-1 processing baseline to version 4.0.0 (October),
- Update to the Sentinel-5P ground processing system introducing new processor versions for Level-1B and Level-2 products (November),
- Publication of Landsat bi-monthly analysis-ready mosaics (1997-2024) in STAC Catalogue (December),
- Progressive rollout of very high resolution (VHR) image mosaics, covering multiple reference years (2015, 2018, 2021 and 2024) (January-December)

Overall, the 2025 traffic profile reflects an actively expanding and evolving platform, absorbing new missions, delivering large-scale reprocessing outputs and serving a growing user base. The consistently higher baseline compared to 2024 indicates broader data availability and deeper operational engagement across the CDSE platform. (Figure 111)

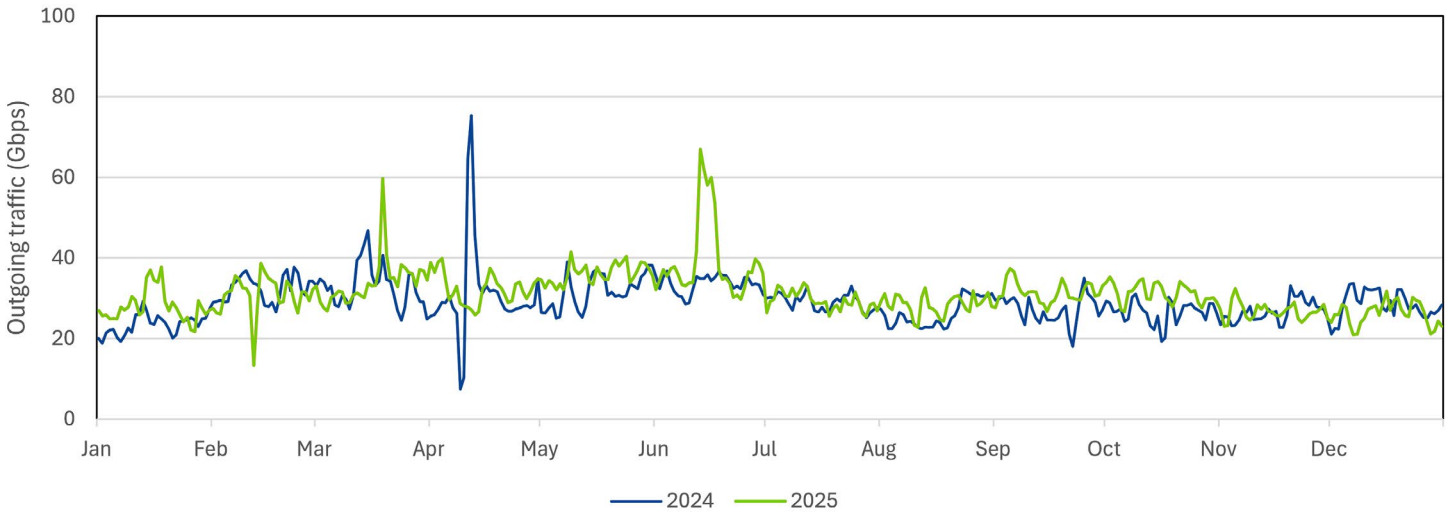
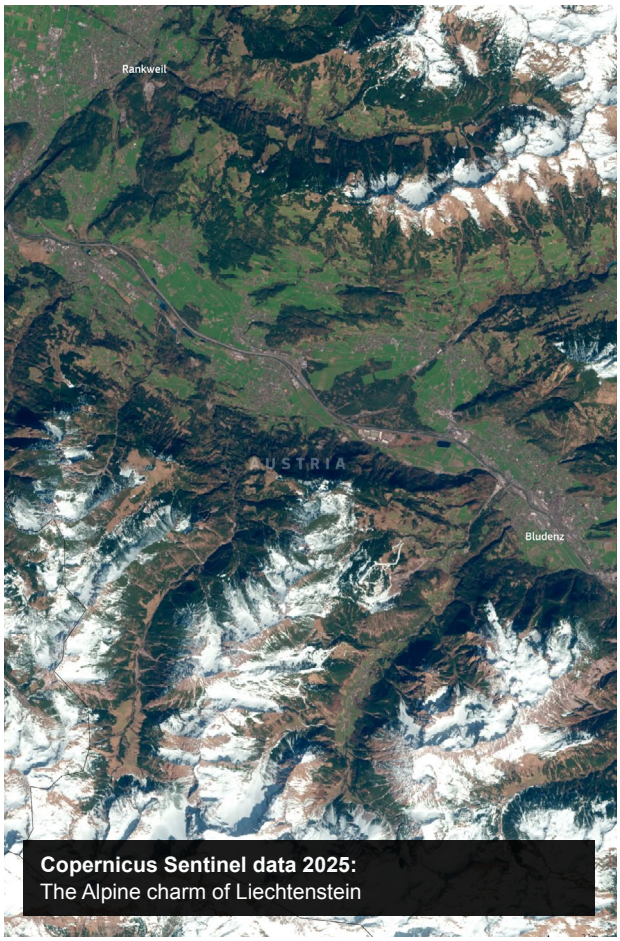


FIGURE 110: The daily outgoing traffic in Gbps in 2025.



Copernicus Sentinel data 2025:
The Alpine charm of Liechtenstein

11.3. Publication timeliness

Timely access to Earth observation (EO) data is essential for the performance of the CDSE, especially for services and applications that rely on near real-time data. Monitoring average publication timeliness provides insight into the efficiency of the data flow from acquisition to user availability.

Publication timeliness is the time between when a satellite acquires data and when that data becomes available on the CDSE platform. This process is influenced by various mission-specific factors, including the orbit point of image sensing, the geographical position of the receiving antenna, and factors such as on-board data latency (i.e. the time between acquisition and data transmission to ground), the availability of auxiliary data required for processing, and the subsequent stages of data publication. Any interruption in this sequence, whether technical or operational, has the potential to impact the overall timeliness of data publication.

User-level data are divided into three timeliness categories: Near-Real Time (NRT), Short-Time Critical (STC), and Non-Time Critical (NTC). Each category, within a given mission, is associated with specific expectations regarding how quickly the data should be published. These requirements may vary depending on the mission, instrument, or product level. It is important to note that the requirements for each timeliness category may not apply to an individual operation and may change over the course of an operation's lifetime. A detailed, up-to-date breakdown of timeliness requirements is shown below.

- **Sentinel-1:**
  - **NRT** and **NTC**: within 24 hours from sensing.
  - **STC**: not applicable.
- **Sentinel-2:**
  - **NTC** within 24 hours from sensing.
  - **NRT** and **STC**: not applicable.
- **Sentinel-3:**

  NRT:
  - **OLCI, SLSTR** and **SRAL**: less than 3 hours after acquisition.
  - **SYNERGY**: not applicable.

  STC:
  - **SRAL** and **SYNERGY**: less than 48 hours after acquisition.
  - **OLCI** and **SLSTR**: not applicable.

  NTC:
  - **OLCI, SLSTR, SRAL** and **SYNERGY**: less than 30 days from acquisition.
- **Sentinel-5P:**

  NRT:
  - **Level-1B** and **Level-2**: within 3 hours from sensing.

  NTC:
  - **Level-1B**: within 24 hours from sensing.
  - **Level-2**: within 14 days from sensing.

Mission	Timeline category		
	NRT	NTC	STC
S1	< 3 hours	< 24 hours	-
S2	-	< 24 hours	-
S3-OLCI	< 3 hours	< 30 days	-
S3-SLSTR	< 3 hours	< 30 days	-
S3-SRAL	< 3 hours	< 30 days	< 48 hours
S3-SYNERGY	-	< 30 days	< 48 hours
S5P-L1B	< 3 hours	< 24 hours	-
S5P-L2	< 3 hours	< 14 days	-

TABLE 53: Reference timeliness thresholds for user-level data publication by mission.

Table 54 presents the average publication timeliness for user-level data across Sentinel missions, based on values recorded over the last three months of the 2025 reporting period. The columns entitled „Δ T25 vs T24“ reflect the difference in the mean publication time in comparison with the same interval in 2024. A minus sign (–) indicates an improvement, i.e., a reduction in publication time, while a plus sign (+) denotes an increase, suggesting a delay in data publication.

Mission	NRT average timeliness	Δ T25 vs T24	NTC average timeliness	Δ T25 vs T24	STC average timeliness	Δ T25 vs T24
S1	01h 45m	+18m	02h 56m	-21m	-	-
S2	-	-	03h 42m	-14m	-	-
S3-OLCI	02h 08m	+13m	1d 02h 40m	+8h 6m	-	-
S3-SLSTR	02h 09m	+20m	1d 10h 41m	+7h 45m	-	-
S3-SRAL	02h 06m	+7m	27d 02h 12m	+1d 22h 25m	1d 14h 53m	-51m
S3-SYNERGY	-	-	2d 00h 35m	+15h 30m	8h 6m	+23m
S5P-L1B	55m	-3m	09h 05m	+5h 44m	-	-
S5P-L2	01h 15m	+5m	2d 10h 45m	-10h 44m	-	-

TABLE 54: Average publication timeliness over last trimester of 2025 and comparison with last trimester of 2024.

The subsequent sections provide a detailed comparison of the average publication times and highlight trends based on timeliness category per Sentinel mission.

Sentinel-1:

In 2025, Sentinel-1 publication timeliness continued to be classified using the two-category approach introduced the previous year, which distinguishes between Near-Real Time (NRT) and Non-Time Critical (NTC) data.

The average publication time for NRT products in the final trimester of 2025 was 1 hour and 45 minutes, which was 18 minutes longer than in the same period of 2024 (Table 54).

Despite this slight increase, all monthly values remained within the expected limits. The highest delays were observed in April (2.77 hours) and October (2.36 hours), which were both comparable to patterns seen in the previous year. Conversely, the fastest publication times were recorded in January and March (1.12 hours). Overall, the monthly distribution indicates a stable and well-performing system, with only minor fluctuations throughout the year and no significant disruptions. (Figure 111)

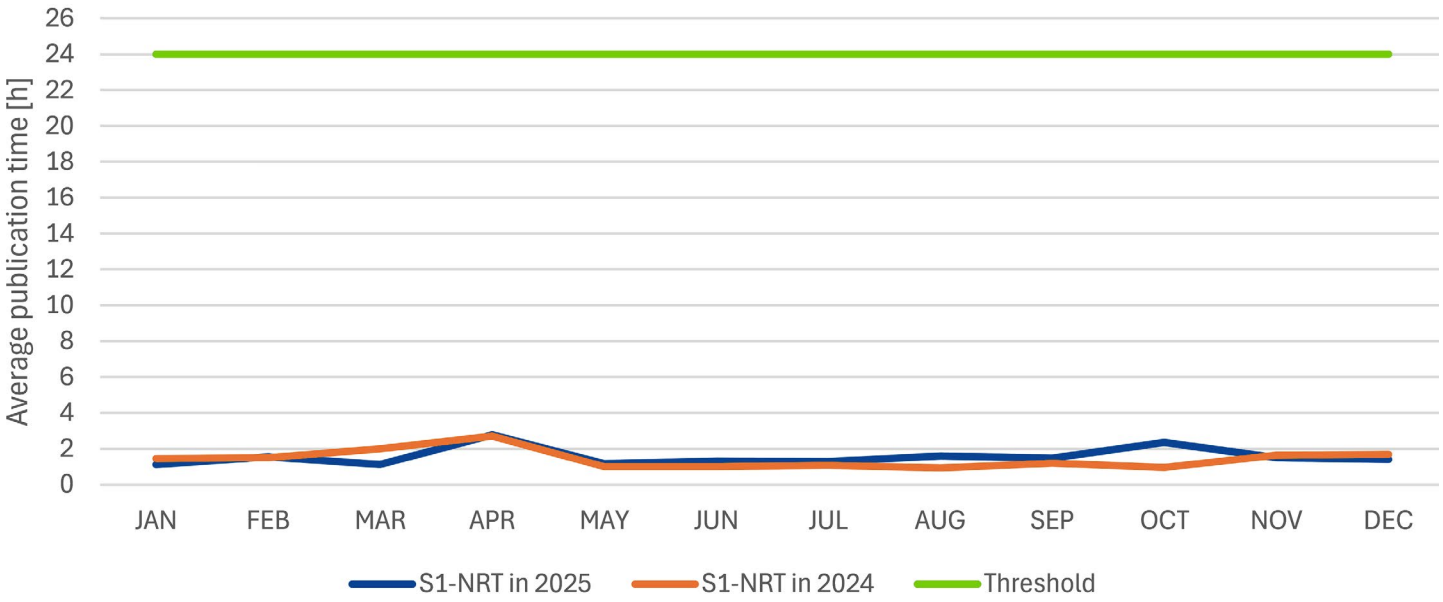


FIGURE 111: Monthly Average Publication Timeliness for Sentinel-1 NRT user-level data during 2025.

