PROGRAMME OF THE
EUROPEAN UNION

EGNOS

EGNOS Annual Performance Report

2025

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DOCUMENT CHANGE RECORD

REASON FOR CHANGE	ISSUE	REVISION	DATE
First version of the document	1	0	June 2026

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1 INTRODUCTION

This document constitutes the EGNOS Annual Performance Report and provides reports and analyses on the performance of EGNOS service provision over one full year, from 1 January 2025 to 31 December 2025, both dates included.

Daily, weekly, and monthly service performance is monitored and analysed as part of ESSP's routine operations and is reported through the dedicated EGNOS User Support Website or the monthly performance report.

2 EXECUTIVE SUMMARY

2.1 A word from the ESSP CEO

The year 2025 unfolded in a challenging international environment, marked by increased geopolitical tensions and heightened requirements in terms of security and sovereignty. These developments, alongside the peak of solar cycle, directly impacted the protection requirements of the systems we operate. The continued robustness of EGNOS remained central to how we managed these shifting conditions.

In this demanding context, ESSP services continued to deliver their missions with a high level of operational rigor, ensuring continuity of service, security, and operational performance. This was particularly evident during the service outage in October, through the transparency and rapid response of our crisis management team, we ensured the recovery of services in the shortest time possible. Our teams demonstrated a strong capacity to adapt and a sustained level of commitment in support of the critical missions entrusted to us.

After more than 15 years of delivering the EGNOS service, ESSP is proud to extend its commitment as the EGNOS Service Provider for the years ahead, under the framework of its contract with EUSPA.

The year 2025 has been marked by the deployment of a new EGNOS system release 2.4.3, dedicated to the deployment of two units of the new generation Navigation Land Earth Stations (NLES) G3 in Rambouillet (France) and Cagliari (Italy) and to restore a three-GEO satellites configuration (including one Backup GEO), and to a significant effort related to the security. ESSP team, together with EUSPA and the industry, TAS, worked closely to align this system release with the new EASA Part-IS regulation. Thanks to this work, ESSP is pleased to report that by the end of the year, the EGNOS service has been secured in compliance with the Part-IS security requirements.

ESSP, as service provider, is continuously taking particular attention to deliver safe, secure, performant and available services to the users and rely on EUSPA to always put at our disposal a robust system. Throughout the year, the EGNOS service has been maintained at a high level of performance when available.

So, I would like to transmit my gratitude to the ESSP team for its dedication and professionalism, to our subcontractors and to the industry for their adaptability in supporting the maintenance of top-tier services, and to our customer, EUSPA, for their continued trust.

Charlotte Neyret
CEO, ESSP SAS

2.2 Service Performance

Table 1 shows a summary of EGNOS performance per service along year 2025. Please note that the predictable outages (NANUs, NOTAMs) are not considered in the computation of the performances, meaning that the results presented are pessimistic.

During the month of October, EGNOS SoL and OS Services were impacted by a total loss of SiS services. EGNOS OS was recovered later that day, and EGNOS SoL was recovered on Friday, 17 October 2025. Please note that statistics below are directly impacted by this outage.

EGNOS Safety of Life (SoL) Service for Aviation – Non-Precision Approach (NPA)[1]				
NPA Availability	0% coverage of 99.9% of the NPA Service Area (99.99% without the October Outage)			
NPA Integrity	No integrity event for any of the monitoring stations			
NPA Continuity	99.81% coverage of the 5.10^{-4}/h NPA Service Area			
EGNOS Safety of Life (SoL) Service for Aviation – Approach with Vertical Guidance (APV-I)[1]				
APV-I Availability	0% coverage of the 99% APV-I Service Area (99.28% without the October Outage)			
APV-I Integrity	No APV-I integrity event			
APV-I Continuity	99.57% coverage of the $5 \cdot 10^{-4}$ APV-I Service Area			
EGNOS Safety of Life (SoL) Service for Aviation – LPV-200[1]				
LPV-200 Availability	0% coverage of the 99% LPV-200 Service Area (99.53% without the October Outage)			
LPV-200 Integrity	No LPV-200 integrity event			
LPV-200 Continuity	99.80% coverage of the $5 \cdot 10^{-4}$ LPV-200 Service Area			
LPV-200 Vertical Accuracy	No LPV200 accuracy event			
EGNOS Open Service (OS)[2]				
Horizontal Accuracy (95%)	1.0 metres (cumulative data for all monitoring stations) vs the 3-metre target			
Vertical Accuracy (95%)	1.7 metres (cumulative data for all monitoring stations) vs the 4-metre target			
Open Service Availability	Above 99% for all locations			
EGNOS Safety of Life assisted service for Maritime users (ESMAS)[3]				
Accuracy (95%)	1.2 metres (cumulative data for all monitoring stations) vs the 10-metre target			
Availability of accuracy	Above 95% for all locations			
EGNOS Data Access Service (EDAS)[4]				
Service	**Availability**	**Availability Target**	**Latency**	**Latency Target**
Service Level 0	99.86%	98.5%	765.93 ms	1300 ms
Service Level 2	99.86%	98.5%	768.10 ms	1450 ms
Ntrip	99.88%	98%	598.74 ms	1750 ms
SISNeT	99.87%	98%	59.06 ms	1150 ms
Data Filtering	99.80%	98%	515.92 ms	1750 ms
FTP	99.89%	98%	N/A	N/A

[1] Refer to SoL SDD **Error! Reference source not found.**

[2] Refer to OS SDD [RD-2]

[3] Refer to ESMAS SDD [RD-3]

[4] Refer to EDAS SDD [RD-4]. The latency values represent the average of the P95 statistics calculated on a monthly basis within the reported period.

Signal-In-Space (SIS) Availability		
GEO PRN136	GEO PRN123 / PRN121[5]	EGNOS OP (at least one SIS)
99.91%	99.90%	99.93%

Table 1: EGNOS service performance during 1 January 2025 to 31 December 2025 period.

The leading causes for the observed degradation in EGNOS service performance were as follows:

- *EGNOS Open Service (OS) and Safety of Life (SoL) for aviation services:*
    - **SiS Outage on 13 October.** In October, both the EGNOS SoL and OS Services were affected by a total SiS loss on Monday, 13 October 2025. The EGNOS OS service was restored later that same day, while the EGNOS SoL for aviation service was fully recovered on Friday, 17 October 2025. This event affected the year's performance figures.
    - **Ionosphere monitoring:** Problems related to EGNOS ionosphere monitoring primarily affected the northern and southern portions of the Service Area. Throughout 2025, this has been the leading contributor to the observed underperformance. The main driver has been the peak in solar activity associated with the current solar cycle, resulting in more frequent ionospheric disturbances. It must be noted, as shown in Figure 1, that Solar Cycle 25 has exhibited higher intensity than predicted, leading to several severe conditions not previously encountered by EGNOS.

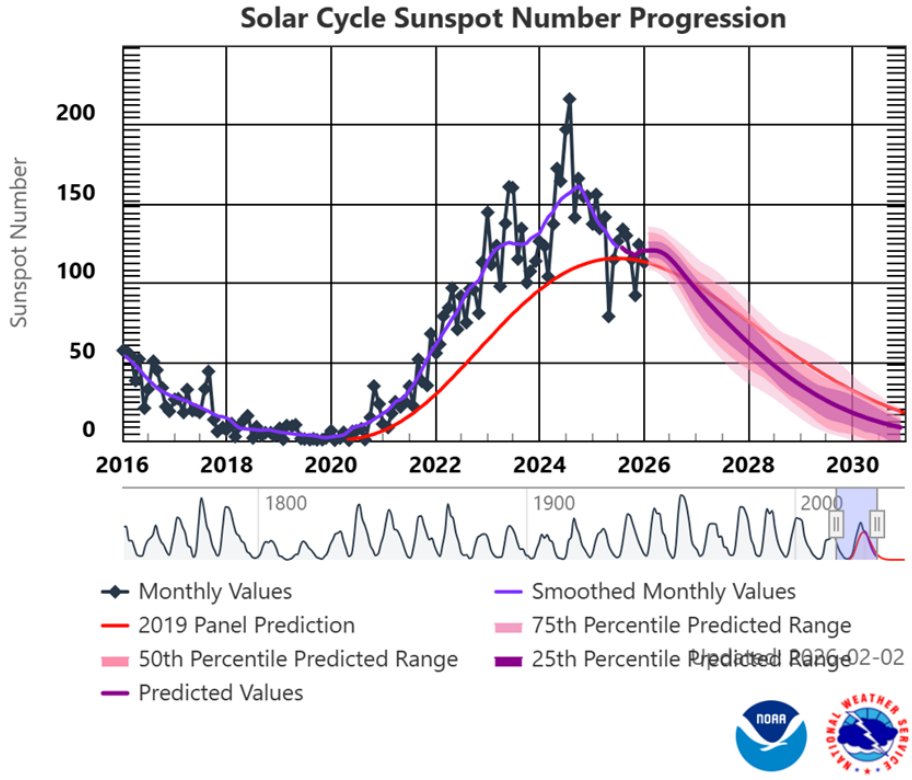

Figure 1: Solar Cycle Sunspot Number Progression

[5] GEO PRN121 was introduced into EGNOS OP on 25/08/2025. GEO PRN123 migrated to EGNOS TEST on 08/09/2025. The availability is computed considering PRN123 from January to August 2025 and PRN121 from September to December 2025.

Between November 2024 and February 2025, LPV200 service level was suspended above 60°N. It was then gradually recovered until 3rd of July 2025 as of which the full SDD [RD-1] commitment was recovered. From this date, the performance has improved, and no additional AME have been observed.

- **Notice Advisory to Navstar Users (NANU):** The publication of NANUs declaring certain GPS satellites temporarily unusable affected EGNOS service performance on specific days across most of the Service Area.

- **Data quality/RIMS anomaly:** Local issues affecting the RIMS receivers used for GPS monitoring contributed to daily degradation in areas near the affected RIMS.

2.3 Service delivery and management

2.3.1 EGNOS services user interface

2.3.1.1 User Support (EGNOS OS/SoL & EDAS/ESMAS Websites & Helpdesks)

During the reporting period, the EGNOS Helpdesk Service handled 215 user requests. Of these, 141 were received directly by the EGNOS OS/SoL Helpdesk, while the remaining 74 were managed by the EDAS and Maritime Helpdesk. The service incident in October 2025 generated 49 user-related tickets, including 18 requests related to SoL and 31 related to OS.

2.3.1.2 Service Prediction Tools

The most notable tool developments for the reporting year include:

- Successful deployment of three new versions of the NOTAM proposals generation tool, aimed at continuous service improvement. These versions introduced both measures to reinforce security and new features requested by certain ANSPs, enabling the use of multiple AFTN addresses for NOTAM proposals. This will allow ANSPs, upon request, to receive the same NOTAM proposals at different locations.
- Successful deployment of two new versions of the MSI Proposals generation tool. These enhancements include increased system capabilities and performance and an upgrade of the monitoring tool.

2.3.1.3 User support improvement process

During the year, new information sources were incorporated to assess EGNOS User Satisfaction. These sources include specific consultations during the EGNOS Workshop, a dedicated EDAS user survey, weekly Helpdesk consultations, and EMA PoCs consultations.

2.3.2 EGNOS services development

2.3.2.1 Aviation

In relation to the development of the EGNOS Safety of Life (SoL) Service for Aviation in 2025, a total of four (4) new EGNOS Working Agreements (EWAs) were successfully signed between the EGNOS Service Provider for the EGNOS SoL Service for Aviation and various organisations intending to implement EGNOS-based operations.

The EWA framework continues to be adopted, in compliance with the applicable Single European Sky (SES) regulation requirements, not only by Air Navigation Services Providers (ANSPs) based in the European Union (EU) and providing both Air Traffic Control (ATC) and Aerodrome Flight Information Service (AFIS), but also by ANSPs operating outside the EU, previous EC authorization. This includes ALBACONTROL, the ANSP of Albania, which entered into an EWA in May 2025.

As a result, the EGNOS SoL Service for Aviation is currently usable, under equal or equivalent applicable SES regulation requirements, in the 27 EU Member States and eight non-EU States within the EGNOS service area: Switzerland, Norway, Iceland, the Bailiwicks of Guernsey and Jersey (the Channel Islands), Serbia, Montenegro, and Albania.

The status of EGNOS SoL Service for Aviation provision, including dissemination of the EWA framework, was presented at several relevant aviation forums and events throughout 2025, including ICAO PBNC TF#12&13 / EUROCONTROL NSG#39&40 (April and October 2025), the EASA EU-LAC APP-II event on the “SBAS feasibility study in the Latin American and Caribbean (LAC) region” (April 2024), the SBAS IWG#40 Operations Sub-Group (August 2025), and the ICAO APAC SBAS-GBAS Implementation Workshop for Airspace Users (October 2025).

As continuous improvement, communication with EWA signatories and relevant stakeholders is analysed in particular with some lesson learnt were provided from past service incidents.

It is also important to highlight the continuation in 2025 of activities aimed at enabling and harmonising the framework that allows the use of the EGNOS SoL Service for Aviation in environments without Air Traffic Services (ATS) and Non-Instrument Runways Ends (NIREs). This includes support for new implementation initiatives, such as in Spain (Mutxamel), following similar support cases provided in previous years in Sweden (Boras) and Germany (Breda).

Unmanned Aircraft Systems (UAS), or drones, were identified as future beneficiaries of EGNOS services. Adapting the EGNOS service provision layer to meet UAS user needs will be crucial to maximise the added value of EGNOS both inside and outside the U-space, including, for instance, GNSS performance monitoring and forecasting capabilities. In this context, several workstreams have been intensively supported to develop the appropriate framework, capture user needs, and assess various approaches. Of particular relevance is the contribution to EUROCAE WG-105 Subgroup 6 in the development of ED-348, now available for open consultation, which provides guidelines on the use of GNSS in medium-risk UAS operations (SAIL III and IV).

2.3.2.1 Maritime

Regarding the added value the ESMAS service currently means to the Maritime community, a close collaboration has been established with some European National Maritime Authorities (and their supporting agencies) from Spain, France, Ireland, Germany, Finland, and Norway. This collaboration has favoured the presentation and discussion of the main ESMAS features, capabilities, the current committed and typical performance with the main goal of gathering their feedback and experience regarding the ESMAS service in the waters under their jurisdiction. This collaboration, which is intended to be continued in the future, is of relevance to enhance the ESMAS Service Provision and its future evolutions, in order to meet the Maritime user needs, requirements and expectations from these actors while encouraging the increasing adoption of the service by the Maritime community.

In addition to the previous collaboration with Authorities, it is proposed other alternatives to increase the adoption of ESMAS service in the Maritime domain. Indeed, beyond the current EGNOS corrections and integrity data provided by ESMAS service through the Signal in Space (from EGNOS satellites) and EDAS (via internet), it has been working on alternative mechanisms to provide these data via Maritime communication specific technologies. These mechanisms proposed will contribute to increase potentially the coverage of ESMAS in those areas not currently covered by EGNOS satellites (for instanced in northern latitudes) or occasionally shadowed (when is blocked by any obstacle) while also offering to the Maritime community another source of augmentation data. In this regard, it has been researched the VDES (VHF Data Exchange System) technology already under development and standardization, to define the mechanisms to enable retransmission of SBAS corrections (e.g. EGNOS) through the VDES messages and channels standardised (or new ones proposed for standardization) by the International Maritime Organization (IMO) and the International Organization for Marine Aids to Navigation (IALA). These mechanisms have been proposed to be incorporated into the IALA technical documentation (e.g. Guideline 1117 VDES Overview) for its final adoption and future publication (part of the material proposed is planned to be published in the updated G1117 in Q2 2026). This activity will be continued in 2026 with additional technical content development in relation to the necessary upgrade of VDES ground and onboard systems to enable the seamless retransmission of SBAS data from the SBAS data source to the final Maritime users equipped with a GNSS and SBAS receiver. This effort could also require the proposal of including this material in the related standards (IALA, IMO, IEC...).

In the regulatory framework, it has been continued with the work started in 2024 regarding the recognition of augmentation systems by the International Maritime Organisation (IMO) within its WWRNS (World Wide Radio Navigation Systems). The IMO decision to amend the existing regulation to include augmentation systems in IMO WWRNS also triggered the need to address SBAS DFMC & ARAIM Performance Standard at the IMO level. Complementary, it has been done a close monitoring of additional initiatives related to SBAS and GNSS in the frame of IALA, for instance, the proposal of training material, training courses and active participation to educate the Maritime community in the use of GNSS and SBAS in this domain with the main objective of ESMAS adoption.

Complementary to the Maritime domain, in Inland Waterways an active contribution has been performed supporting CESNI (the European Committee for Standardisation in the field of Inland Navigation) being the work done in this forum especially focused on monitoring and assessing the potential future use of EGNOS in Inland Waterways (IWW). Thus, it has been performed an assessment of a potential operational concept (with potential operational scenarios) for introducing EGNOS into IWW, within the framework of the Inland-Multi Sensor Receiver (I-MSR) under the CESNI Vessels Tracking and Tracing (VTT) Temporary Working Group. This work is intended to be enriched and matured in the coming years.

2.3.2.1 Rail

The following points summarise the main information on the Rail domain:

Various activities were carried out in collaboration with the ERTMS User Group Localisation Working Group (EUG-LWG) to define and implement a GNSS augmentation service based on EGNOS within the EGNOS4RAIL project (launched in November 2023). This work provides added value to the development of the future EGNOS-based service and supports its use within the Advanced Safe Train Positioning (ASTP) currently under development. In particular, as presented by the EGNOS4RAIL project coordinator during the EGNOS Workshop (EGNOS for Rail – E4R Context, status & roadmap), the definition of an EGNOS service for rail is done in the framework of this project, involving all relevant organizations.

The Rail User Consultation Platform (UCP) served, among other purposes, to gather rail user needs related to GNSS and EGNOS. The feedback obtained in this UCP will be included on an update of the User Requirements Document.

3 EGNOS SERVICE PERFORMANCE

3.1 EGNOS SIS Availability

*The **Individual GEO availability** is the percentage of time each geostationary satellite broadcasts a valid EGNOS SIS. A valid SIS is defined as a Signal-In-Space delivering safety of life augmentation messages compliant with ICAO SARPS and RTCA MOPS.*

*The **Grouped GEO availability** is the percentage of time during which at least one geostationary satellite in the EGNOS operational configuration (EGNOS-OP) broadcasts a valid EGNOS SIS (as per the above definition).*

This section presents the annual SIS availability performance, including the monthly SIS availability for each GEO PRN in operational mode, namely PRN123, PRN121, and PRN136 and the operational SIS (at least one SIS available).

- Individual GEO availability (SES-5 configured with PRN136): 99.91%
- Individual GEO availability[5] (ASTRA-5B configured with PRN123 or EUT-5WB configured with PRN121): 99.90%
- Grouped GEO availability (at least one SIS): 99.93%

The numerical values for each month and each GEO PRN are provided in Table 2:

DATE	PRN136 (%)	PRN123 or PRN121[5] (%)	Grouped GEO availability (%)
January 2025	99.98	99.97	100.00
February 2025	99.98	99.99	100.00
March 2025	99.98	99.97	100.00
April 2025	99.99	99.99	100.00
May 2025	99.99	99.96	100.00
June 2025	99.99	99.95	100.00
July 2025	99.98	99.98	100.00
August 2025	99.99	99.99	100.00
September 2025	99.95	99.99	100.00
October 2025	99.16	99.07	99.18
November 2025	99.97	99.97	100.00
December 2025	100.00	99.99	100.00
Average monthly availability	**99.91**	**99.90**	**99.93**

Table 2: EGNOS SIS OP Monthly availability from January to December 2025 (%)

The monthly operational SIS availability was 100% throughout 2025 and exceeded 99.9% for each GEO satellite, except in October 2025. The reduced availability in October is due to the EGNOS SiS outage that occurred on 13/10/2025 at 10:00 UTC.

3.2 SoL Service – Non-Precision Approach (NPA)

3.2.1 NPA minimum performance

Figure 2 and Figure 3 recall the minimum Non-Precision Approach (NPA) availability and continuity performance expected from EGNOS, as defined in the EGNOS SoL SDD (see the EGNOS SoL for Aviation Service Definition Document [RD-1]).

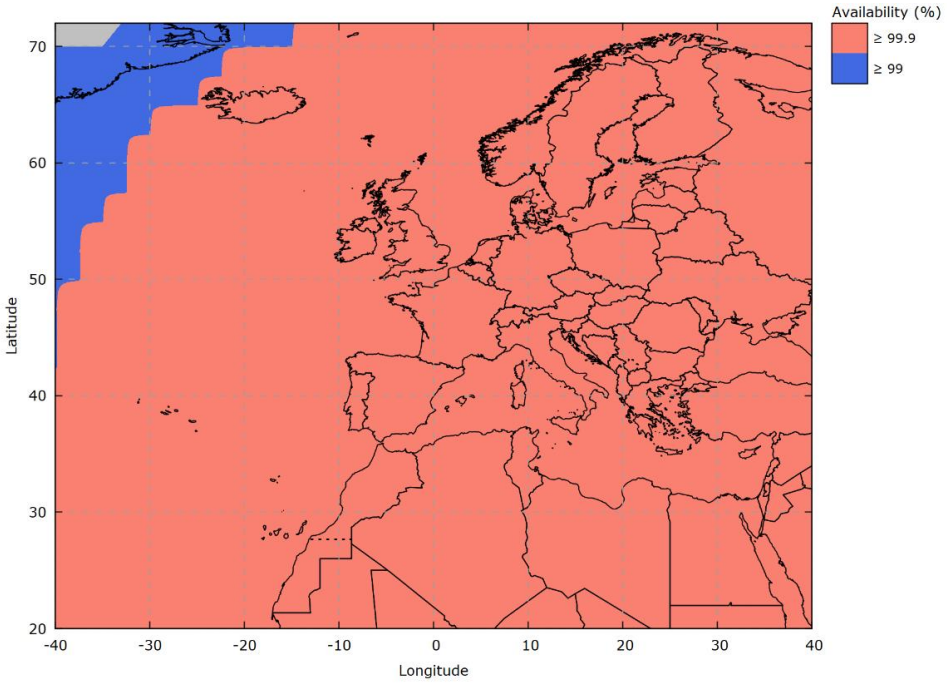

Figure 2: NPA Availability map – Expected minimum performance (SoL SDD for aviation [RD-1])

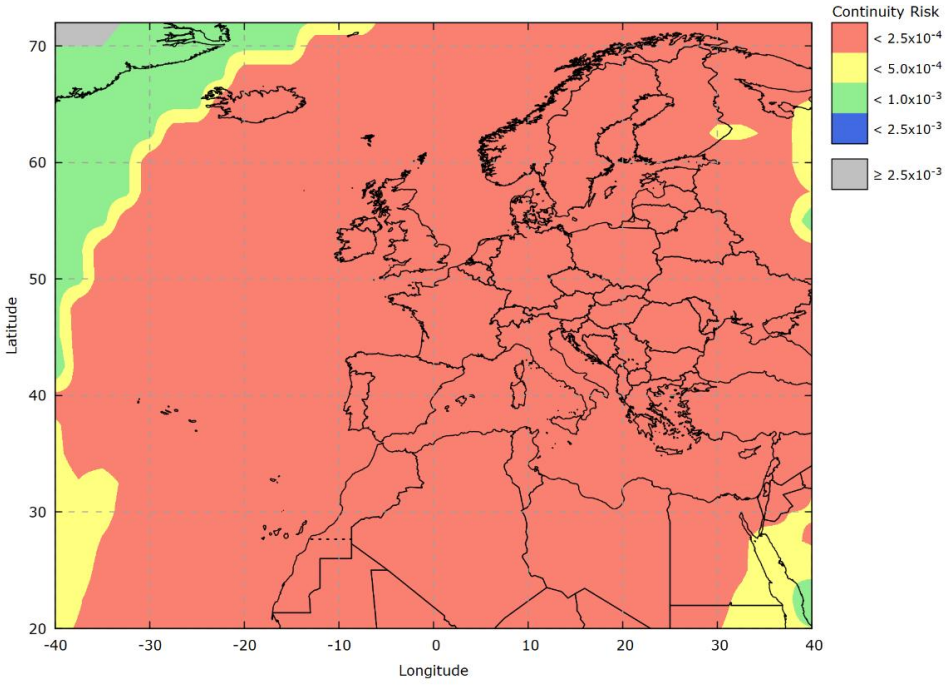

Figure 3: NPA Continuity map – Expected minimum performance (SoL SDD for aviation [RD-1])

These values represent the expected performance as measured by a fault-free receiver using all GPS satellites in view over a one-month period and using all operational EGNOS GEOs.

The NPA performance achieved during the reporting period is presented below. Additionally, NPA performance is reported in the EGNOS Monthly Performance reports, which are available on the EGNOS User Support website.

3.2.2 NPA availability

EGNOS NPA Availability *is defined as the percentage of samples in which the Horizontal Protection Level (HPL) is below the Alert Limit for NPA (HAL: 556m), calculated over the total observation period.*

Figure 4 illustrates NPA availability during the reporting period for combined GEOs (understood as the use of corrections from either of the two operational GEOs, switching between them if an SiS outage longer than three seconds is detected). The same information, excluding the five-day outage in October, is presented in Figure 5.

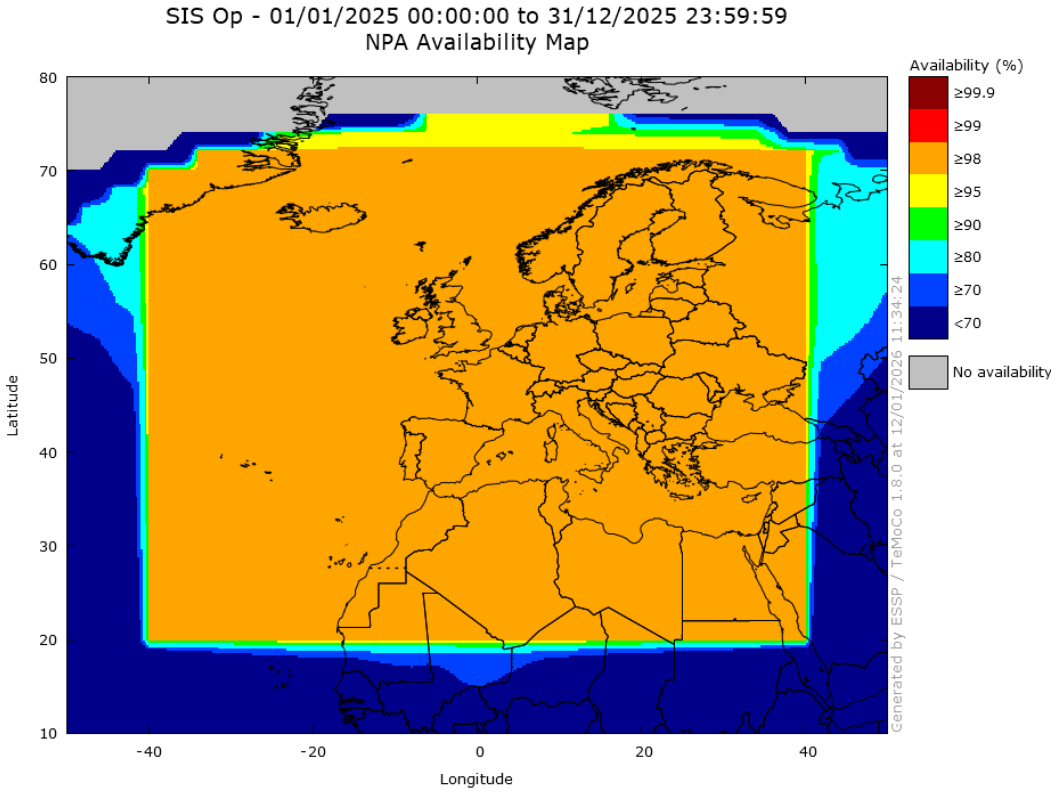

Figure 4: NPA Availability from 01/01/25 to 31/12/25

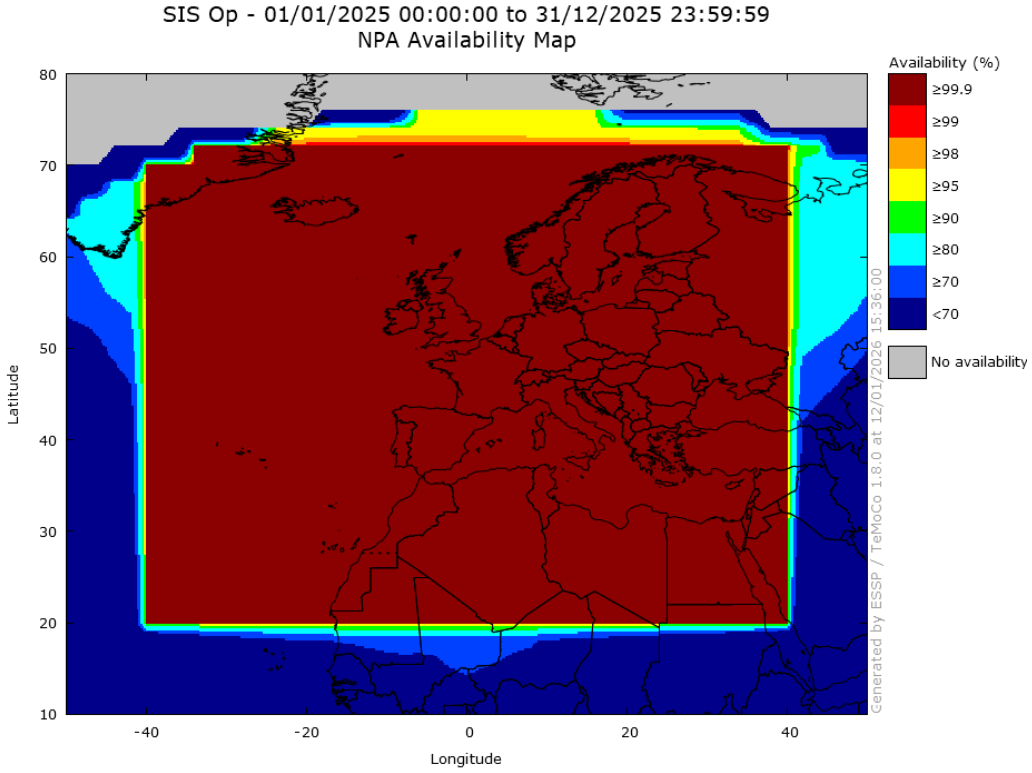

Figure 5: NPA Availability from 01/01/25 to 31/12/25, excluding from 13th to 17th October

The NPA availability performance was not met during the reporting period, resulting in 0% compliance across the entire NPA Service Area. However, when the October outage is excluded, the compliance area reaches 99.99%.