A more positive trend can be seen for NTC data. Here, the average publication time in the last quarter dropped to 2 hours and 56 minutes, marking a 21-minute improvement compared to 2024 (Table 54). Throughout the year, values consistently remained well below the 24-hour threshold, typically oscillating around the 3-hour mark. The lowest monthly value was observed in July (2.76 hours), while April again showed the highest value (4.69 hours). From mid-year onwards, the results became even more stable, with very little variation between months, with values staying close to or just under 3 hours. Compared to 2024, this represents a clear improvement in terms of both consistency and overall performance. Correspondingly, the annual average decreased from 3.48 hours in 2024 to 3.14 hours in 2025, reflecting a 0.34-hour improvement. (Figure 111)

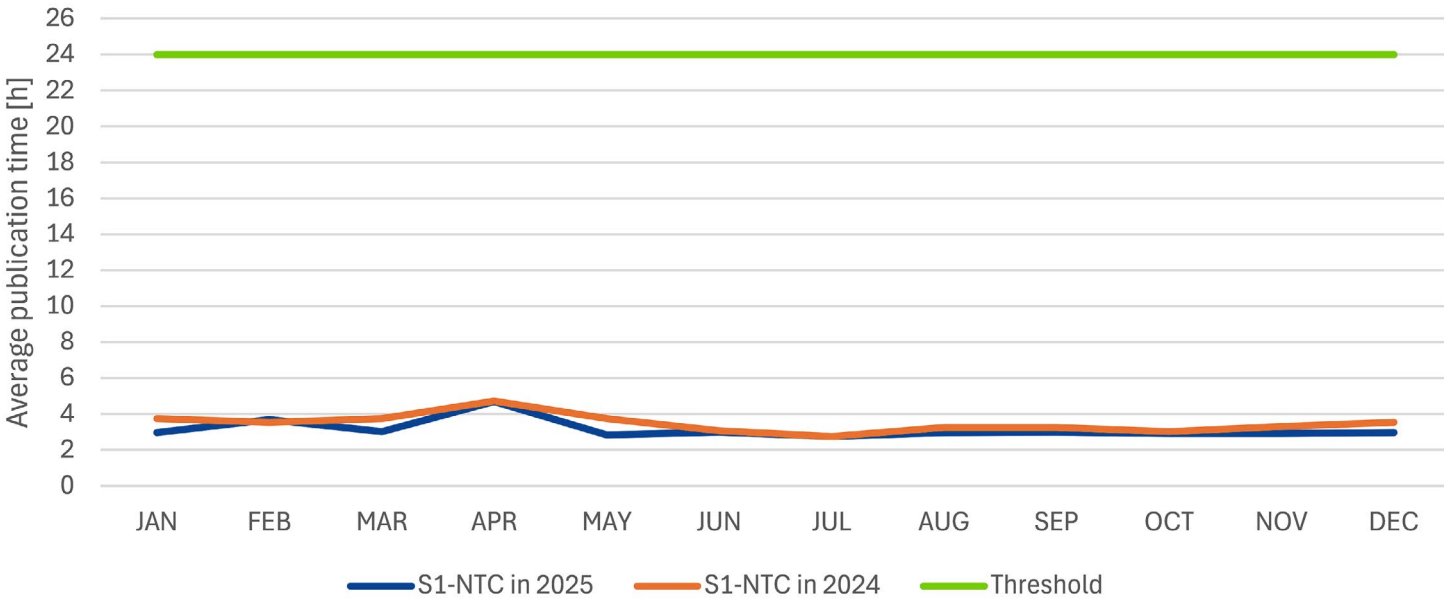


FIGURE 112: Monthly Average Publication Timeliness for Sentinel-1 NTC user-level data during 2025.



Copernicus Sentinel data 2025: The Giza Plateau in Egypt

Sentinel-2:

The timeliness metrics for Sentinel-2 user-level data in the final quarter of 2025 averaged at 3 hours and 42 minutes, resulting in a 14-minute reduction in publication time over the same period in 2024 (Table 54). All monthly values remained well below the 24-hour threshold throughout the year, confirming reliable and consistent system performance.

Additionally, a closer look at the monthly breakdown reveals a more stable picture in 2025 than in the previous year. The best performance was recorded in November (3.31 hours) and October (3.92 hours), while the highest value of the year occurred in February (5.10 hours). Nevertheless, even the highest publication time remained well within acceptable limits. By contrast, 2024 saw pronounced spikes in August (10.93 hours) and September (14.20 hours), which were caused by delays in product publication at the data source. In 2025, these months saw values of 4.03 and 4.54 hours respectively, which are consistent with the annual trend. This marks a substantial improvement year on year in the second half of the year and confirms that the disruptions observed in 2024 did not reoccur.

In summary, Sentinel-2 maintained highly reliable and uniform performance throughout the year, with no significant external disruptions affecting the publication process. This is further reflected in the annual averages, where the mean publication time decreased from 6.35 hours in 2024 to 4.21 hours in 2025, confirming a substantial year-on-year improvement. (Figure 113)

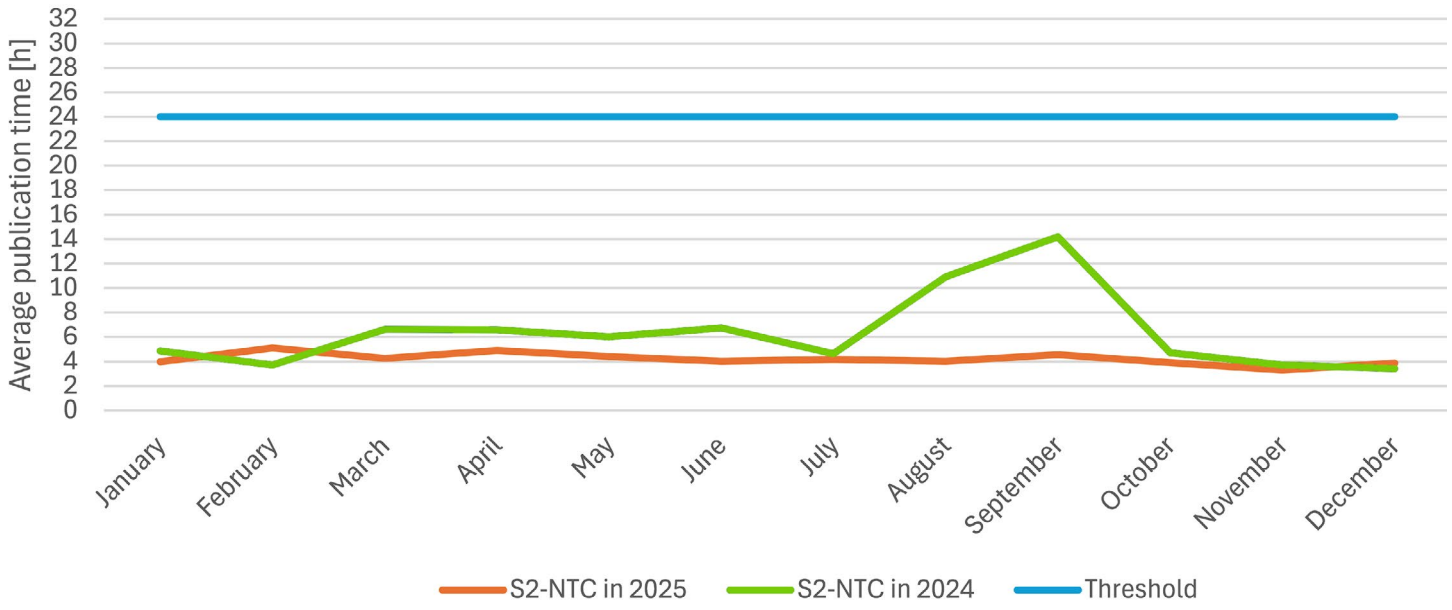


FIGURE 113: Monthly Average Publication Timeliness for Sentinel-2 user-level data during 2025.

Sentinel-3:

The situation for Sentinel-3 NRT data in 2025 was more volatile than in the previous year. While the final-trimester averages across all instruments remained within or close to the 3-hour threshold – 2 hours and 8 minutes for OLCI, 2 hours and 9 minutes for SLSTR, and 2 hours and 6 minutes for SRAL (Table 54) – these represent increases in publication times of 13, 20, and 7 minutes, respectively, compared to the final trimester of 2024.

A more detailed monthly breakdown reveals several periods when the three-hour threshold was exceeded, most notably in January and February (OLCI: 3.37 hours, 3.91 hours; SLSTR: 3.17 hours, 4.40 hours; SRAL: 3.60 hours, 3.31 hours), as well as in May (OLCI: 5.51 hours, SLSTR: 4.37 hours, SRAL: 5.14 hours) and July (SRAL: 3.41 hours) These elevated values were driven by longer times in the data production (before the data are made available to the CDSE). Meanwhile, the publication time for products within the CDSE system itself remained within the normal range of a few to several minutes and was not a contributing factor. Outside these periods, the second half of the year was more settled, with values consistently returning below the threshold from June onwards (except for SRAL in July), broadly following the pattern seen in 2024, even though the baseline was higher in the early months. (Figure 114).

Figure 114 illustrates this trend by presenting the monthly publication averages across 2025.

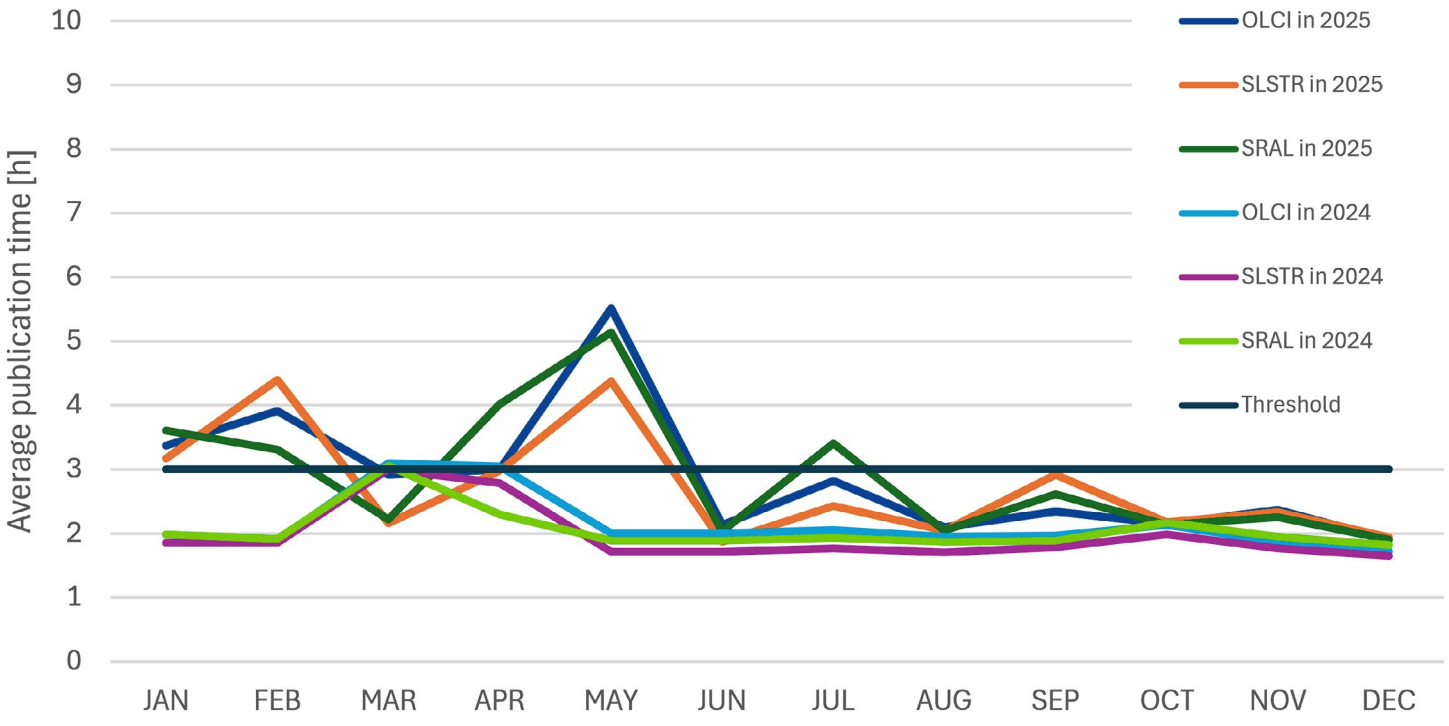


FIGURE 114: Monthly Average Publication Timeliness for Sentinel-3 NRT user-level data during 2025.

The average timeliness of Sentinel-3 NTC products remained well within the 30-day threshold in 2025, although there was an increase compared to 2024 for most instruments. For the final quarter, the average publication times were as follows: 26 hours and 40 minutes for OLCI (+8 hours and 6 minutes compared to Q4 2024); 1 day, 10 hours and 41 minutes for SLSTR (+7 hours and 45 minutes); and 2 days, 35 minutes for SYNERGY (+15 hours and 30 minutes) (Table 54). These increases were driven by longer production times prior to data availability on CDSE, while internal CDSE publication times remained within normal levels. The most notable monthly deviations occurred in June: OLCI reached 66.75 hours; SLSTR reached 91.78 hours; and SYNERGY reached 78.00 hours (Figure 115). May also stood out in terms of the time taken to publish OLCI and SLSTR data, with averages of 46.91 and 45.91 hours, respectively. Similarly, SYNERGY data experienced increased delays in October, averaging 65.85 hours. In all cases, values remained within the 720-hour threshold. The second half of the year saw a clear return to lower, more consistent values for all instruments with the exception of SYNERGY products (Figure 115).

SRAL NTC data, published on a significantly extended cycle, are presented on a dedicated chart due to the different time scale (Figure 116). In 2025, publication times were consistently clustered around 27 days and 2 hours, remaining within the 30-day limit throughout the year but running approximately two days longer than in 2024, when values were typically close to 25 days and 4 hours (Figure 116). The increase in publication times, visible from February onwards, coincides with the deployment of the new Sentinel-3 Altimeter Processing Baseline 3.32, which was rolled out for Sentinel-3A on 24 January 2025 and for Sentinel-3B on 5 February 2025. The transition to the new processor is likely a contributing factor to the longer publication cycle observed throughout the year, as indicated by a steady increase starting in February, which remained remarkably flat for the rest of the year. Monthly values remained stable with no significant fluctuations, and the overall increase of 1 day, 22 hours, and 25 minutes in the trimester-on-trimester comparison reflects this structural shift rather than any operational disruption within CDSE.

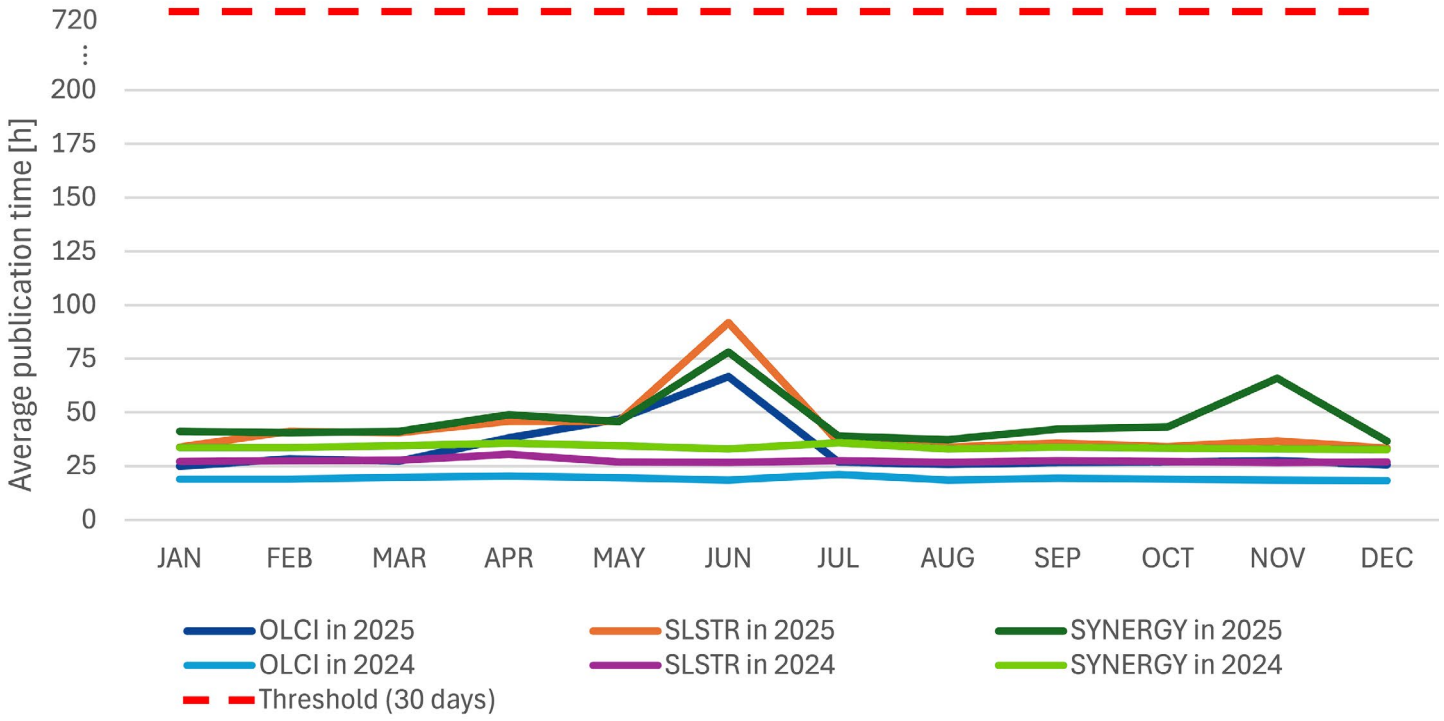


FIGURE 115: Monthly Average Publication Timeliness for Sentinel-3 NTC (OLCI, SLSTR, SYNERGY) user-level data during 2025.

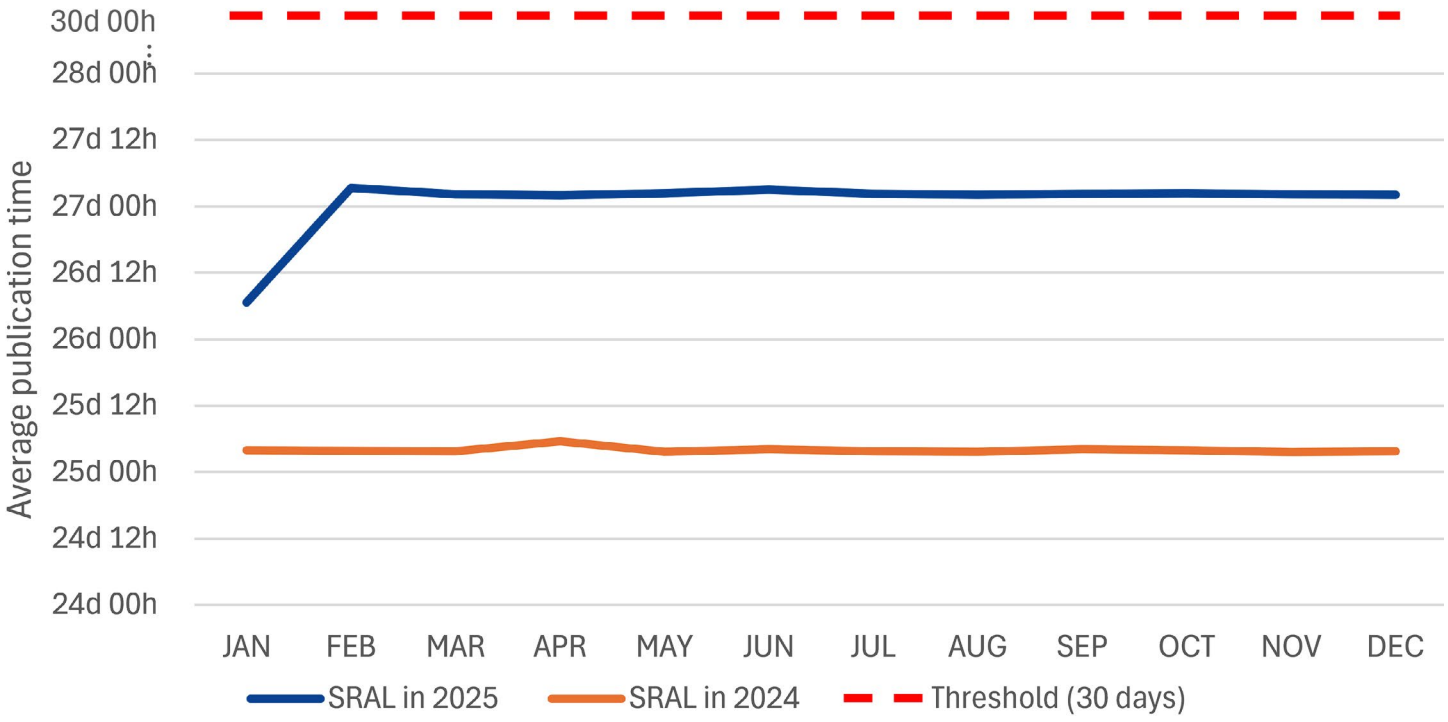


FIGURE 116: Monthly Average Publication Timeliness for Sentinel-3 NTC (SRAL user-level data during 2025.



Copernicus Sentinel data 2025: Uluru in Australia

In 2025, the timeliness of publications for Sentinel-3 STC products – covering both SRAL and SYNERGY – remained well within the 48-hour threshold throughout the year. In the final quarter, SRAL averaged 1 day, 14 hours and 53 minutes, which was 51 minutes faster than in the same period in 2024 and represented a modest improvement. In contrast, SYNERGY averaged 8 hours and 6 minutes, so it was 23 minutes slower than in 2024 and indicated a slight decline in timeliness. Overall, the results indicate stable performance, with only minor variations between the two years and no disruption in the publication process. (Table 54)

Examining the monthly distribution, SRAL publication times were consistent, ranging from 38.6 to 41.7 hours – slightly lower and more stable than in 2024. SYNERGY values varied between 7.8 and 11.6 hours, with a small peak observed in March, but otherwise remained within a narrow and predictable range. Unlike in 2024, no distinct spikes or anomalies were observed in any particular month. On average, SRAL improved slightly year-on-year (39.61 hours in 2025 versus 40.50 hours in 2024), while SYNERGY showed a modest increase (9.24 versus 8.26 hours). Taken together, these results confirm the publication process is reliably managed with no significant anomalies during the year. (Figure 117)

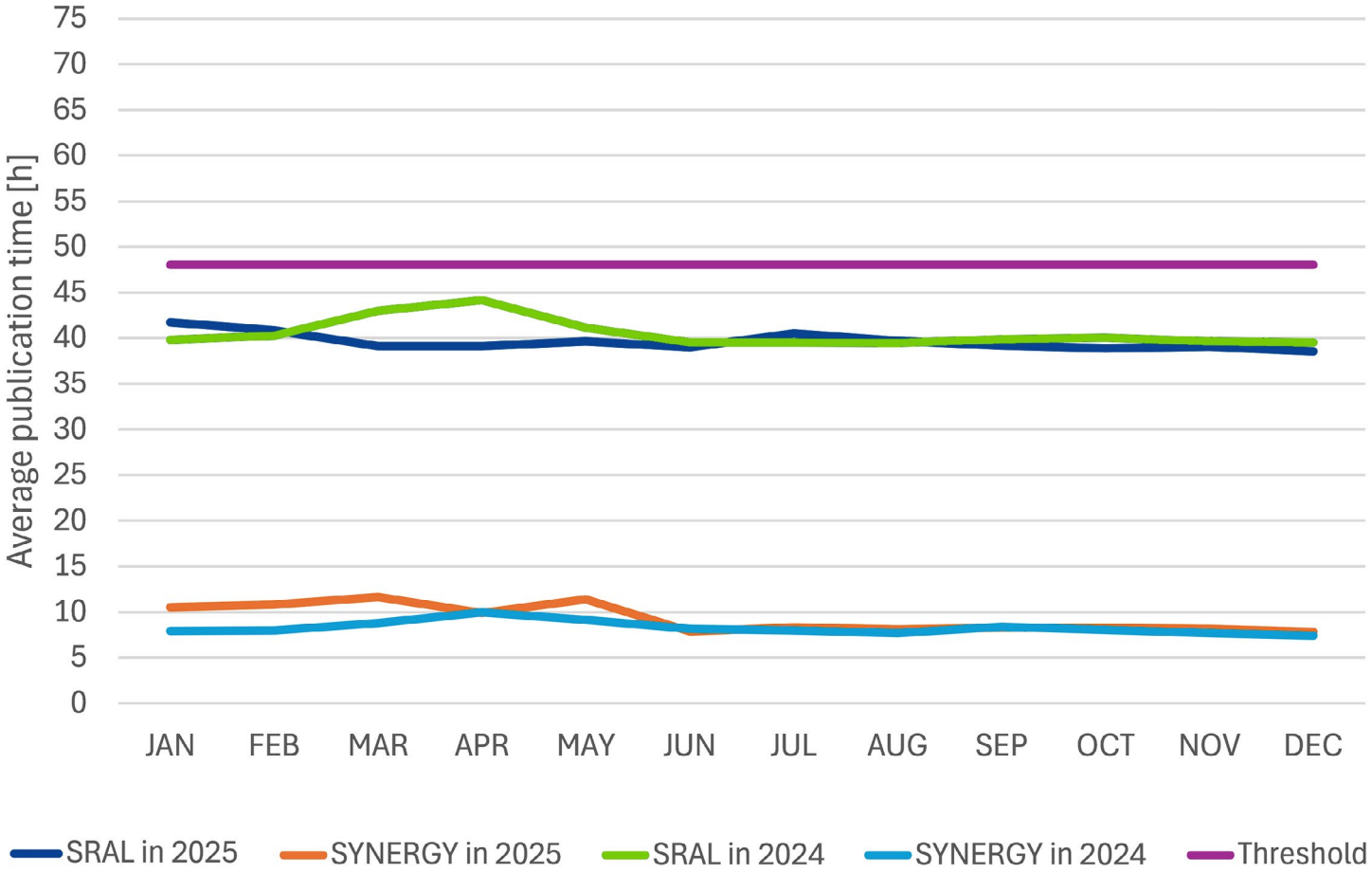


FIGURE 117: Monthly Average Publication Timeliness for Sentinel-3 STC user-level data during 2025.

Sentinel-5P:

Sentinel-5P NRT products maintained a high level of consistency throughout 2025. Based on final-trimester averages, Level 1B was published in 55 minutes and Level 2 in 1 hour and 15 minutes – a marginal change of −3 and +5 minutes, respectively, compared to the same period in 2024 (Table 54). Monthly values confirm this stability, with L1B ranging from 0.90 to 2.27 hours and L2 from 1.11 to 2.07 hours throughout the year. The only notable exception was March, when both L1B and L2 saw higher values than in other months, though both remained within the 3-hour threshold (Figure 118). Several operational events occurred in March, collectively contributing to these elevated figures: the deployment of an updated ground processing system with a new UPAS processor on 20 March; an orbit control manoeuvre on 12 March that temporarily affected the quality of L1B and L2 products; and a ground segment issue between 21 and 24 March that caused the NRT data to be partially unavailable. Excluding March, the pattern is consistent and stable during the rest of the year. Averaged across all twelve months, the publication time for L1B was 1 hour and 6 minutes in 2025, compared to 1 hour and 4 minutes in 2024. Meanwhile, the publication time for L2 was 1 hour and 20 minutes, compared to 1 hour and 14 minutes the previous year. These small differences are hardly noticeable in practice and simply confirm (Figure 118).