3.2.3 NPA availability – Achievement against target values

In this section, compliance with the NPA availability is established by comparing performance against the Reference Map of the Service Area shown in Figure 2. Figure 6 presents the combination of the 99% NPA availability map and the NPA Service Area. Figure 7 provides the same information, excluding the days affected by the October Outage.

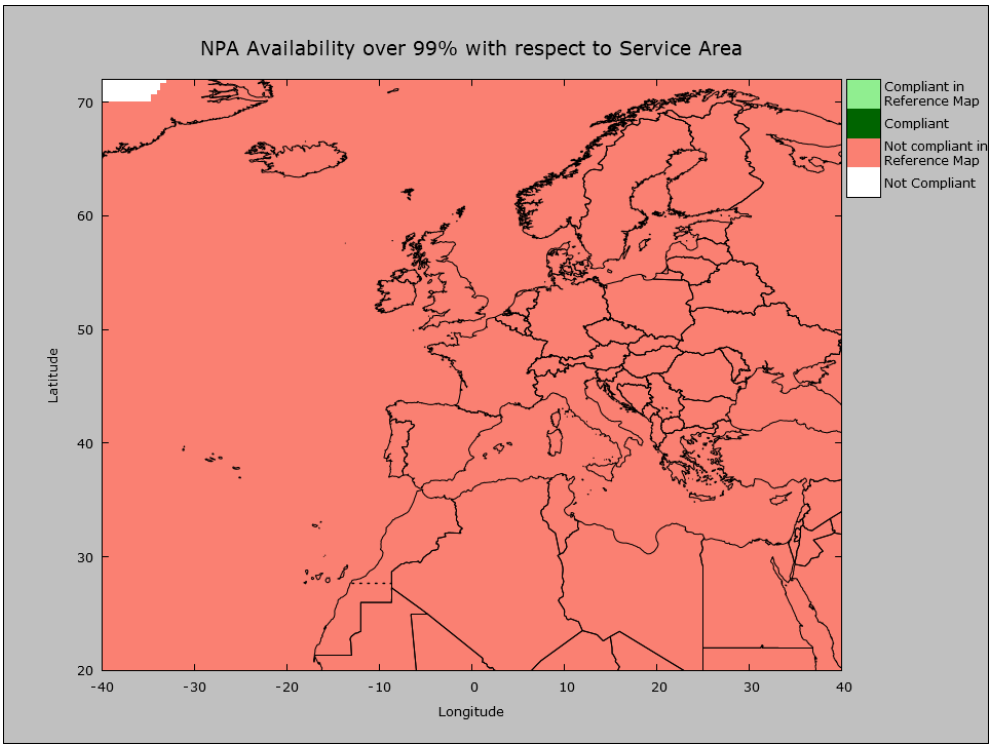

Figure 6: NPA Availability map regarding the Service Area – from 01/01/25 to 31/12/25

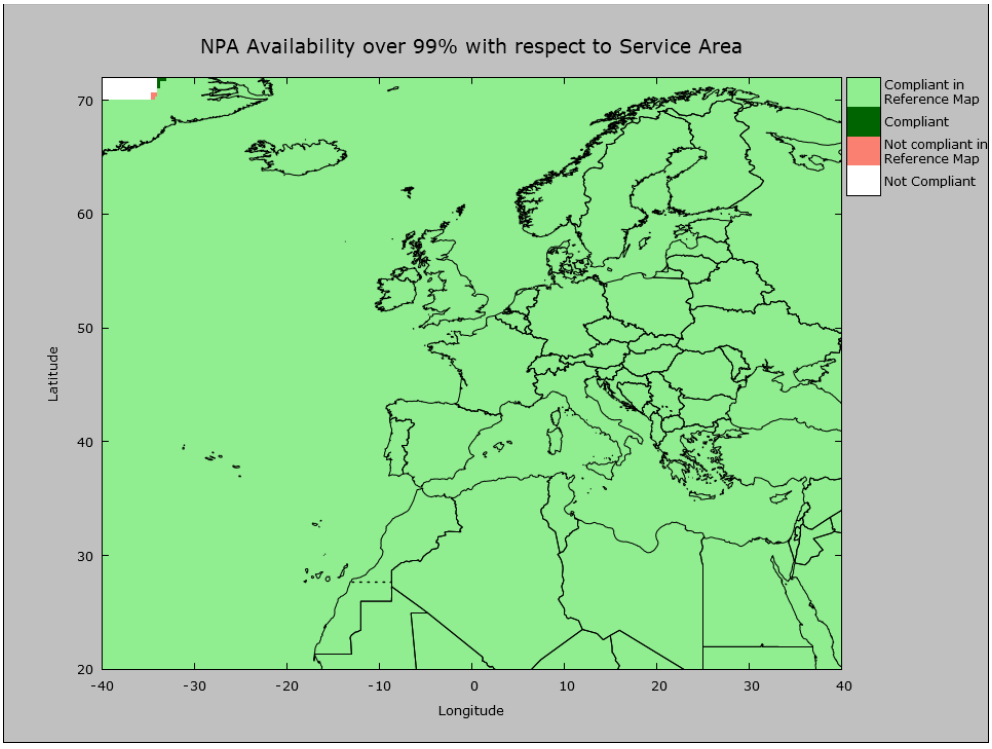

Figure 7: NPA Availability map regarding the Service Area – from 01/01/25 to 31/12/25, excluding 13th to 17th October

In Figure 6 and Figure 7, the legend is to be interpreted as follows:

- Compliant on the Reference Map: the portion of the Service Area where NPA Availability exceeded 99% (target).
- Compliant: the area outside the Service Area where NPA Availability also exceeded 99% (coverage extension regarding the commitment).
- Not compliant on the Reference Map: the portion of the Service Area where NPA Availability was below 99%.
- **Not compliant (white):** any area outside the Service Area where NPA Availability is below 99% (target).

As shown in Figure 6, NPA availability was below 99% (in red) over the area where the EGNOS GEOs were visible during the reporting period. However, Figure 7 shows that, when excluding the October outage, NPA availability exceeded 99% (in green).

Using the commitments defined in the SoL SDD for aviation [RD-1] as a reference, the percentage of compliant points within the 99.9% NPA Service Area (i.e., availability above 99.9%) reaches **99.9%**, excluding the October outage. It should be noted that this comparison with the SoL SDD for aviation [RD-1] commitment map is included for information purposes only, as the commitment map is defined on a monthly basis, whereas the reporting period covers one year.

3.2.4 NPA Integrity

*An **EGNOS NPA Integrity Event** is defined as an event in which the Navigation System Error is greater than or equal to the corresponding Protection Level for NPA.*

*The **Safety index** is defined as the ratio of the Navigation System Error to the Protection Level calculated for each second (assuming NPA algorithms calculate HNSE and HPL). If the HNSE/HPL ratio is above 1, it indicates that a Misleading Information (MI) condition has occurred.*

Table 3 presents the maximum Horizontal Safety Index (HSI) recorded at each RIMS located within the NPA Service Area (Figure 2 at 90%).

Station	HSI	Station	HSI
Agadir	0.83	La Palma	0.73
Aalborg	0.33	Lappeenranta	0.28
Athens	0.35	Lisbon	0.57
Azores	0.40	Madeira	0.80
Berlin	0.28	Malaga	0.69
Canary Islands	0.87	Palma de Mallorca	0.40
Cork	0.27	Reykjavik	0.58
Catania	0.65	Roma	0.32
Djerba	0.89	S. de Compostela	0.35
Egilsstadir	0.25	Sofia	0.30
Gävle	0.26	Swanwick	0.32
Glasgow	0.28	Toulouse	0.25
Golbasi	0.40	Tromsoe	0.30
Jan Mayen	0.31	Trondheim	0.31
Kirkenes	0.30	Warsaw	0.31
Kuusamo	0.31	Zürich	0.31

Table 3: NPA Safety Index (maximum) at reference stations

No integrity events were recorded at any RIMS stations located within the SoL [RD-1] commitment area during the year. The elevated geomagnetic activity observed in certain regions (particularly in the southern and northern parts of the Service Area) resulted in increased HSI at the corresponding RIMS stations; however, all values remained below 1.

Figure 8 presents the HSI histogram, including measurements from the various EGNOS stations and the operational GEOs throughout the year.

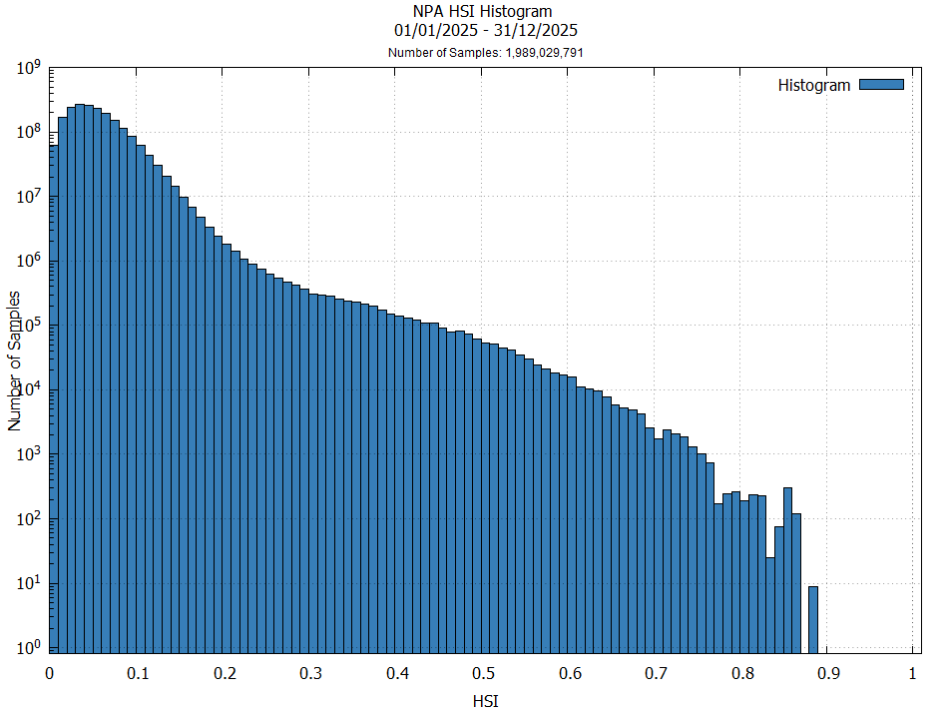

Figure 8: NPA Horizontal Safety Index[6]

The histogram confirms that no MI events occurred during the year. For southern RIMS (AGA, CNR, and DJA), HSI values exceed 0.80. Subsequent analyses demonstrated that these cases were not attributable to EGNOS corrections, but rather to the use of the GPS ionospheric model (Klobuchar), which exhibited reduced accuracy under conditions of significant ionosphere disturbances. It is recalled that NPA operations allow airborne receivers to revert to the GPS ionospheric model when SBAS ionosphere corrections are unavailable. For instance, on 1 February, RIMS DJA recorded a near MI with an HSI value of 0.89. An additional test was performed using exclusively EGNOS ionospheric corrections (i.e., without reverting to the Klobuchar model when EGNOS ionospheric data were unavailable). Under these conditions, the HSI decreased to 0.61, demonstrating that the near MIs observed in Figure 8 were caused by the use of the Klobuchar model.

Despite these elevated HSI values, the computed HNSE always remained well below the NPA Horizontal Alert Limit (556m), confirming the absence of any integrity issue.

In addition, no MI or near MI was detected at stations outside the MT27 area. Please note that due to their location outside of the EGNOS Service Area, the safety index is calculated using NPA mode protection levels, as most of these stations cannot compute a PA solution using EGNOS corrections.

Note that the SDD for aviation [RD-1] targets are computed under a worst-case scenario that considers only the Klobuchar corrections.

[6] It should be noted that certain periods may have been removed to calculate the different histograms presented in this document. These exclusions correspond to monitoring stations exhibiting poor-quality data attributed to local environmental conditions.

3.2.5 NPA Continuity

EGNOS NPA Continuity *is calculated as the ratio of the total number of single continuity events, evaluated over a one-hour sliding time window, to the number of samples with a valid and available NPA navigation solution. A single continuity event occurs if the system is available at the beginning of the operation and becomes unavailable for at least one second within the subsequent one-hour sliding window.*

Figure 9 presents the NPA Continuity Risk obtained for the combined GEOs covering the entire analysed period.