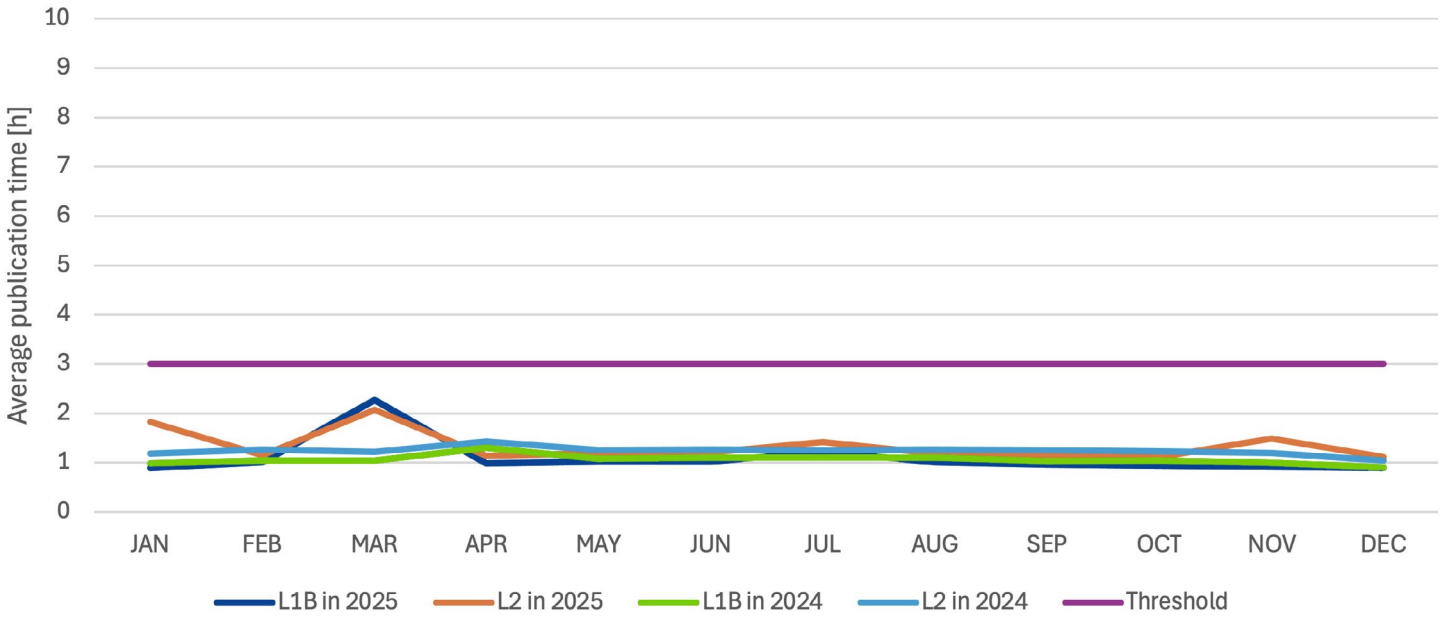


FIGURE 118: Monthly Average Publication Timeliness for Sentinel-5P NRT user-level data during 2025.

The overall picture for Sentinel-5P NTC Level 1B products remained stable in 2025, with most monthly values falling between 3.54 and 7.89 hours – well within the 12-hour threshold introduced for this reporting period. However, one notable exception was November, when the average publication time reached 15.55 hours, briefly exceeding the threshold. This spike paired with the deployment of a major ground-processing system update on 26 November 2025, which introduced new processor versions across Level-1B and multiple Level-2 product lines. The update required a staged production shutdown spanning several days, during which NRT products for affected orbits were not generated and OFFL production was temporarily halted. December also showed a slightly elevated value of 7.89 hours, likely reflecting the tail end of the recovery period following the November deployment. Outside of these two months, the publication timeliness of the L1B products indicates robust and well-managed performance (Figure 119).

Level 2 NTC products followed a much more stable trend in 2025 than in the previous year. The average for the final trimester of 2 days, 10 hours and 45 minutes represents an improvement in timeliness of 10 hours and 44 minutes compared to the same period in 2024 (Table 54). Monthly values clustered narrowly between 54.27 and 63.63 hours for most of the year, and no month came close to the threshold. A modest uptick was visible in May (62.00 hours), due to a combination of planned ground segment maintenance on 5 May, which resulted in partial NRT unavailability and temporary delays in OFFL production, and routine satellite operational activities affecting product quality across several orbits. November (63.63 hours) saw a similar rise, driven by the same ground-processing system update described above. When comparing timeliness trends from 2025 to 2024, a clear contrast can be observed: significantly higher values were previously recorded in June (86.2 hours), August (90.7 hours) and October (75.05 hours) due to slowdowns in the data download queue, reprocessing of downloaded data and missing metadata issues. Over the course of 2025, the average publication time for Level 2 NTC products was 57.21 hours, compared to 68.36 hours in 2024. This reduction of over 11 hours highlights the visibly reduced delivery time of Level-2 NTC products year-on-year (Figure 119).

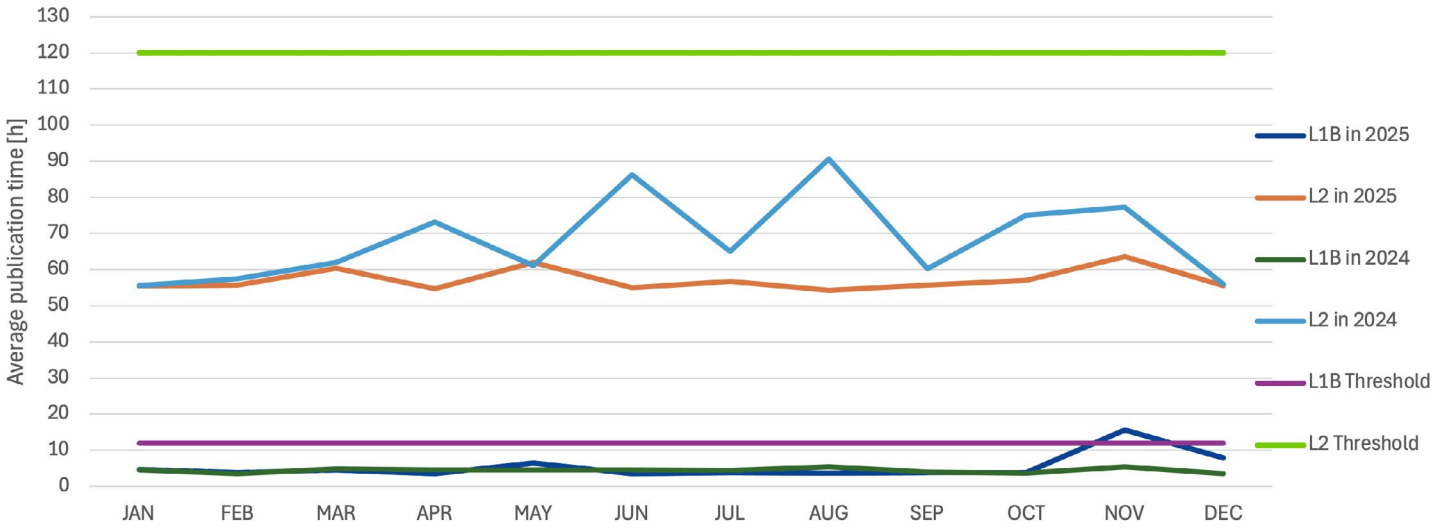


FIGURE 119: Monthly Average Publication Timeliness for Sentinel-5P NTC user-level data during 2025.

12 END-USER SUPPORT AND FEEDBACK

User feedback is continuously monitored to ensure our data access service meets expectations and to quickly address any issues. Users can easily reach the user support help centre via the CDSE web portal (https://helpcenter.dataspace.copernicus.eu/hc/en-gb), and are encouraged to contact support using, submit a request. This support is available to users of all expertise levels in the EO industry, public administration, and academic community. Each year, we assess user experiences using the insights gathered from our CDSE Annual Satisfaction Survey.

12.1. The five pillars of the CDSE user support

The CDSE user support is based on five pillars: the FAQ collection, the documentation portal, the user helpdesk, community forum, and video tutorials (Figure 120).

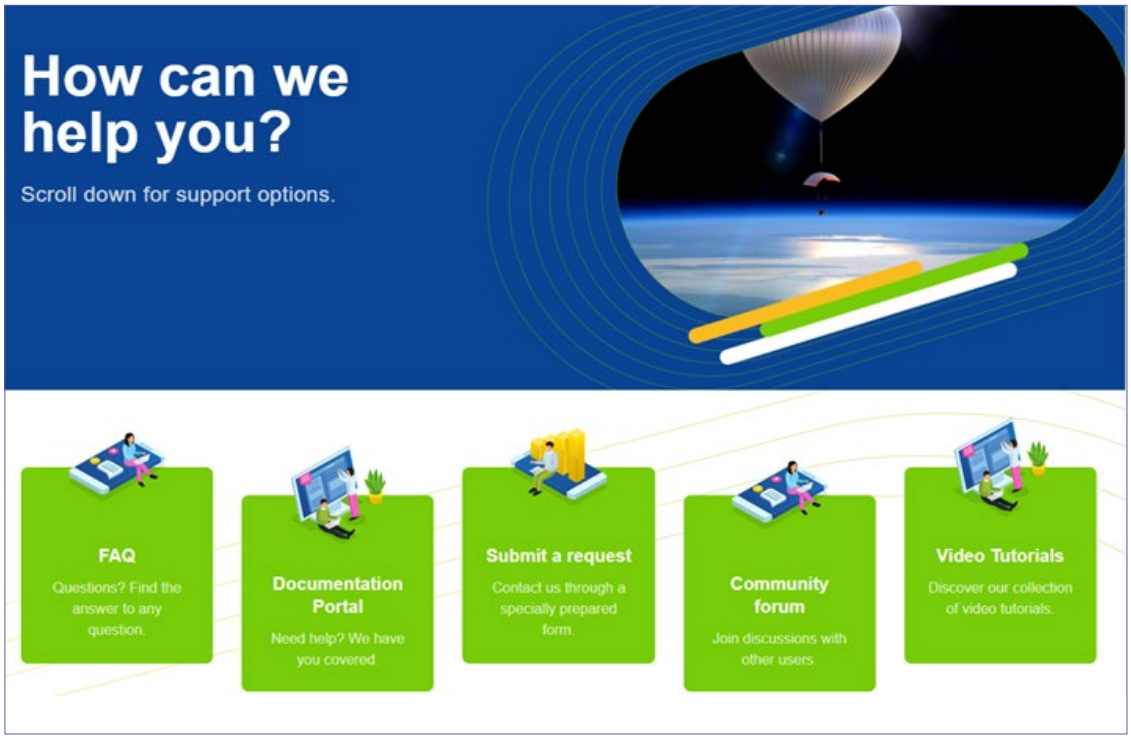


FIGURE 120: The five-pillar structure of the user support.



Copernicus Sentinel data 2025: Venta River in Latvia

I. FAQ

The FAQ section continually gathers the most common problems, questions, and use cases. While there is already a substantial collection available, it is continuously evolving based on user needs and feedback. The FAQ page is designed as a live resource that is regularly expanded and updated to help users quickly find answers, navigate common scenarios more efficiently, and resolve issues faster.

Overview of the most relevant new and enhanced topics introduced in 2025:

- What can I do if I run out of download quota, processing units, or requests?
- How can I download Copernicus data in bulk mode?
- How can I stream Sentinel-2 cloudless mosaics to my GIS application?
- How to access COP-DEM 10m?
- How to access the level of products that require expert knowledge (e.g. Sentinel-2 Level 1B, or the WV mode for Sentinel-1 Level 0)?

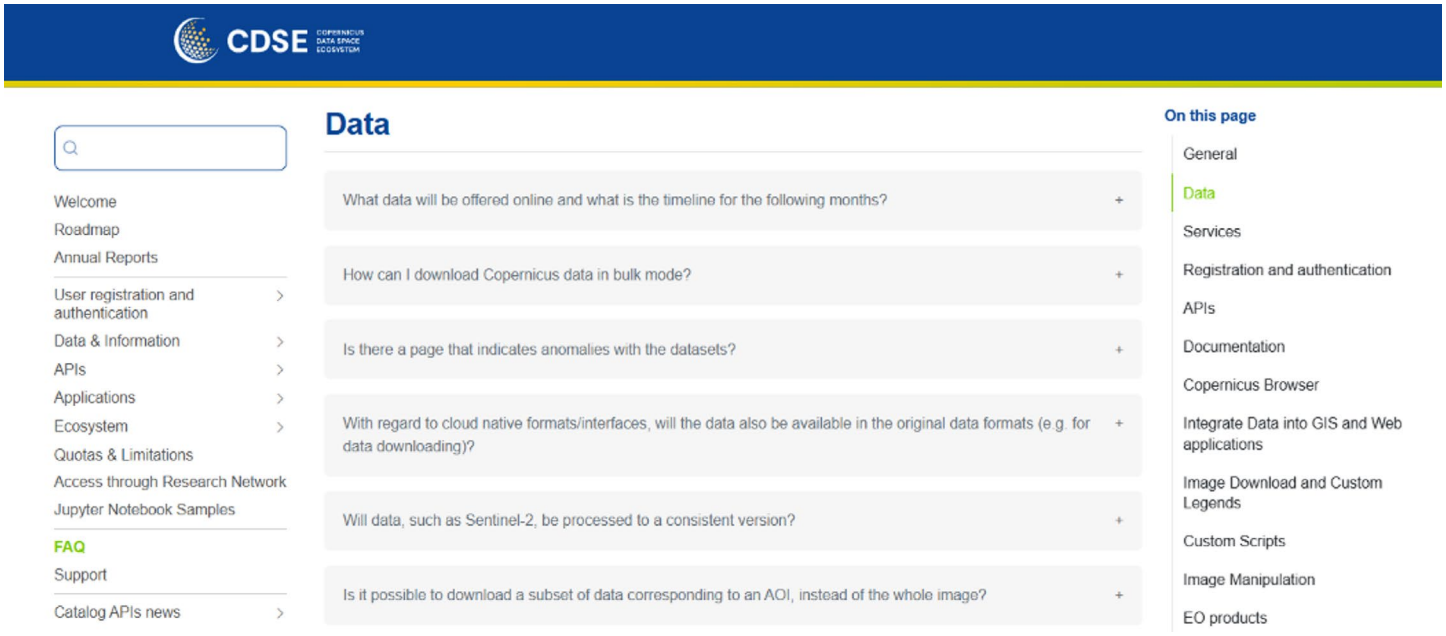


FIGURE 121: FAQ section in CDSE, divided into 12 thematic categories.

II. Documentation portal

CDSE offers extensive documentation that provides end-users with insights into the comprehensive Earth Observation data collection and the various data access and processing capabilities. The documentation is a dynamic resource, continuously updated to provide the latest information.

Main sections of the documentation:

Following the onboarding of the Copernicus Land Monitoring Service (CLMS) in 2025 and the expansion of available datasets, the Data & Information category in CDSE has been reorganized to better reflect both thematic content and usability.

- Data & Information: Users can explore large amounts of open and free Earth Observation datasets, including Sentinel Missions, Copernicus Services as CLMS, CEMS, CAMS, Copernicus Contributing Missions, and Complementary Data, with detailed information.
- APIs: Users can find the perfect interface for their needs in our suite of APIs. Whether they seek catalogue access, product downloads, data visualization, or processing capabilities, our offerings encompass a range of options, including S3, STAC, openEO, and Sentinel Hub APIs.
- Applications: User can learn how to simplify their satellite data journey and engage with data using our user-friendly applications for searching, visualizing, modifying, and downloading data effortlessly.
- Quotas and Limitations: Users can get to know the quotas and limitations that come with their user type and plan their data download and processing pipelines accordingly.

If users have any questions that remain unanswered on this portal, they are always encouraged to contact the CDSE Support team (Documentation – support (copernicus.eu)), who is ready to assist anytime.

III. Submit a request

The User Helpdesk is responsible for end-user support, including the follow-up of any requests logged by end-users using the CDSE. The objective of the helpdesk service is to ensure a positive end-user experience in request follow up. End-users of the Copernicus Data Space Ecosystem (CDSE) have two options to contact the Helpdesk, depending on their registration status and the nature of their inquiry:

1. General Inquiries

Users who are not registered and have general questions can submit their inquiries via the webform available on the About Copernicus Data Space Ecosystem page (https://dataspace.copernicus.eu/about#contact-form)

2. Technical Inquiries

For technical issues or questions, users are required to register and then submit a request through the User Support Help Center (https:// helpcenter.dataspace.copernicus.eu/hc/en-gb).The dedicated request form allow users to specify the nature of their query (e.g., data offerings, analysis tools, APIs, etc.). Once logged in, users can:

- Track their submitted requests directly through their account, and
- Follow related email conversations via support@dataspace.copernicus.eu.

If users have any questions that remain unanswered on this portal, they are always encouraged to contact the CDSE Support team (Documentation – support (copernicus.eu)), who is ready to assist anytime.



The technical inquiries from CDSE registered users are tracked via a ticketing system, sorted into five main categories and 18 subcategories according to the following Service Catalogue:

Data Offering

- Copernicus and Sentinel Data
- On Demand and Commercial Data
- Copernicus Contribution Missions
- Copernicus Land Monitoring Service (CLMS)
- Federated Data Sets

Analysis Tools

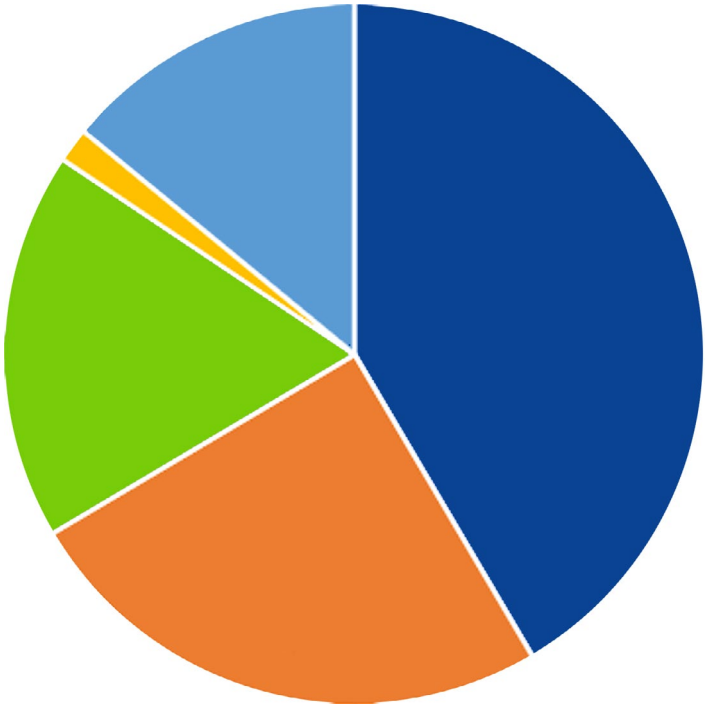
- Copernicus Browser
- Marketplace
- JupyterLab
- Data workspace and On-Demand processing
- openEO
- Dashboard
- Traceability service

API's

- Catalogue and download API's
- openEO
- Sentinel Hub
- Traceability
- On demand production

Ecosystem

- Commercial services
- Public services



- Data Offering: **41 %**
- Analysis Tools: **25 %**
- API's: **18 %**
- Ecosystem: **2 %**
- Other: **14 %**

FIGURE 122: Percentage of each category of tickets received.

In **2025**, the CDSE helpdesk received a total of **3003 tickets**, where out of these, **99,5%** were resolved within the nominal threshold resolution time of 5 normal working days. The average resolution time for solved tickets was 6,9 hours.

During the reporting period, user support requests increased in line with the growing adoption of the Copernicus Data Space Ecosystem (CDSE). This was driven by a rising number of users and the onboarding of new datasets, including mosaics, DEM products, and CLMS datasets, with additional traffic coming from the CLMS portal.

DEM datasets, especially the Copernicus DEM EEA-10, attracted strong interest and generated many questions. At the same time, as users explored advanced features, support requests increasingly focused on access to JupyterLab, use of openEO, and onboarding to the STAC API. Recurring inquiries also covered the Copernicus CCM licence. Overall, the increase in support requests reflects both the platform's expanding data offering and the growing engagement with its tools and services.

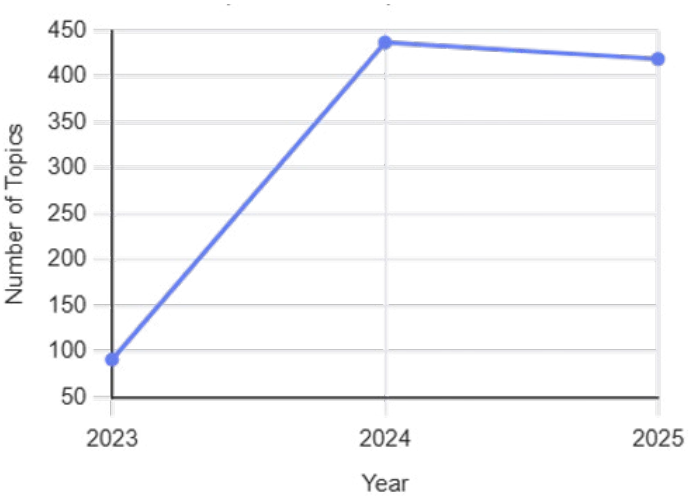


FIGURE 123: Forum topics created per Year

IV. Communities around the CDSE

With the increase in registered users, there is a great opportunity for flourishing user communities. CDSE is proud of the existing EO communities and envisions significant growth in the coming years. To support this, CDSE is continuously improving the forum environment (https://forum.dataspace.copernicus.eu) according to the user needs, creating a user-friendly space where end-users can share their experiences with others.

In 2025, the CDSE forum (https://forum.dataspace.copernicus.eu) continued to strengthen its role as a valuable collaboration and support space for the Earth Observation community. While the total number of forum topics remained broadly stable in 2025, with only a slight decrease of 4.1% compared to 2024, engagement across the platform remained consistently high, with the vast majority of discussions still receiving responses throughout the year.

Conversation coverage remained very high in 2025, with 96.42% of topics receiving at least one response, demonstrating continued strong engagement and responsiveness across the full range of discussion areas. The remaining percentage largely consist of categories where replies are not expected - such as community contributions, news, and training content - where topics are primarily shared for information rather than initiated to seek support.

The forum also showed encouraging progress in community-driven support. The share of user-to-user interactions increased significantly in 2025, reflecting a growing culture of peer engagement and knowledge exchange within the community. At the same time, partner and staff contributions continued to provide strong support across discussions, ensuring reliable guidance for users.

Overall, the 2025 results confirm that the CDSE forum remains a trusted and evolving community platform, successfully fostering collaboration, knowledge sharing, and user support across the Copernicus ecosystem.

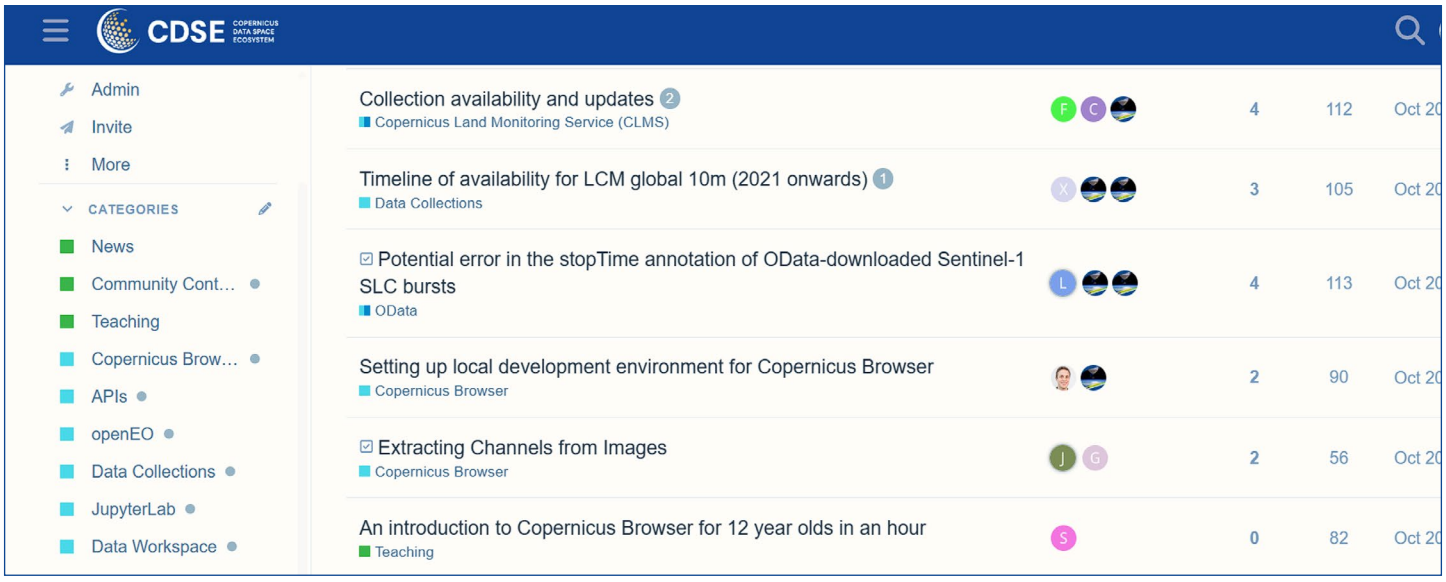


FIGURE 124: CDSE Forum environment showcases topics from multiple categories.

V. Video tutorials

The Copernicus Data Space Ecosystem offers several videos about features, tutorials and highlights that demonstrate the use of the Ecosystem. These videos (https://dataspace.copernicus.eu/videos) cater to both EO professionals building scientific or business solutions and members of the public interested in remote sensing. User can access several introductory videos directly via CDSE or via the YouTube channel. The video section is constantly extended based on user feedback and requests.

In 2025 alone, 20+ videos were uploaded, reflecting the continuous expansion of the video library based on user feedback and requests. Sections:

- Introductory Videos
- Sentinel data
- Copernicus Browser
- openEO
- openEO Algorithm Plaza
- Capabilities
- Sentinel Hub API
- CDSE User Review Meeting 2025
- Webinars

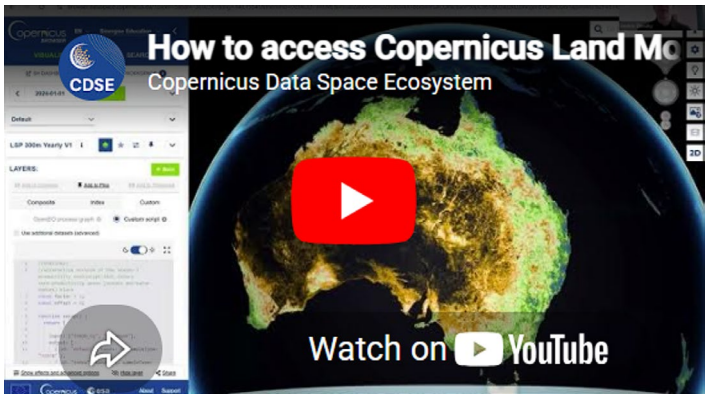


FIGURE 125: Example of video on How to access Copernicus Land Monitoring Service data in CDSE



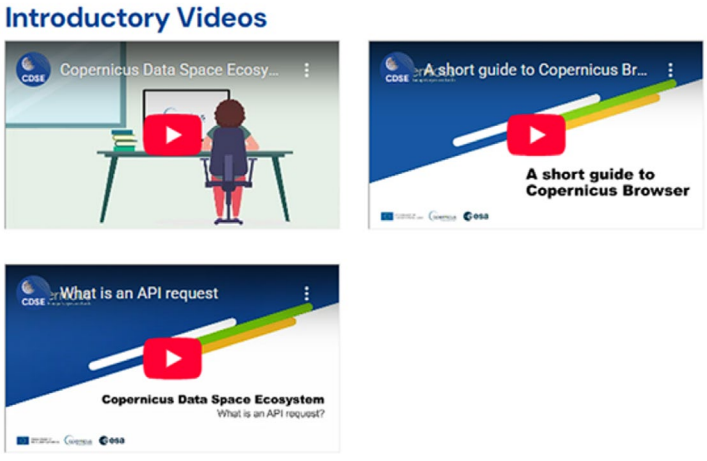


FIGURE 126: Example of video tutorials on CDSE website.