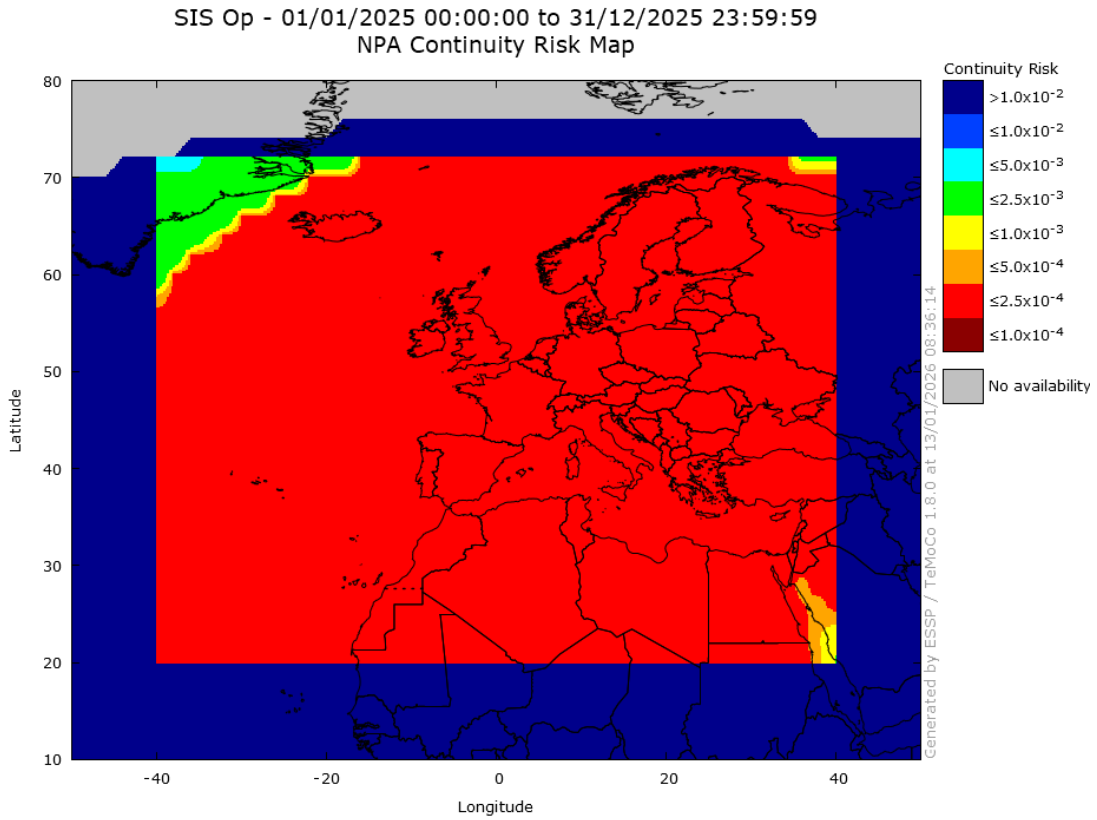

Figure 9: NPA Continuity Risk from 01/01/25 to 31/12/25

As shown in Figure 9, the continuity risk met 5e-4/h in **99.81%** of the Service Area (defined as the 99% zone in EGNOS SoL SDD for aviation [RD-1]) in 2025.

3.3 SoL Service – Approach with Vertical guidance (APV-I)

3.3.1 APV-I minimum performance

Figure 10 and Figure 11 present the minimum APV-I (Approach with Vertical guidance) availability and continuity performance expected from EGNOS, as defined in the EGNOS SoL for Aviation Service Definition Document [RD-1].

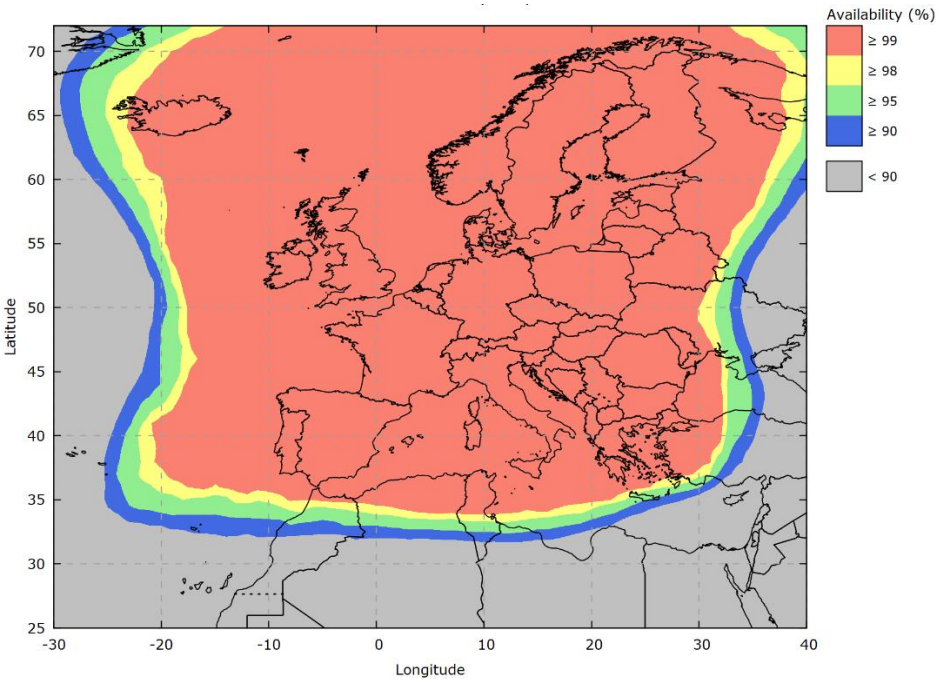

Figure 10: APV-I Availability map – Expected minimum performance (SoL SDD for aviation [RD-1])

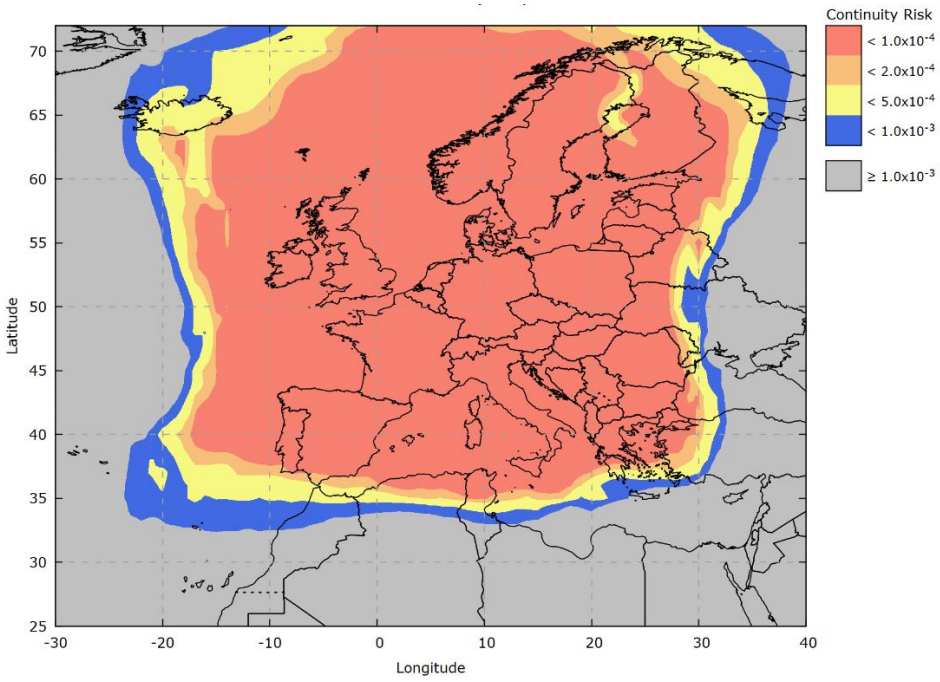

Figure 11: APV-I Continuity map – Expected minimum performance (SoL SDD for aviation [RD-1])

These values represent the expected performance, as measured by a fault-free receiver with all satellites in view, averaged over the entire year and across all operational EGNOS GEOs.

The APV-I performance achieved during the reporting period is presented below. APV-I performance is also reported in the EGNOS Monthly Performance reports available on the EGNOS User Support website.

3.3.2 APV-I availability

EGNOS APV-I Availability *is defined as the percentage of epochs within the total period during which the Protection Level (both HPL and VPL) remain below the Alert Limits for this APV-I service (HAL: 40m; VAL: 50m).*

Figure 12 shows the APV-I Availability map for the operational GEOs during the reporting period. The same information, excluding the five-day outage in October, is presented in Figure 13.

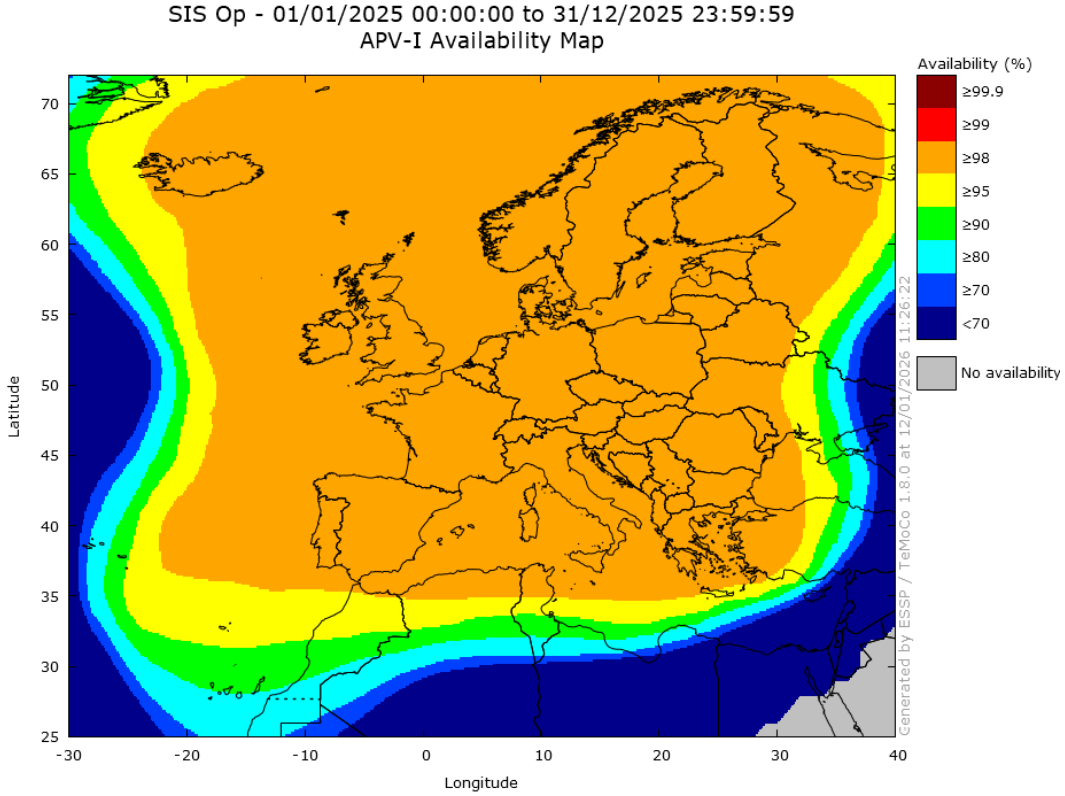

Figure 12: APV-I Availability from 01/01/25 to 31/12/25

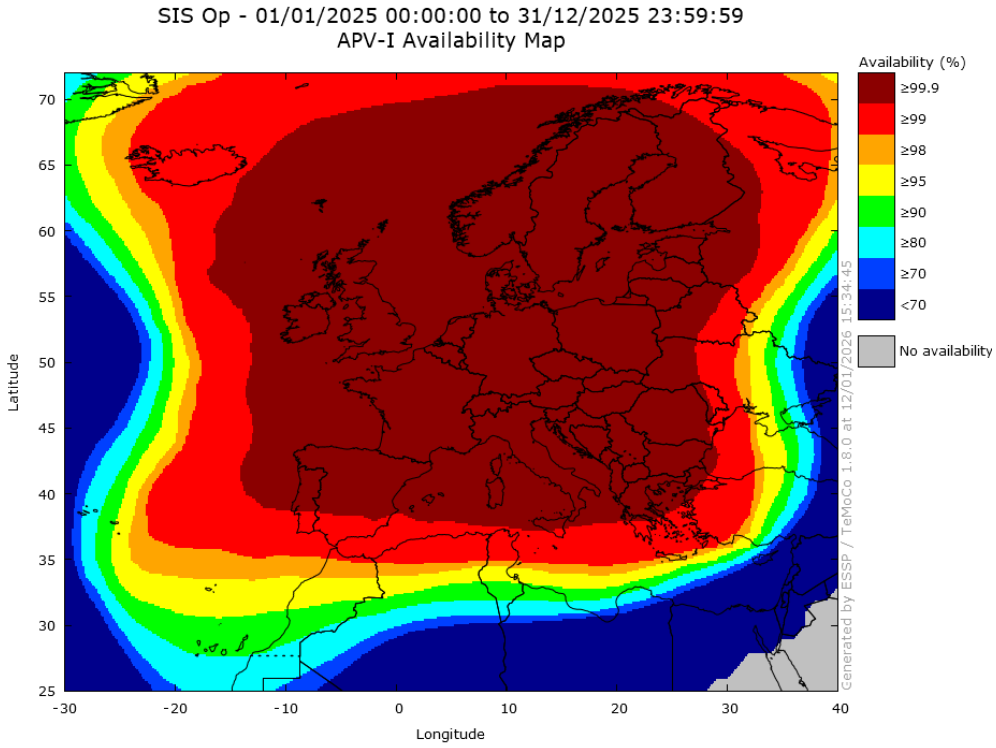

Figure 13: APV-I Availability from 01/01/25 to 31/12/25 excluding 13 to 17 October

Figure 14 presents the annual compliance with the APV-I Availability target defined in the SoL SDD for aviation [RD-1] for airports with published EGNOS-based operations.

Figure 15 provides the same information, excluding the October outage.

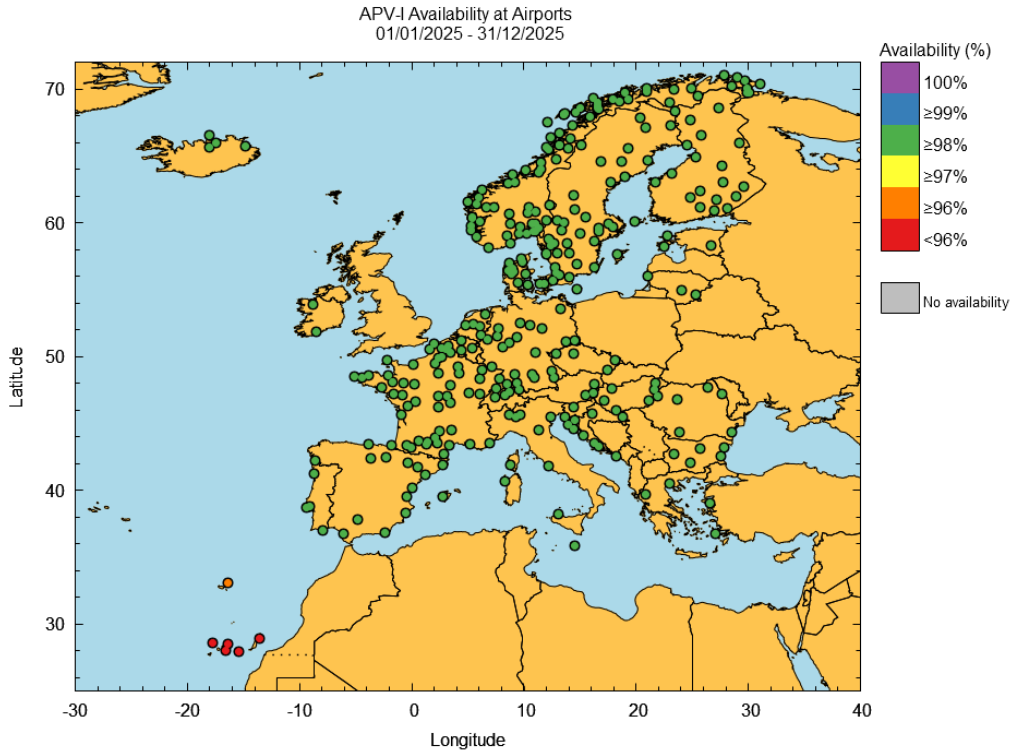

Figure 14: APV-I Availability compliance at airports with published EGNOS-based operations from 01/01/25 to 31/12/25

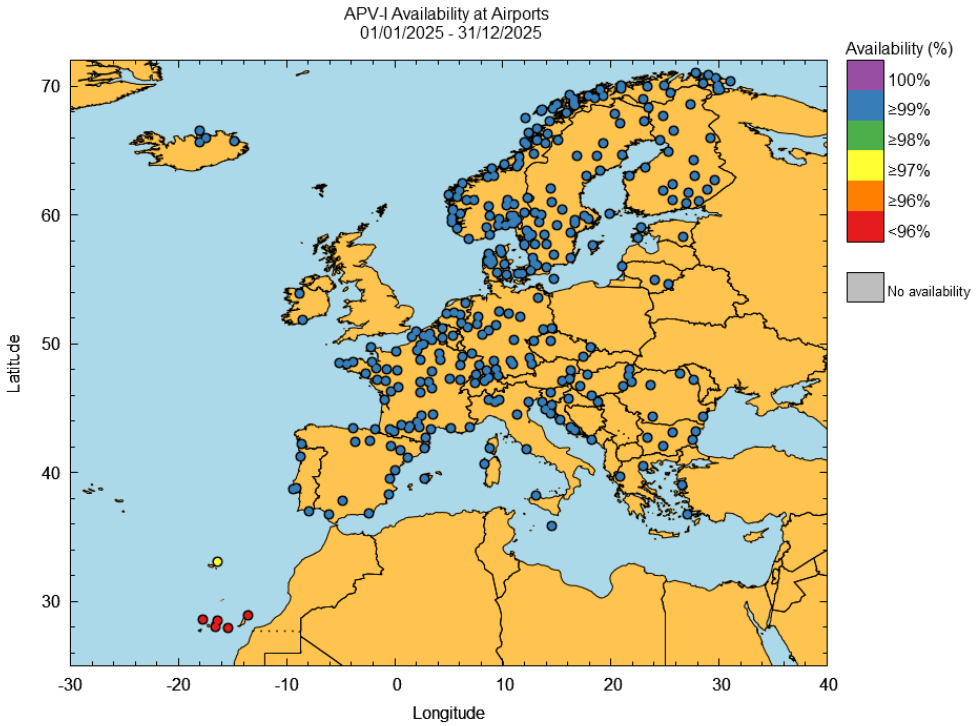

Figure 15: APV-I Availability compliance at airports with published EGNOS-based operations from 01/01/25 to 31/12/25, excluding 13 to 17 October

In addition, the 99% APV-I service availability commitment defined in SoL SDD for aviation [RD-1] was met (excluding the five days affected by the October outage) at all airports with EGNOS-based operations.

For additional information, please refer to the corresponding Monthly Performance Reports.

3.3.3 APV-I availability – Achievement against target

In this section, compliance with the APV-I availability is analysed by comparing the achieved performance against the reference Service Area map shown in Figure 10. Figure 16 presents the overlay of the 99% APV-I Availability map with the 99% APV-I Service Area. Figure 17 provides the same information, excluding the days affected by the October outage.

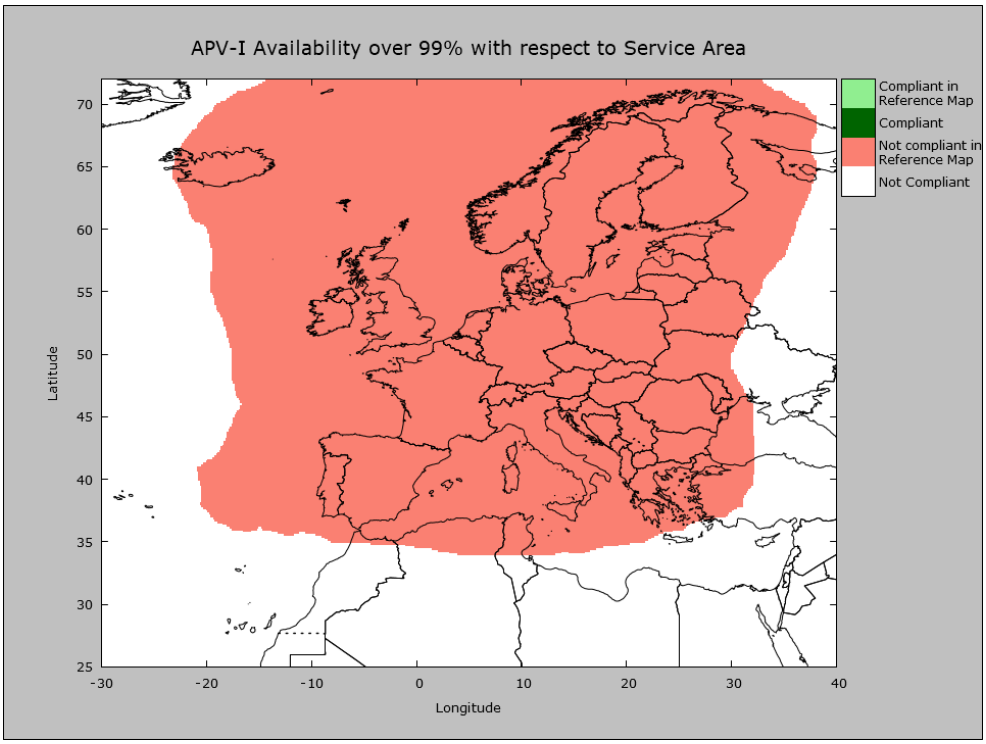

Figure 16: APV-I 99% Availability map for the 99% APV-I Service Area – from 01/01/25 to 31/12/25

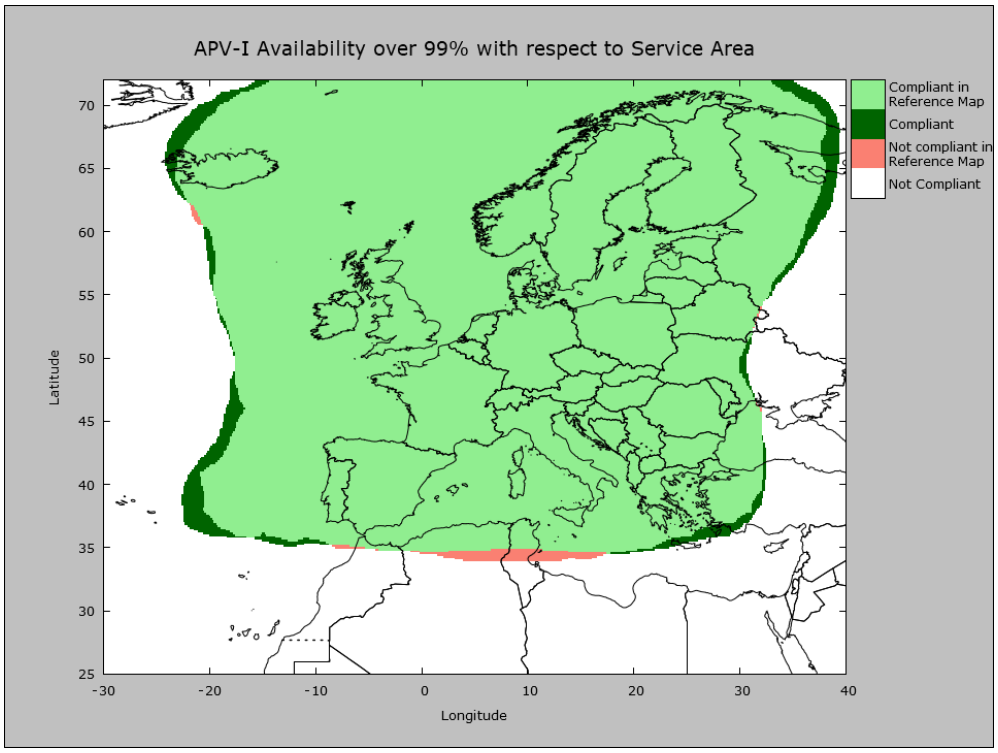

Figure 17: APV-I 99% Availability map for the 99% APV-I Service Area – from 01/01/25 to 31/12/25, excluding 13 to 17 October

In Figure 16 and Figure 17, the legend should be interpreted as follows:

- Compliant on the Reference Map: the portion of the Service Area where APV-I Availability exceed 99% (target).
- Compliant: the area outside the Service Area where APV-I Availability also exceeded 99% (coverage extension regarding the commitment).
- Not compliant on the Reference Map: the portion of the Service Area where APV-I Availability was below 99%.
- **Not compliant (white):** any other area outside the Service Area where APV-I Availability was below 99% (target).

The percentage of points compliant with the 99% APV-I Service Area (in green) is **0%,** and **99.28%** when excluding the October outage**.** The uncovered area along the southern border is attributable to ionospheric disturbances related to solar activity and equatorial scintillation.

It should be noted that the comparison with the SoL SDD for aviation [RD-1] commitment map is provided for information purposes only. The commitment map is defined on a monthly basis, whereas the reporting period covers a full year.

3.3.4 APV-I Integrity events

*An **EGNOS APV-I Integrity Event** is defined as an event in which the Navigation System Error is greater than or equal to the corresponding Protection Level for APV-I.*

No integrity event was detected.

*The **Safety Index** is defined as the ratio of the Navigation System Error to the Protection Level calculated for each second (assuming PA algorithms to calculate xNSE and xPL). If the xPE/xPL ratio is over 1, it indicates that a Misleading Information condition has occurred.*

Table 4 presents the maximum HSI and Vertical Safety Index (VSI) recorded at each RIMS located within the APV-I Service Area (see Figure 10 at 90%). In addition, Stanford plots are available on the EGNOS User Support Website:

AStation	HSI	VSI	Station	HSI	VSI
Aalborg	0.29	0.30	Lisbon	0.30	0.29
Athens	0.23	0.31	Madeira	0.36	0.35
Berlin	0.29	0.34	Malaga	0.32	0.36
Catania	0.40	0.37	Palma de Mallorca	0.42	0.33
Cork	0.27	0.37	Reykjavik	0.43	0.32
Djerba	0.42	0.40	Roma	0.33	0.32
Egilsstadir	0.26	0.33	S. de Compostela	0.31	0.26
Gävle	0.27	0.36	Sofia	0.31	0.33
Glasgow	0.28	0.39	Swanwick	0.33	0.40
Golbasi	0.25	0.22	Toulouse	0.26	0.29
Jan Mayen	0.32	0.39	Tromsoe	0.31	0.39
Kirkenes	0.31	0.33	Trondheim	0.32	0.39
Kuusamo	0.32	0.35	Warsaw	0.32	0.29
Lappeenranta	0.28	0.31	Zürich	0.27	0.35

Table 4: EGNOS APV-I Safety Index (maximum) at reference stations

Figure 18 and Figure 19 provide the HSI and VSI histograms, computed per second from measurements collected from the various EGNOS stations and both operational GEOs throughout 2025.