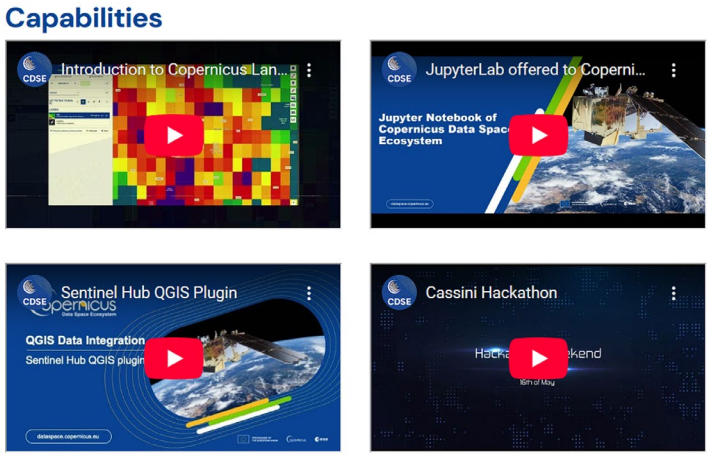


FIGURE 127: Example of video tutorials on CDSE website.

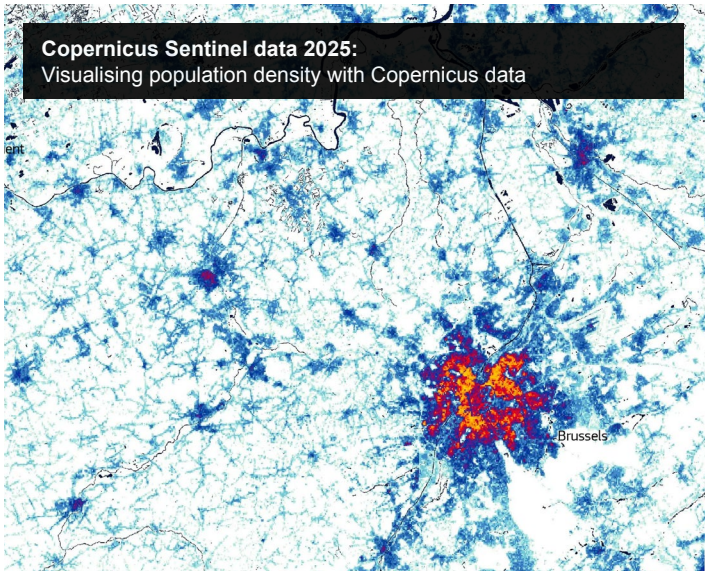
12.2. User satisfaction

Helpdesk Performance

The CDSE helpdesk has implemented a satisfaction rating system to better evaluate ongoing services and understand user needs, with the goal of continuous service improvement.

After a support ticket is resolved, users are invited to submit their satisfaction feedback by indicating either a positive or negative experience and, if desired, providing an additional comment for context. Since feedback is voluntary, not all users choose to participate.

The graph below presents the number of tickets received each month in 2025, along with the number of positive (94%) and negative (6%) ratings submitted through the feedback system.



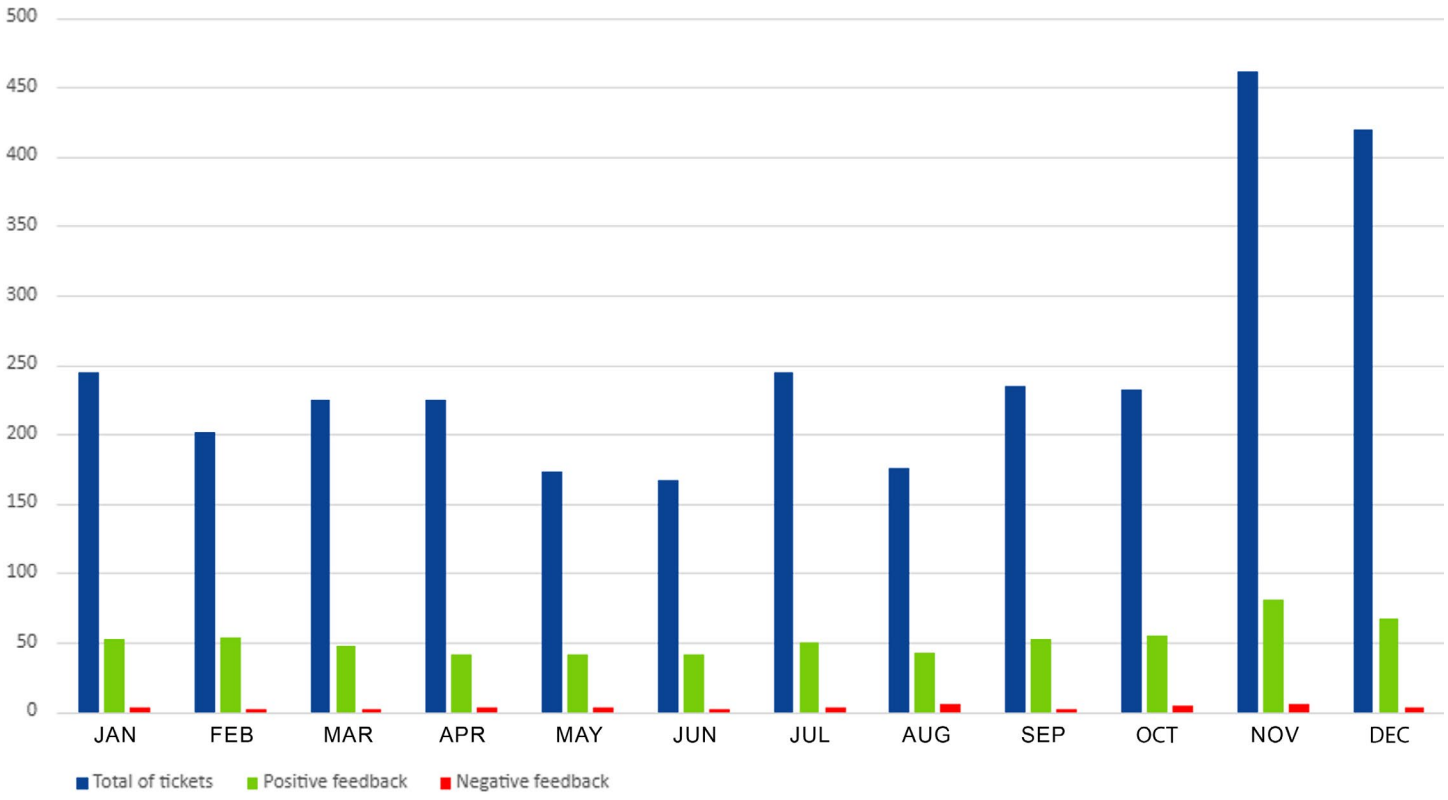


FIGURE 128: The total number of tickets received by support (blue), with positive ratings (green) and negative ratings (red).

A pronounced peak in activity is observed in November and December 2025, reinforcing the overall increase compared to 2024. Ticket volume grew from 2,029 tickets in 2024 to 3,003 tickets in 2025, representing an increase of 974 tickets (+48%) year over year. This surge is primarily driven by the launch of the JupyterLab access web form on CDSE, with a further boost in December linked to expert access to Sentinel-2 Nighttime Imaging Campaign data. The significant year-over-year growth highlights the strong impact of these new services and data access initiatives on user demand and support activity.

Community gathering at ESA LPS25

The Copernicus Data Space Ecosystem organised its second User Review Meeting. This free hybrid event took place on Tuesday, 24 June 2025, as part of ESA's Living Planet Symposium, held at the Austria Center Vienna. The User Review provided the ideal opportunity to gather with users and service providers to explore innovations, collaborations, latest EO data and services, and help shape the future of Earth observation.

The CDSE User Review Meeting offered a mix of insightful presentations, pitches from ecosystem adopters, user stories, and interactive discussions. We want to thank all our speakers for providing valuable updates, encouraging collaboration and fostering user feedback, essential for continuously improving the Copernicus Data Space Ecosystem.

Prior to the event, a User Review Survey was distributed among the user groups, and the results were analysed and presented at the meeting.

12.2.1 User Feedback and Continuous Improvements

User feedback collected through surveys continues to play a key role in shaping the evolution of the CDSE. Over the past year, numerous improvements and additions have been implemented or planned in direct response to user needs, covering data availability, platform performance, usability, and documentation.

In 2025, service evolution continued to follow a user driven approach based on priorities identified in the 2024 User Review Survey. Key user requests were translated into roadmap actions and delivered within one year, notably improving data discovery through STAC based catalogue interfaces and expanding analytical capabilities with enhanced notebook environments, including the addition of R and Julia support.

Landsat bi monthly 30 m mosaics (ARD) have been added, and Landsat Collection 2 Level 1 data (2021–2025) are now available in CDSE.

Platform performance was a strong focus area. The viewing speed of recent imagery has been significantly improved as of Q3 2025 as well as download performance. In response to user suggestions on optimising partial reads and access speed, Tile part Length (TLM) markers were introduced by ESA in Sentinel 2 JPEG2000 products in Q1 2026. For the openEO API, cost effectiveness and stability were further improved while extending capabilities towards ML and AI. In response to requests for the download of multiple scenes, CDSE supports bulk download workflows through the link between Copernicus Browser and the Data Workspace functionality. Users can add selected scenes to the Data Workspace during browsing and subsequently download them together in bulk, simplifying data access and improving efficiency for larger data selections.

Usability enhancements were also delivered. Download procedures and access options were clarified through improved guidance. Support for multiple field boundary uploads is available via common geospatial formats such as KML/KMZ, GPX, WKT, and GeoJSON. Documentation for the STAC API has been updated and expanded, while communication around API updates and system changes has continued to improve.

Sentinel 1 Near Real Time (NRT) data delivery demonstrates performance that exceeds user requirements, with timeliness results indicating data availability at least twice faster than originally estimated. This improvement directly supports user needs for enhanced timeliness and coverage in operational monitoring scenarios.

In 2025, the CDSE web portal was updated to improve user findability and support the onboarding of new services. Introduction of the CDSE globe on the front page that is now integrated live with popular layers of the visualization service, which gives improved and interactive visibility to use cases and special images. A refreshed design and optimized navigation enhance accessibility and uptake of Earth observation data and services across user communities, including a new CDSE Data Availability page released in 2025, providing real time Sentinel mission status via SentiBoard.

Looking forward, CDSE continues to expand its capabilities and ecosystem. AI/ML based geospatial services were introduced in 2025 with an initial set of embeddings, with further extensions planned for 2026. The platform is also growing commercially, with newly onboarded services and the introduction of billing systems. Features such as time lapse video generation and area of interest based analysis, which were highlighted in user feedback, are already available. Extending support for novice users remains an ongoing priority.

Several FAQ entries were introduced and expanded in 2025 as part of continuous platform improvement efforts, directly reflecting recurring user questions and feedback. These additions address key user needs, such as access to expert-level datasets, bulk data handling, streaming capabilities, and account management, and contribute to a more self-service-oriented user experience. This proactive enhancement of documentation helps reduce support demand while improving overall usability and accessibility of the Copernicus Data Space Ecosystem.

Positive feedback received via open responses

In addition to suggestions for improvement, the survey also gathered substantial positive feedback. Users expressed strong appreciation for CDSE's role in supporting research and education, and CDSE will continue its collaboration with schools and educational initiatives. Respondents highlighted the high quality and standardisation of data, as well as the immediacy of data availability. Many users praised S3 access, Sentinel Hub tools, and Copernicus Browser, with several noting high satisfaction with services such as Copernicus Browser, JupyterLab environments, and free access to satellite data. The platform was described as an excellent portal offering valuable services, including environmental monitoring and tracking seasonal changes.