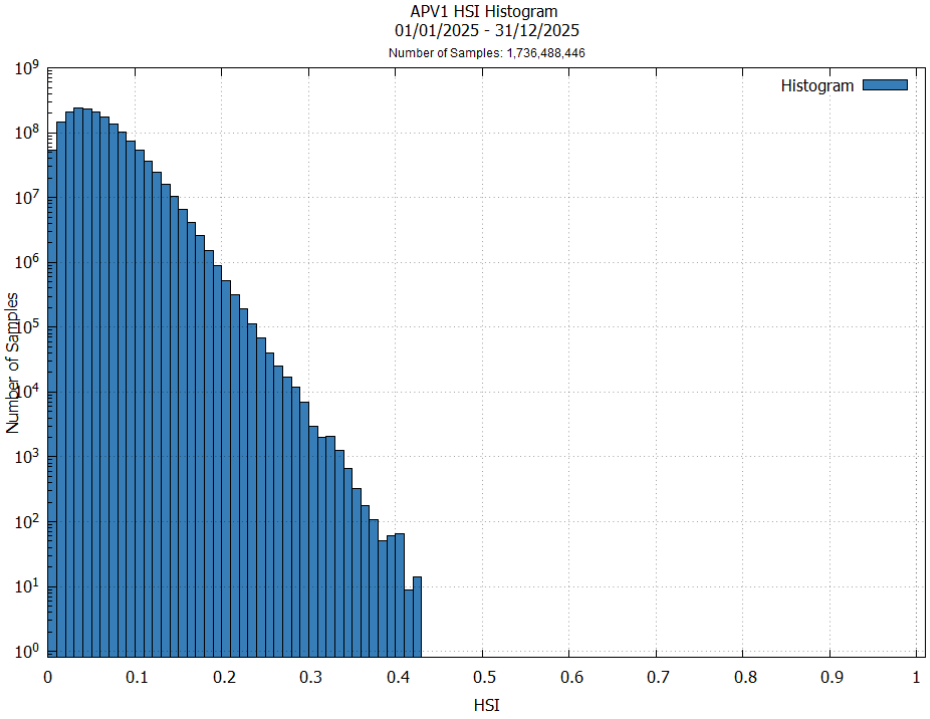

Figure 18: EGNOS APV-I Horizontal Safety Index[7]

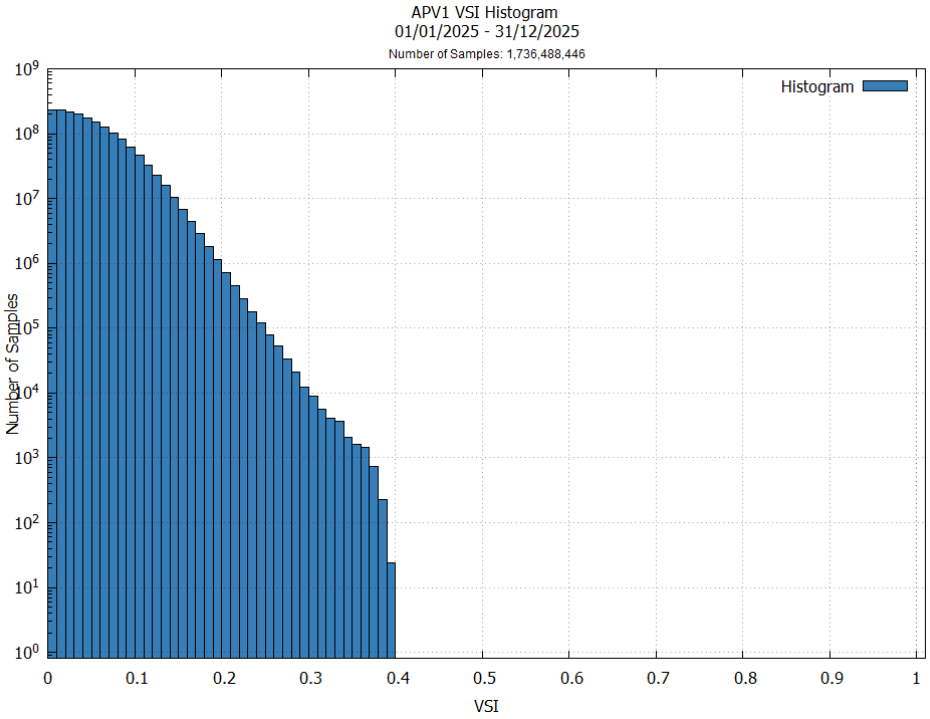

Figure 19: EGNOS APV-I Vertical Safety Index[7]

[7] It should be noted that certain periods may have been removed to calculate the different histograms presented in this document. These exclusions correspond to stations with poor-quality data due to local environmental conditions.

Figure 18 and Figure 19, the horizontal and vertical safety indices for APV-I remained below 0.31 and 0.33, respectively.

3.3.5 APV-I Continuity risk

EGNOS APV-I Continuity Risk *is defined as the ratio of the total number of single continuity events, evaluated over a 15-second sliding time window, to the total number of samples with a valid and available APV-I navigation solution. A single continuity break occurs if the system is available at the beginning of the operation and becomes unavailable at any time within the subsequent 15 seconds.*

Figure 20 below presents the combined GEO APV-I continuity risk for the reporting period:

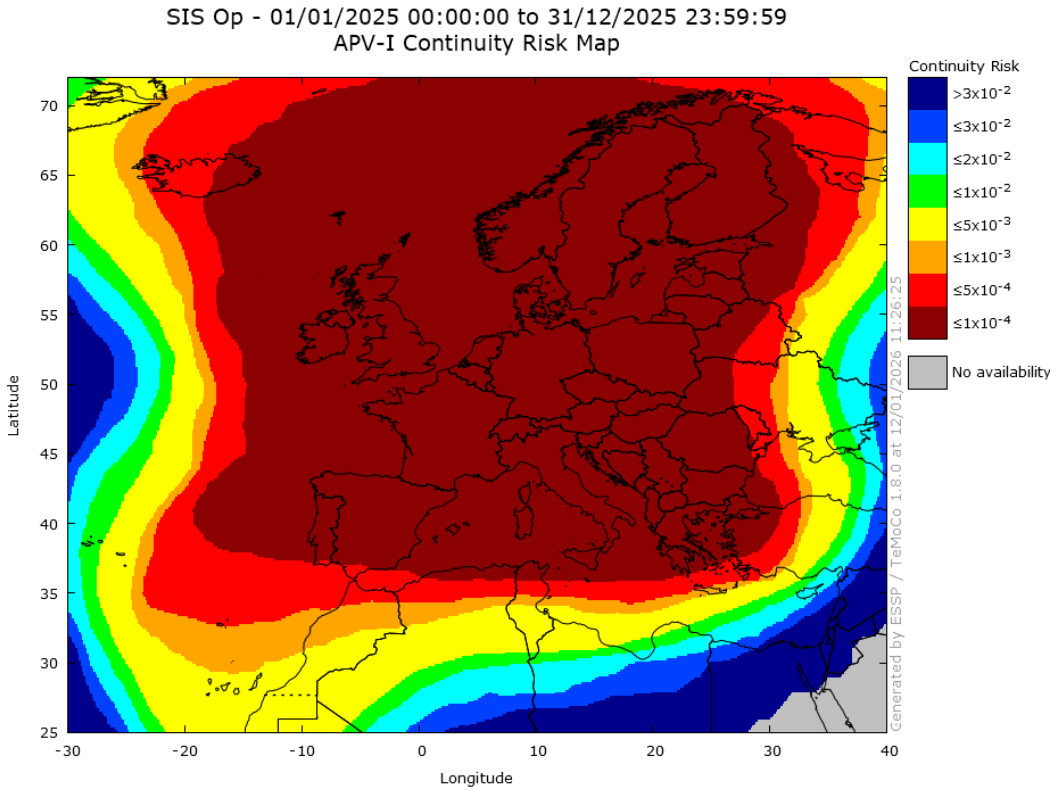

Figure 20: APV-I Continuity Risk from 01/01/25 to 31/12/25

The APV-I continuity performance was consistent with availability: it remained below $5{\cdot}10^{-4}$ over the central portion of the APV-I Service Area,[8] with underperformance observed primarily along the southern border.

[8] $5{\cdot}10^{-4}$ APV-I continuity risk area is shown in Figure 11, obtained from the EGNOS Safety of Life for Aviation SDD v3.6 **Error! Reference source not found.**

3.3.6 APV-I Continuity – Achievement against target

The overlay of the 5.10^{-4} APV-I Continuity Risk map and the $5{\cdot}10^{-4}$ APV-I Service Area is presented in Figure 21.

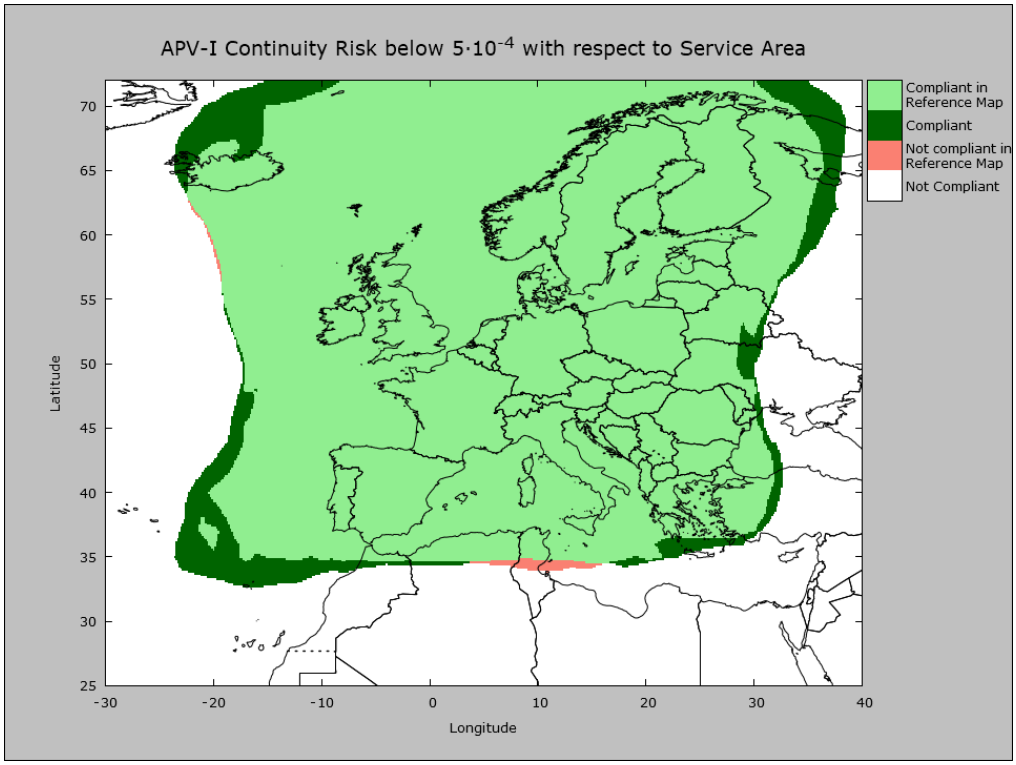

Figure 21: APV-I Continuity Risk ($5{\cdot}10^{-4}$) map regarding the $5{\cdot}10^{-4}$ APV-I Service Area – from 01/01/25 to 31/12/25

In Figure 21, the legend should be interpreted as follows:

- Compliant on the Reference Map: the portion of the Service Area where APV-I continuity exceeded 5·10-4.
- Compliant: the area outside the Service Area where APV-I continuity also exceeded 5·10-4 (coverage extension regarding commitment).
- Not compliant on the Reference Map: the portion of the Service Area where APV-I continuity was below 5·10-4.
- **Not compliant (white):** any other area outside the Service Area where APV-I continuity is below 5·10-4.

Using the SDD [RD-1] map as the reference, the percentage of points compliant with the 5·10-4 APV-I Continuity Risk Area (5·10-4/15sec) is 99.57%. It should be noted that the comparison with the SoL SDD for aviation [RD-1] commitment map is provided for information purposes only. The commitment map is defined on a monthly basis, whereas the reporting period covers a full year.

3.4 SoL Service – EGNOS Localizer Performance with Vertical guidance down to a minimum decision altitude of 200 ft (LPV-200)

3.4.1 LPV-200 minimum performance

Figure 22 and Figure 23 present the minimum LPV-200 availability and continuity performance expected from EGNOS, as defined in the EGNOS SoL for Aviation Service Definition Document [RD-1].

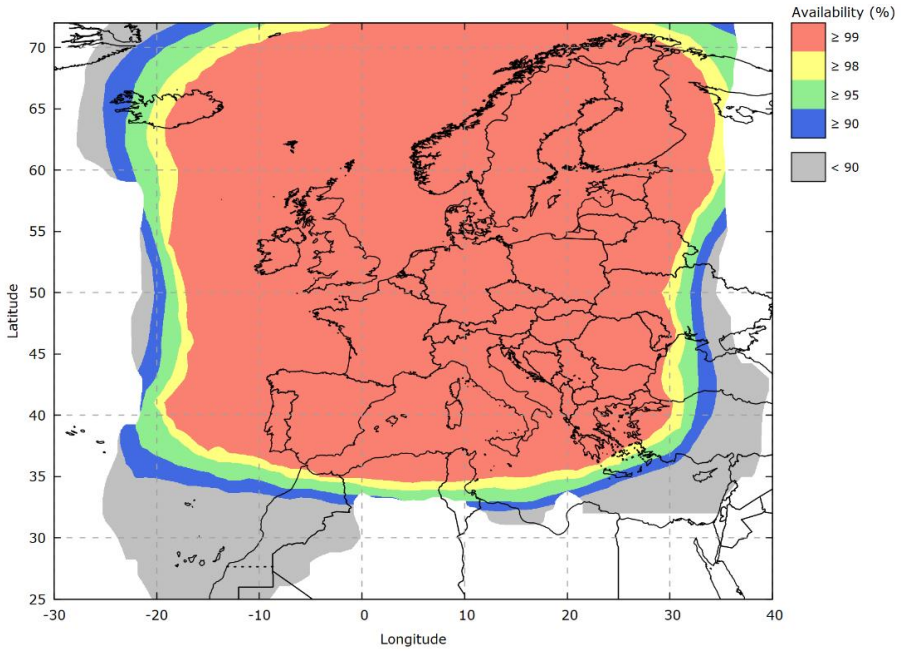

Figure 22: LPV200 Availability map – Expected minimum performance (SoL SDD for aviation [RD-1])

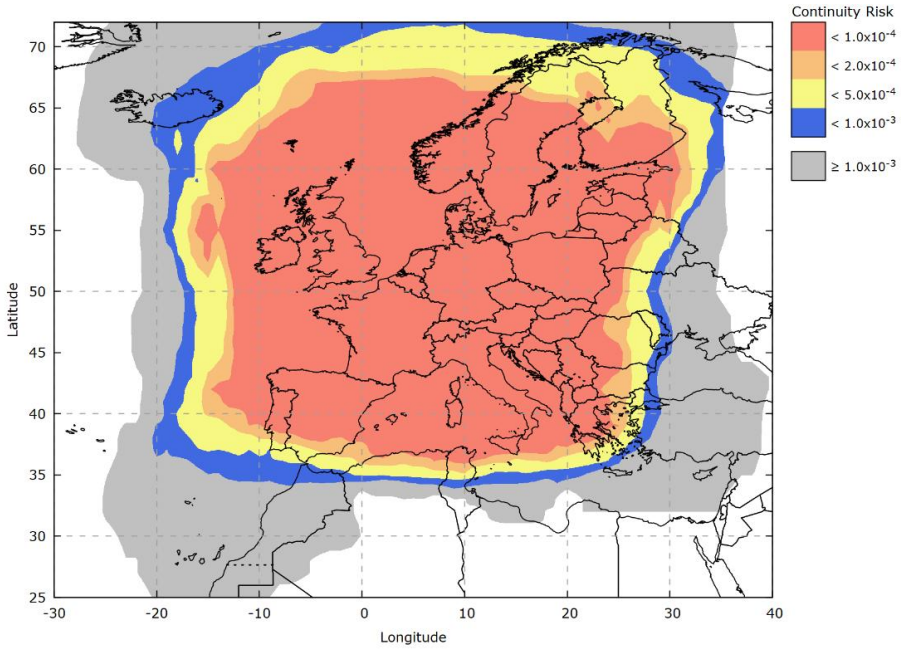

Figure 23: LPV200 Continuity map – Expected minimum performance (SoL SDD for aviation [RD-1])

These values represent the expected performance as measured by a fault-free receiver using all GPS satellites in view throughout the year and all operational EGNOS GEOs.

The LPV-200 performance achieved during the reporting period is presented below. Additionally, LPV-200 performance is reported in the EGNOS Monthly Performance reports available on the EGNOS User Support website.

3.4.2 LPV-200 availability

EGNOS LPV-200 Availability *is defined as the percentage of epochs within the period during which the Protection Level (both HPL and VPL) remains below the LPV-200 service Alert Limits(HAL: 40m; VAL: 35m).*

Figure 24 presents the LPV-200 availability for the combination of operational GEOs over the period from January 2025 to December 2025. The same information, excluding the five-day outage in October, is shown in Figure 25.

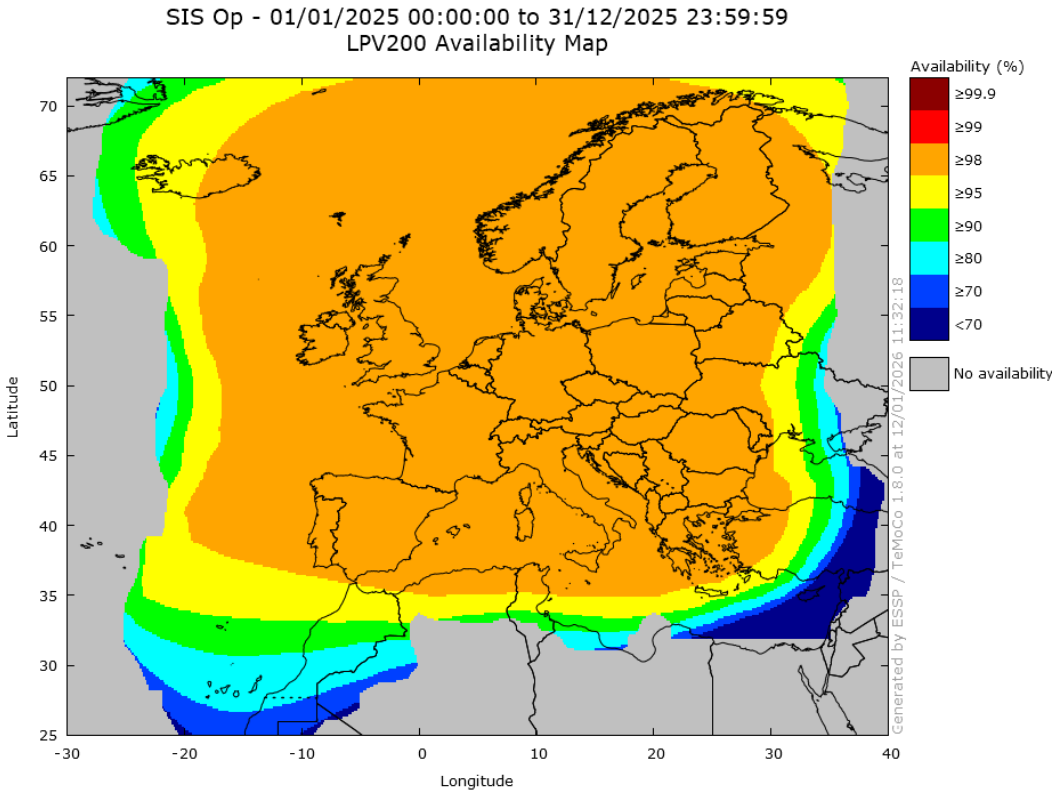

Figure 24: LPV-200 Availability from 01/01/25 to 31/12/25

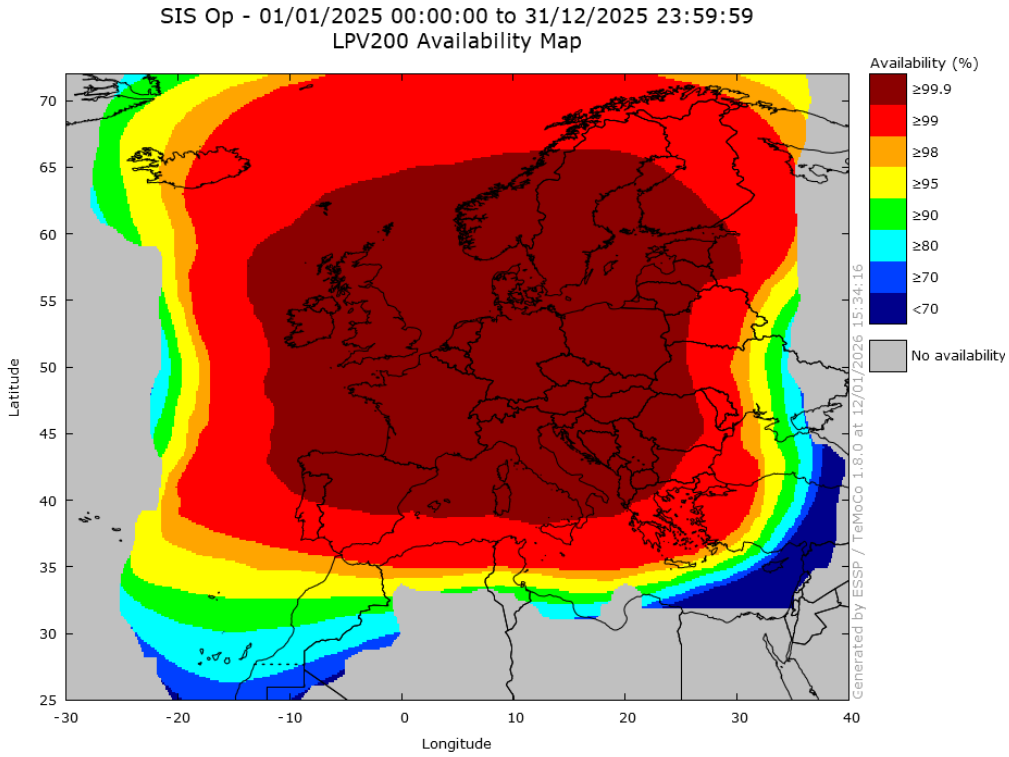

Figure 25: LPV-200 Availability from 01/01/25 to 31/12/25 excluding 13 to 17 October

Figure 26 illustrates the annual compliance with the LPV-200 availability target defined in the SoL SDD for aviation [RD-1] for airports with published EGNOS-based operations. Figure 27 provides the same information, excluding the October outage.

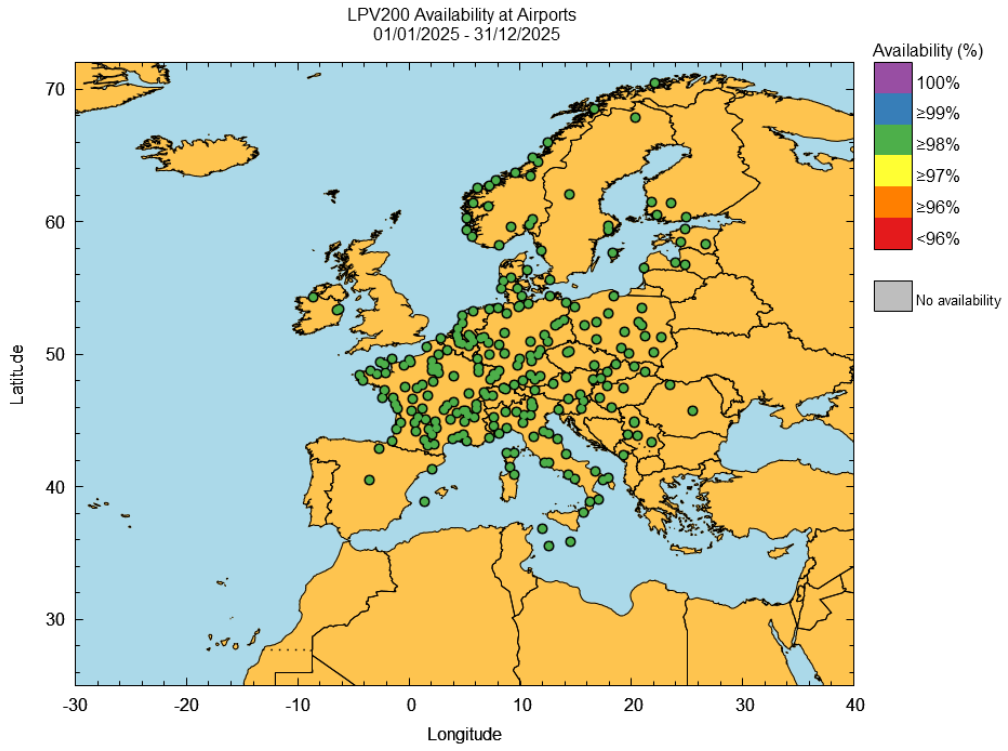

Figure 26: LPV-200 Availability compliance at airports with published EGNOS-based operations from 01/01/25 to 31/12/25

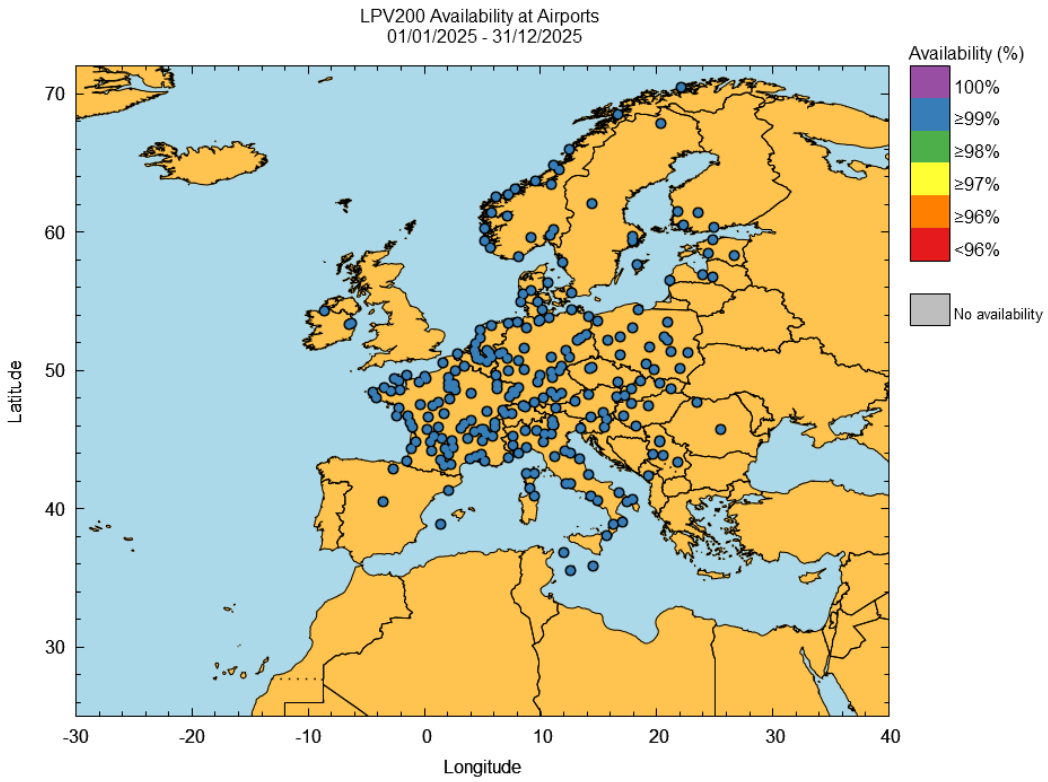

Figure 27: LPV-200 Availability compliance at airports with published EGNOS-based operations from 01/01/25 to 31/12/25, excluding 13 to 17 October

In addition, in accordance with the SoL SDD for aviation [RD-1], the LPV200 service availability commitment was met (excluding the five days affected by the October outage) at all airports with EGNOS-based operations.

For additional information, please refer to the relevant Monthly Performance Reports.

3.4.3 LPV-200 availability – Achievement against target value

In this section, compliance with the LPV-200 availability requirement is analysed by comparing performance against the Reference Map of the Service Area shown in Figure 22. Figure 28 presents the overlay of the 99% LPV-200 Availability map with the 99% LPV-200 Service Area. Figure 29 provides the same information, excluding the October outage.