Improvements identified through user support interactions

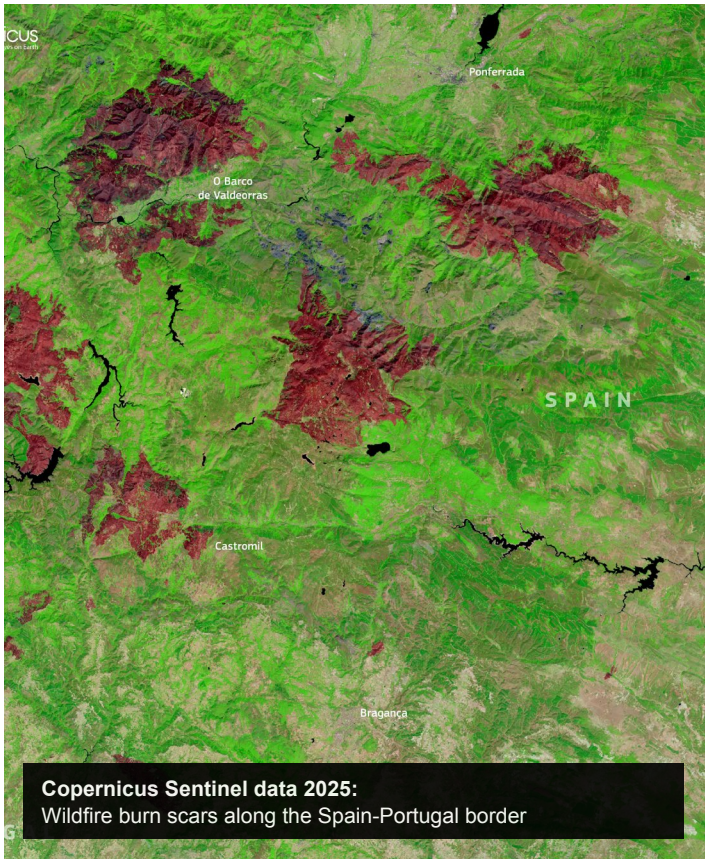
In addition to structured surveys, CDSE continuously collects feedback through direct user support interactions. Throughout the year, several targeted improvements were implemented based on issues and enhancement requests raised via support channels, further refining the user experience in CDSE.

Among the key user-driven upgrades delivered in 2025 were critical functional enhancements to the Copernicus Browser interface. These updates significantly improved Area of Interest (AOI) visibility through clearer coloring and polygon overlays, accelerated data downloads via modernized HTTP access, and increased search precision by utilizing true polygon geometries instead of traditional bounding boxes. In parallel, the CDSE documentation repository was systematically expanded to address highly requested technical topics, resulting in enriched resources and guides for the STAC API, OData protocols, and two-factor authentication (2FA) implementation.

These highlights demonstrate how ongoing support interactions complement survey feedback, enabling CDSE to respond quickly to practical usability issues encountered in day to day use.

Roadmap - Navigating End Users

To promote transparency and maintain a close connection with its user community, the CDSE ensures that its public roadmap (https://dataspace.copernicus.eu/#roadmap) remains continuously accessible. A „User Improvement" tag will be introduced in 2026 to clearly highlight which roadmap items originate from user feedback. This enables users and stakeholders to easily follow ongoing developments and track upcoming enhancements over time. By keeping planned actions visible, CDSE provides clarity on future priorities and demonstrates how user input contributes to the platform's evolution, reinforcing its commitment to openness, responsiveness, and accountability.



Copernicus Sentinel data 2025:
Wildfire burn scars along the Spain-Portugal border

13 SUSTAINABILITY

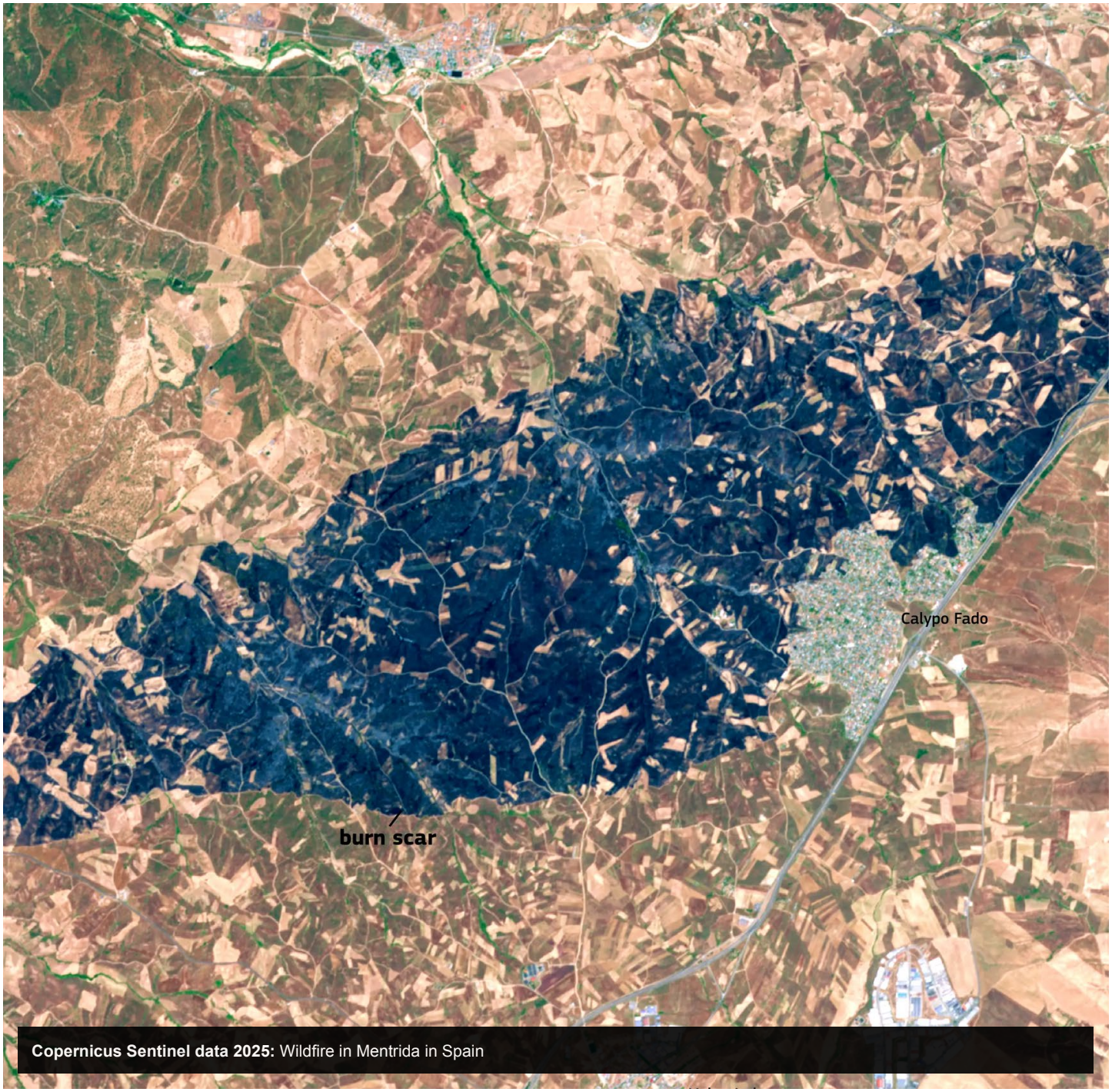
The European Commission has set a clear and far-reaching course toward climate neutrality, committing to reduce its greenhouse gas emissions to nearly a third of 2019 levels by the end of the decade while systematically reducing the environmental footprint of all EU programs. In close partnership with the Commission, the European Space Agency (ESA) is accelerating its efforts to measure, manage, and continuously improve the environmental performance of the services and technologies under its responsibility. A cornerstone of this effort is the rigorous and transparent assessment of carbon impacts.

13.1. Telekom – overall

To evaluate the sustainability performance of T-Systems' T Cloud Public (TCP) datacenters, with a particular focus on the facilities in the Amsterdam region. It draws on the latest publicly available disclosures, technical fact sheets, and corporate responsibility reporting to provide a clear evaluation of energy sourcing, efficiency (PUE), certifications, circularity efforts, and governance maturity.

- Renewable energy and geo-redundancy: TCP datacenters in the Netherlands operate on 100 % renewable electricity, contributing to substantial reductions in carbon intensity.
- Energy efficiency (PUE): The Open Telekom Cloud reports competitive energy efficiency performance. Recent figures indicate PUE values around 1.25–1.46 at Amsterdam and other regional sites.
- Water Usage Effectiveness (WUE), a critical metric used primarily in the data center industry to measure how efficiently water is used for cooling the IT equipment relative to the energy consumed, this is at level 1.2 in the TCP Amsterdam.
- Corporate climate commitments and industry engagement: Deutsche Telekom have committed to sourcing all electricity from renewable sources since 2021 and to continuous efficiency improvements. The company is a certified signatory of the Climate Neutral Data Centre Pact and has participated in the EU Code of Conduct for Data Centre Energy Efficiency since the early 2010s.
- Certifications and management systems: TCP datacenters hold a broad set of internationally recognized certifications, including ISO 14001 (environmental management), ISO 50001 (energy management), ISO 45001 (occupational health and safety), ISO 9001, ISO/IEC 20000-1 (service management), and ISO 22301 (business continuity). These support structured governance and continuous improvement in sustainability practices. The datacenters in NL do not currently hold an EN 50600 certification or an equivalent standard, but they are operated under the same operational framework for energy distribution.
- Sustainability measures and circularity: Notable operational sustainability measures include 100 % renewable electricity procurement, high energy efficiency design, research into advanced cooling and waste heat reuse, and structured asset lifecycle management.
- The TCP Datacenters in Netherlands are not Tier III externally validated but are built according to Tier III standards and even have additions that are not required („Tier III+“).

Ecological and social responsibility have been part of the company‘s activities for more than three decades. Climate protection is one of the four key topics of the Group‘s corporate responsibility strategy: since 2021, Deutsche Telekom has been purchasing electricity exclusively from renewable energies throughout the Group and is continuously increasing energy efficiency in order to keep electricity demand constant despite network expansion. Telekom reports transparently on targets and progress on an annual basis. Detailed information on the achievement of the climate targets – including the goal of greenhouse gas neutrality in its own operations (Scope 1,2 & 3) by the end of 2025 – can be found in Deutsche Telekom‘s Annual Report, which was published by end of February 2026 under the following link (ESRS E1 – Climate change).



Copernicus Sentinel data 2025: Wildfire in Mentrida in Spain

13.2. T-Systems T Cloud Public (TCP)

All compute equipment used in T Cloud Public (TCP) is Energy Star certified. TCP is built upon OpenStack and operates as a multi-tenant platform, resource allocation is achieved through virtualization and orchestration, not on a per-server basis. The energy efficiency strategy therefore focuses on reducing infrastructure fragmentation and improving utilization efficiency through a combination of GreenOps practices, workload allocation orchestration, and operational capacity management. This differs fundamentally from traditional static environments, where individual servers are tuned using fixed active/idle profiles. In the case of TCP the energy performance depends on real-time workload distribution and infrastructure state and cannot be represented by a single static number.

Energy Efficiency and Carbon Accountability of the Platform

1) Strategy to continuously improve server energy efficiency (how we implement and measure improvements)

TCP's continuous improvement prioritizes multiple strategies through four complementary layers:

(A) Centralized scheduling and consolidation using Fundy-Scheduler
(A Scalable and Extensible Resource Manager for Cloud Resources)
(B) Workload consolidation and advanced fragmentation reduction through algorithmic optimization
(C) Operational GreenOps and manual standby management
(D) Monitoring and continuous improvements

a) Platform-level consolidation via Fundy-Scheduler

Fundy-Scheduler operates on regional controller nodes and makes placement decisions with full visibility across all compute aggregates. It actively consolidates workloads to reduce the number of lightly loaded servers, ensuring infrastructure is utilized more efficiently and minimizing energy waste from underused resources.

b) Algorithmic optimization

Alongside Fundy, TCP leverages topology-awareness tools and advanced scheduling algorithms to further minimize infrastructure fragmentation across PODs. These mechanisms improve long-term resource bin-packing efficiency by consolidating virtual machines onto fewer physical hosts.

c) GreenOps & manual standby practices

Operational teams continuously monitor resource utilization and identify low-risk compute nodes that can be safely powered down. These nodes are placed into standby following standardized operational procedures designed to avoid impacts on availability or dependencies with storage and networking. This process typically reduces per-node power consumption by up to 80 % when servers are transitioned from active to deep sleep states.

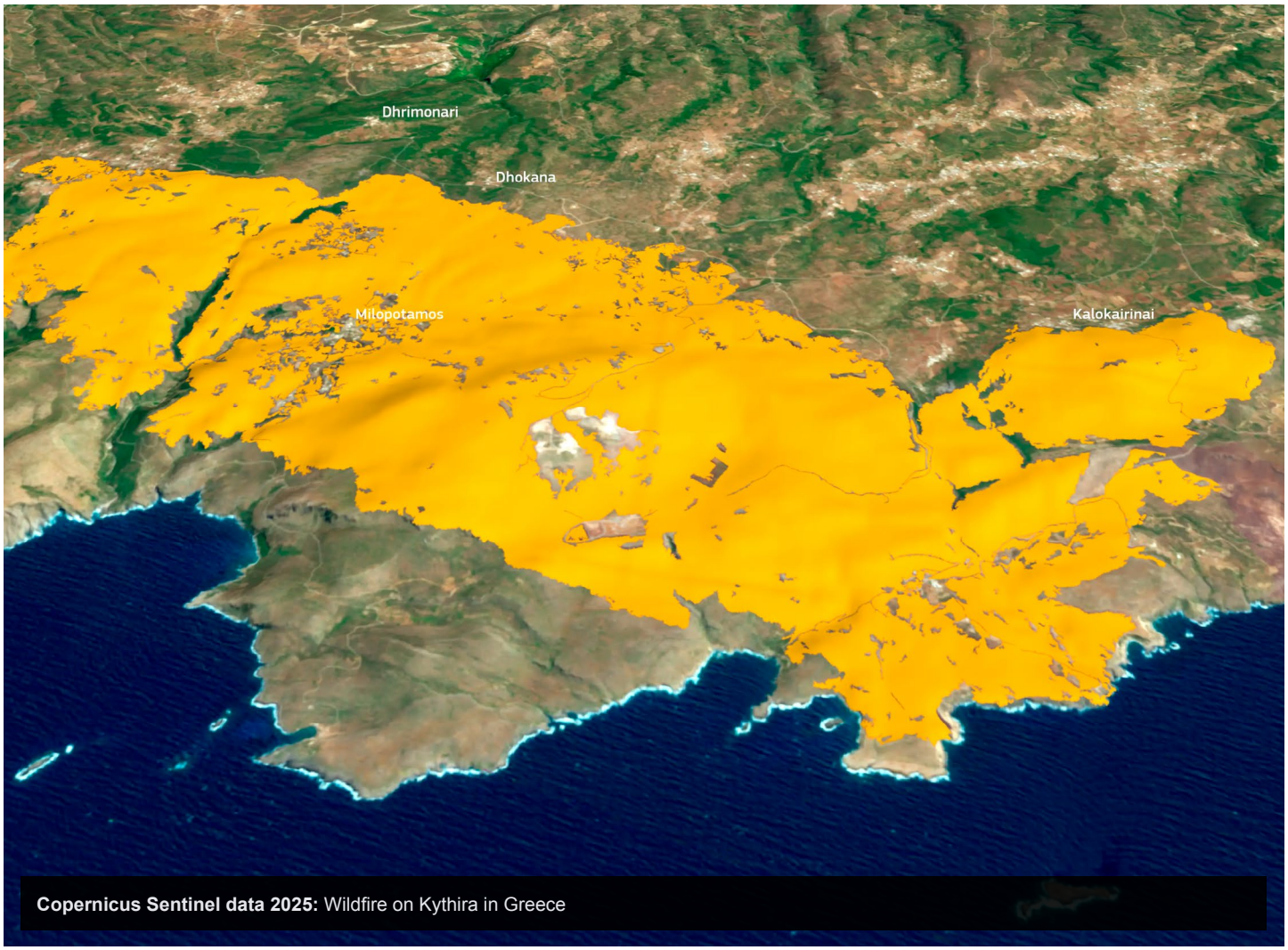
d) Data-Driven monitoring and continuous optimization

TCP's efficiency improvements are supported by continuous monitoring of operational metrics such as average CPU utilization, the number of active nodes per service, and observed idle power levels for key server models. These metrics are reviewed regularly through internal capacity reports and are used to identify further optimization opportunities.

2) Energy consumption and emissions measurement at datacenter level Aalsmeer and Almere in NL (relevant to CDSE)

Energy consumption and associated CO_2 emissions at datacenter level are measured, monitored, and reported as part of T-Systems' annual Corporate Responsibility (CR) reporting. These figures are based on market-based Scope 1 and Scope 2 emissions, and include the energy consumed by the entire facility. Scope 3 is currently calculated and reported at business unit level. The latest market-based carbon intensity and REF for the mentioned TCP datacenters:

Country	Location (Zone)	Market-Based Carbon Intensity [kgCO2e/kWh]	Renewable Energy Factor (REF)	Notes
Netherlands	Aalsmeer	0,00004	99,996%	100 % clean energy via PPAs and GoOs. Residual emissions stem only from generator testing.
Netherlands	Almere	0,00003	99,997%	100 % clean energy via PPAs and GoOs. Residual emissions stem only from generator testing.



Copernicus Sentinel data 2025: Wildfire on Kythira in Greece

13.3. CloudFerro Cloud

CloudFerro Cloud is a scalable cloud computing platform based on open standards, designed to support data-intensive, research-driven, and mission-critical workloads. The platform operates exclusively within European data centers, ensuring compliance with EU requirements related to data protection, information security, and environmental responsibility. CloudFerro Cloud delivers public, private, and hybrid cloud environments optimized for large-scale data storage, processing, and distribution.

The platform is specifically tailored to manage and serve large Earth observation and environmental datasets. CloudFerro Cloud provides access to more than 100 petabytes of data, with an average daily growth of approximately 30 terabytes, supporting international research activities related to climate change, environmental monitoring, and sustainability. The infrastructure underpins key data repositories for the Copernicus programme and is used by European and international scientific institutions, including ESA, ECMWF, and EUMETSAT.

Energy efficiency and resource optimization

Energy efficiency is a core design principle of CloudFerro Cloud. All underlying data centers operate on 100% renewable electricity, market-based method, confirmed by Guarantees of Origin. GoOs are certificates issued within the European energy certification system confirming that a corresponding volume of electricity has been generated from renewable sources. This approach aligns with the market-based accounting method defined in the GHG Protocol for Scope 2 emissions. Typical Power Usage Effectiveness (PUE) values across relevant facilities range between 1.4 and 1.57, reflecting optimized cooling systems and efficient power management.

At platform level, CloudFerro Cloud focuses on reducing energy intensity per unit of storage and computation. The infrastructure relies on high-density, energy-efficient helium-filled 20 TB storage drives, selective block-level data compression, and optimized workload placement. These measures reduce the total storage footprint and associated power demand while maintaining high performance and availability for data-intensive services.

Carbon footprint and monitoring approach

The environmental performance of CloudFerro Cloud is monitored through platform-relevant indicators, including electricity consumption, energy efficiency metrics, and infrastructure utilization. CloudFerro calculated its operational carbon footprint for 2025 in accordance with the GHG Protocol, covering Scope 1, Scope 2, and Scope 3 emissions at company level. Market-based Scope 2 emissions were low due to the exclusive use of renewable electricity in data centers.

While carbon footprint reporting is currently performed at organizational level, the monitoring framework supports ongoing improvements in the energy efficiency of cloud services and provides a basis for tracking reductions in energy use per terabyte of stored data over time. The carbon footprint calculation for 2025 is published on the website in the Sustainability tab - https://cloudferro.com/sustainability/.



Copernicus Sentinel data 2025: Wildfires in Portugal

Data centers supporting CloudFerro Cloud (CDSE-relevant)

CloudFerro Cloud is deployed across multiple European data centers. Facilities relevant to the ESA CSC Data Access Service include locations in Poland (Netia Jawczyce, T-Mobile Polska) and Germany (FRA-1). All supporting facilities meet Tier III reliability requirements, ensuring high availability, redundancy, and operational continuity. Key sustainability and resilience characteristics include:

- 100% renewable electricity supply
- PUE values between 1.4 and 1.57
- Advanced cooling and airflow management solutions
- Compliance with EN 50600 Class 3 availability standards
- Certified management systems, including ISO 14001, ISO 50001, ISO 27001, ISO 22301, ISO 9001 and ISO 45001 (depending on location)

Additional environmental considerations

Beyond energy consumption and carbon emissions, CloudFerro also considers broader environmental aspects associated with cloud infrastructure operations. These include responsible waste management, recycling of IT equipment in accordance with EU regulations, and lifecycle management of hardware through refurbishment, reuse where feasible, and certified end-of-life treatment. The data centers supporting CloudFerro Cloud apply operational practices aimed at optimizing resource use, including efficient cooling technologies and responsible handling of operational waste streams.

Forward-looking platform measures

In line with CloudFerro's 2025–2027 ESG Strategy, CloudFerro Cloud continues to evolve toward lower energy intensity and improved resource efficiency. Planned measures include further modernization of storage infrastructure, optimization of workload allocation, and the development of energy-efficient cloud-based cold storage solutions designed for long-term archival of Earth observation data with infrequent access patterns. These developments support reduced lifecycle emissions while ensuring long-term availability, reliability, and scientific value of CDSE-related datasets.



Copernicus Sentinel data 2025: Wildfires in Spain and Portugal

REFERENCES

- Copernicus Data Space Ecosystem: https://dataspace.copernicus.eu/
- The commercial services are provided via the CREODIAS service: https://creodias.eu/
- Insight into the Open Telekom: https://open-telekom-cloud.com/en
- European Earth observation programme Copernicus: https://www.copernicus.eu/
- Atmosphere monitoring services: https://atmosphere.copernicus.eu/
- Copernicus Marine Service: https://marine.copernicus.eu/
- Land Monitoring Service: https://land.copernicus.eu/en
- Climate Change Service: https://climate.copernicus.eu/
- Copernicus Contributing Missions: https://dataspace.copernicus.eu/explore-data/data-collections/copernicus-contributing-missions
- Security Services: https://www.copernicus.eu/en/copernicus-services/security
- Emergency Management Services: https://emergency.copernicus.eu/
- Sentinel Hub: https://www.sentinel-hub.com/
- List of 3rd party applications: https://dataspace.copernicus.eu/ecosystem/services
- Copernicus Data Space Ecosystem (CDSE) Annual Report 2024: https://dataspace.copernicus.eu/news/2025-12-4-copernicus-data-space-ecosystem-cdse-releases-annual-report-2024

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A Annex 1: Special Terms and Definition

Name	Definition
CDSE	Copernicus Data Space Ecosystem. An open ecosystem that provides free instant access to a wide range of data and services from the Copernicus Sentinel missions and more on our planet's land, oceans, and atmosphere.
CLMS	The Copernicus Land Monitoring Service, also known as simply CLMS, is one of six thematic Copernicus services. The Copernicus Land Monitoring Service provides geographical information on land cover and its changes, land use, ground motions, vegetation state, water cycle and Earth's surface energy variables to a broad range of users in Europe and across the World in the field of environmental terrestrial applications.
CREODIAS	The brand of the commercial service platform, that has been implemented in 2015, advanced to a Copernicus DIAS service in 2018 and since then has become the leading cloud-service platform for the user communities. It will provide the core platform for the new Copernicus Data Space services and the brand will be continued for the commercial services of the Copernicus Data Space, whereas the free and open services contracted by ESA will be provided through the linked Open Data Space.
openEO	openEO is an H2020 project funded under call EO-2-2017: EO Big Data Shift, under grant number 776242. The project ran from Oct 2017 to Sept 2020. openEO developed an open API to connect R, Python, JavaScript, and other clients to big Earth observation cloud back-ends in a simple and unified way.
QGIS	QGIS is a free and open-source cross-platform desktop geographic information system application that supports viewing, editing, and analysis of geospatial data.
Sentinel Hub	Sentinel Hub is an engine for processing of petabytes of satellite data. It is opening the doors for machine learning and helping hundreds of application developers worldwide. It makes Sentinel, Landsat, and other Earth observation imagery easily accessible for browsing, visualization and analysis. Scale your system globally with an intuitive and user-friendly interface, without any hassle.
STAC (Catalogue)	The Spatio-Temporal Asset Catalogue (STAC) specification provides a common language to describe a range of geospatial information, so it can more easily be indexed and discovered. A 'spatiotemporal asset' is any file that represents information about the earth captured in a certain space and time.
T Cloud Public (former Open Telekom Cloud)	The leading public cloud service in Europe based on the Open-Source Cloud Computing Infrastructure OpenStack. Open Telekom Cloud was launched in 2015 and meanwhile manages more than 500 Petabyte of customer data. Since 2018, Open Telekom Cloud provides the infrastructure and services for the Copernicus DIAS Mundi Web Services. Open Telekom Cloud is owned by Deutsche Telekom AG and operated by its 100% subsidiary T-Systems, in multiple data centers spread over two regions around Amsterdam (Netherlands) and Magdeburg (Germany).
Terrascope	Terrascope is the Belgian Collaborative Ground Segment hosting a multitude of cutting-edge services on top of Copernicus-based added value datasets. The platform is developed, hosted, and maintained by VITO.
WEkEO	WEkEO is the EU Copernicus DIAS reference service for environmental data, virtual processing environments and skilled user support. A platform operated by EUMETSAT.

B Annex 2: Abbreviation and Definition

Abbreviation	Definition
API	Application Programming Interface
CCM	Copernicus Contributing Missions / Complementary Missions
CDAS	Copernicus Data Access Services
CDSE	Copernicus Data Space Ecosystem
CF	CloudFerro
CLMS	Copernicus Land Monitoring Service
DAD	Deferred Access Data / Deferred Available Data
DEM	Digital Elevation Model
DIAS	Data and Information Access Services
DLR	German Aerospace Center (Deutsches Zentrum für Luft und Raumfahrt)
EC	European Commission
EO	Earth Observation
ESA	European Space Agency
EU	European Union
GDPR	European General Data Protection Regulation
GIS	Geographic Information System
GRD(H/M)	Ground Range Detected (High/Medium Resolution)
GUI	Graphical User Interface
HLOP	High Level Operations Plan
IaaS	Infrastructure as a Service
IAM	Identity and Access Management
ICT	Information and Communication Technology
KPI	Key Performance Indicator
LCFM	Land Cover and Forest Monitoring
ML	Machine Learning
MSI	Multispectral Instrument (Sentinel-2 instrument)
NASA	National Aeronautics and Space Administration
NRT	Near-Real Time

Abbreviation	Definition
NTC	Non-Time-Critical
OCN	Ocean (S-1 user-level data category)
OData	Open Data Protocol
OCRE	Open Clouds for Research Environments
ODS	Open Data Space
ODP	On-Demand Production
OGC	Open Geospatial Consortium
OLCI	Ocean and Land Color Instrument (Sentinel-3 instrument)
Open Hub	Copernicus Open Access Hub
OTC	Open Telekom Cloud
PaaS	Platform as a Service
SIEM	Security Incident and Event Monitoring
S3	Interface to operate Object Storage
S-1	Sentinel-1
S-2	Sentinel-2
S-3	Sentinel-3
S-5P	Sentinel-5 Precursor
SAFE	Standard Archive Format for Europe
SAR	Synthetic Aperture Radar
SLC	Single Look Complex
SLSTR	Sea and Land Surface Temperature Radiometer (Sentinel-3 instrument)
SMOS	Soil Moisture and Ocean Salinity satellite
SRAL	SAR Altimeter (Sentinel-3 instrument)
STAC	Spatio-Temporal Asset Catalogues
STC	Short Time Critical
SYN	Synergy (Sentinel-3 user-level data type group)
TCP	T Cloud Public
TROPOMI	TROPOspheric Monitoring Instrument (Sentinel-5P)
USGS	United States Geological Survey
VM	Virtual Machine

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