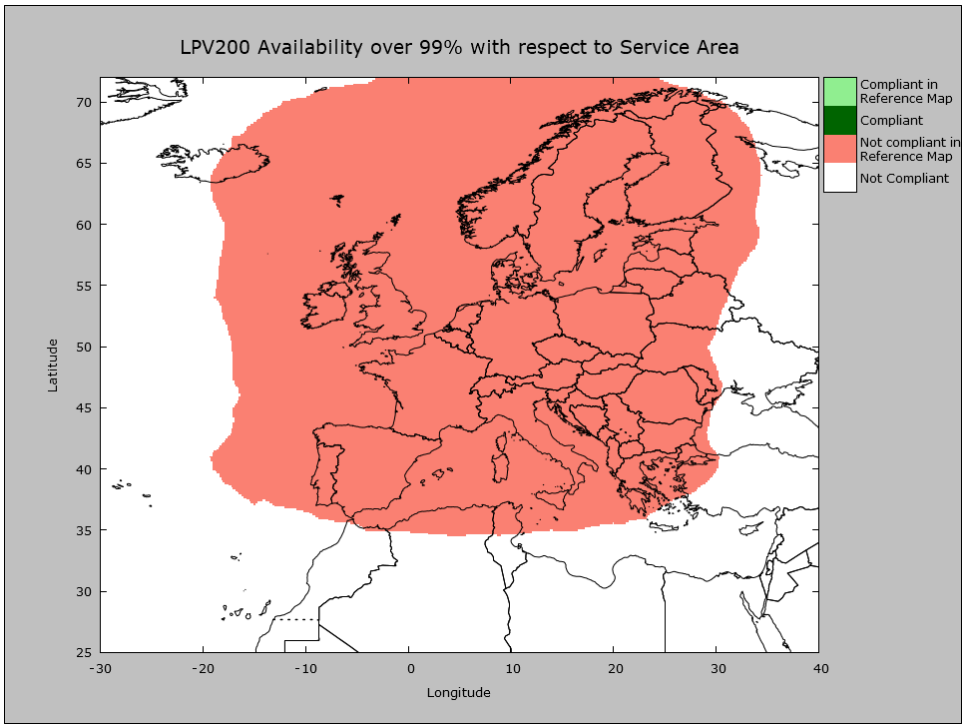

Figure 28: LPV-200 Availability map regarding the Service Area – from 01/01/25 to 31/12/25

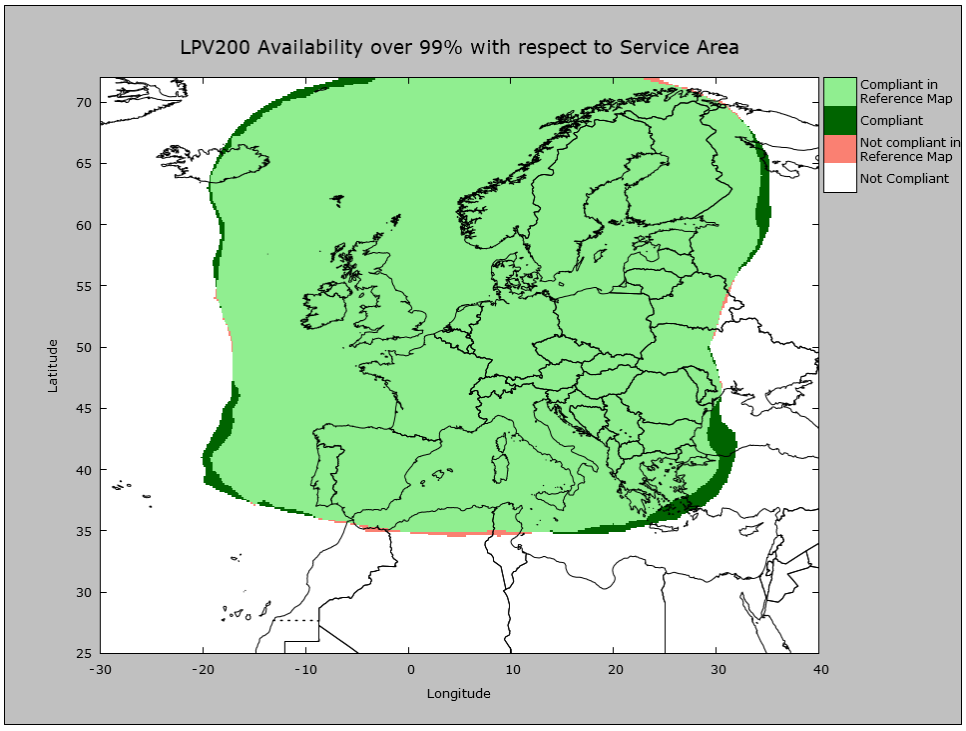

Figure 29: LPV-200 Availability map regarding the Service Area – from 01/01/25 to 31/12/25, excluding from 13 to 17 October

In Figure 28 and Figure 29, the legend should be interpreted as follows:

- Compliant on the Reference Map: the portion of the Service Area where LPV-200 Availability exceeds 99% (target).
- Compliant: the area outside the Service Area where LPV-200 Availability also exceeded 99% (coverage extension regarding the commitment).
- Not compliant on the Reference Map: the portion of the Service Area where LPV-200 Availability was below 99%.
- **Not compliant (white):** any other area outside the Service Area where LPV-200 Availability is below 99% (target).

Based on the map from EGNOS Safety of Life Service SDD v3.6.0 for aviation [RD-1], the percentage of points compliant with the 99% LPV-200 Service Area is **0%**, and **99.53%** when excluding the October outage. The deviations observed in a limited area along the southern borders with respect to the SDD commitment are attributable to the same factors described in Section 3.3.3.

It should be noted that the comparison with the SoL SDD for aviation [RD-1] commitment map is provided for information purposes only. The commitment map is defined on a monthly basis, whereas the reporting period covers a full year.

3.4.4 LPV-200 Integrity events

*An **EGNOS LPV-200 Integrity Event** is defined as an event in which the Navigation System Error is greater than or equal to the corresponding Protection Level for LPV-200.*

No integrity events were detected.

*The **Safety Index** is defined as the ratio of the Navigation System Error to the Protection Level for each second (assuming PA algorithms to calculate xNSE and xPL). If the xPE/xPL ratio is over 1, it indicates a Misleading Information condition has occurred.*

Table 5 presents the maximum HSI and VSI recorded at each RIMS located within the LPV-200 Service Area (see Figure 22 at 90%). In addition, Stanford plots are available on the EGNOS User Support Website.

Station	HSI	VSI	Station	HSI	VSI
Aalborg	0.29	0.30	Lisbon	0.30	0.29
Athens	0.23	0.31	Malaga	0.32	0.36
Berlin	0.29	0.34	Palma de Mallorca	0.42	0.33
Catania	0.40	0.37	Reykjavik	0.43	0.32
Cork	0.27	0.37	Roma	0.33	0.32
Djerba	0.42	0.40	S. de Compostela	0.31	0.26
Egilsstadir	0.26	0.33	Sofia	0.31	0.33
Gävle	0.27	0.36	Swanwick	0.33	0.40
Glasgow	0.28	0.39	Toulouse	0.26	0.29
Golbasi	0.25	0.22	Tromsoe	0.31	0.39
Jan Mayen	0.32	0.39	Trondheim	0.32	0.39
Kirkenes	0.31	0.33	Warsaw	0.32	0.29
Kuusamo	0.32	0.35	Zürich	0.27	0.35
Lappeenranta	0.28	0.31			

Table 5: EGNOS LPV-200 Safety Index (maximum) at reference stations

Figure 30 and Figure 31 present the HSI and VSI histograms, respectively, computed per second from measurements collected from the various EGNOS stations and both operational GEOs throughout the year.

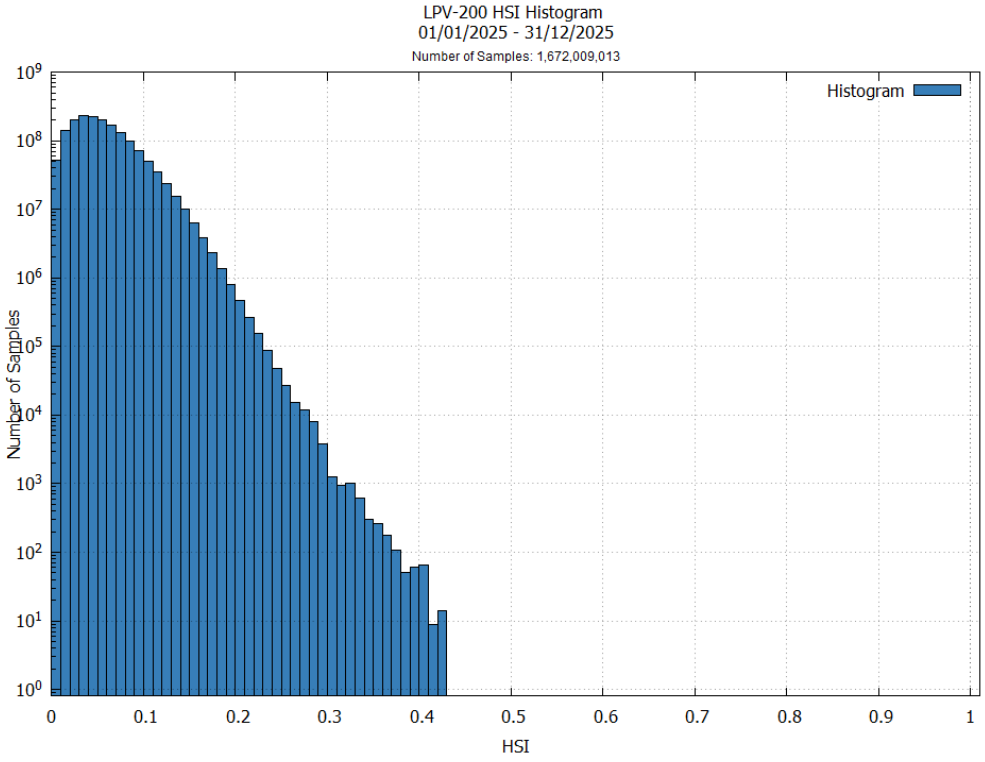

Figure 30: EGNOS LPV-200 Horizontal Safety Index

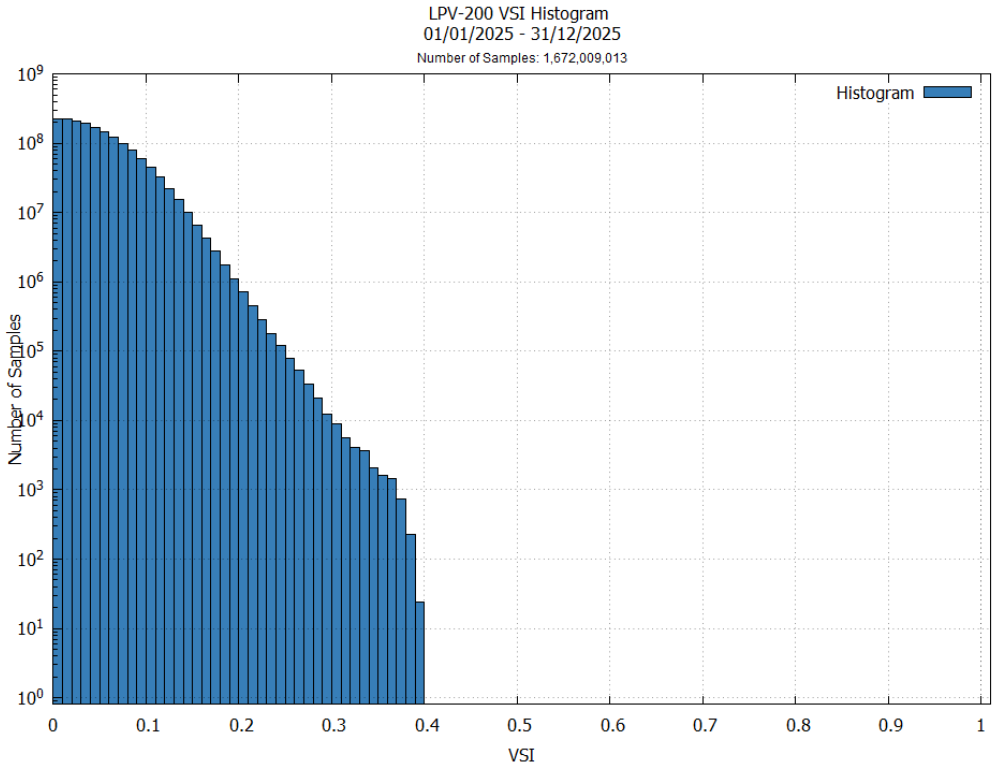

Figure 31: EGNOS LPV-200 Vertical Safety Index

Figure 30 and Figure 31, the horizontal and vertical safety indices for LPV-200 remained below 0.43 and 0.40, respectively, at all stations.

3.4.5 LPV-200 Continuity risk

EGNOS LPV-200 Continuity Risk *is defined as the ratio of the total number of single continuity events, evaluated over a 15-second sliding time window, to the total number of samples with a valid and available LPV-200 navigation solution. A single continuity event is recorded when the system is available at the start of the operation and becomes unavailable at any time within the subsequent 15 seconds.*

Figure 32 presents the combined GEO LPV-200 continuity risk for 2025.

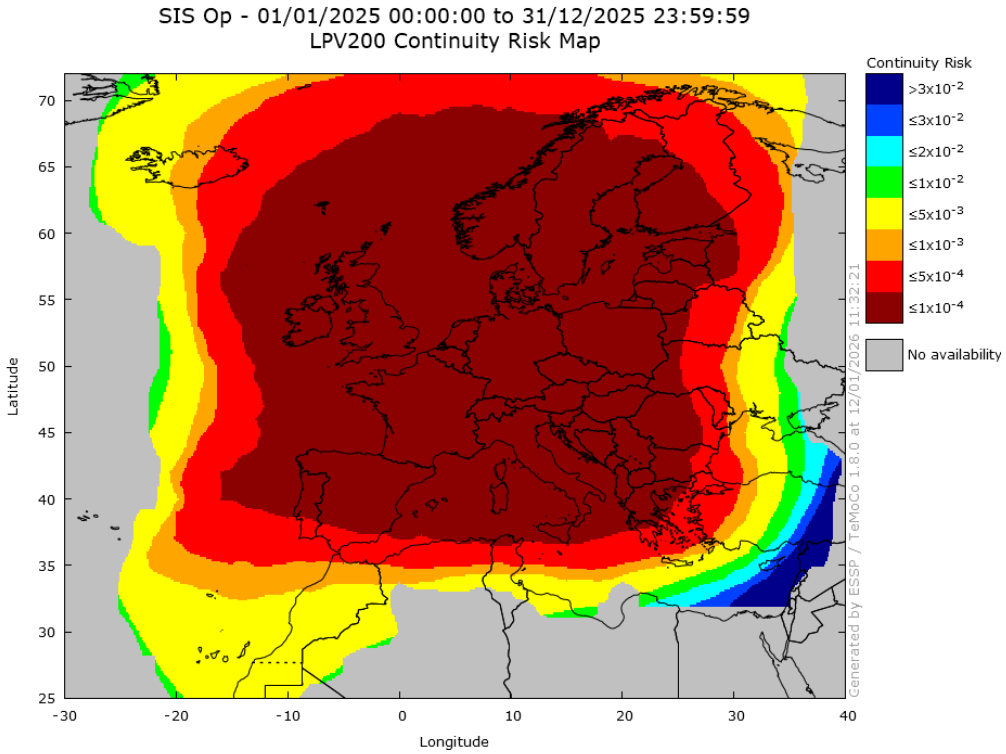

Figure 32: LPV-200 Continuity Risk from 01/01/25 to 31/12/25[9]

[9] The grey colour indicates regions outside the LPV-200 Service Area, as defined in the EGNOS Safety of Life SDD v3.6 **Error! Reference source not found.**.

3.4.6 LPV-200 Continuity – Achievement against target

Figure 33 presents the overlay of the 5.10^{-4} LPV-200 Continuity Risk map and Service Area.

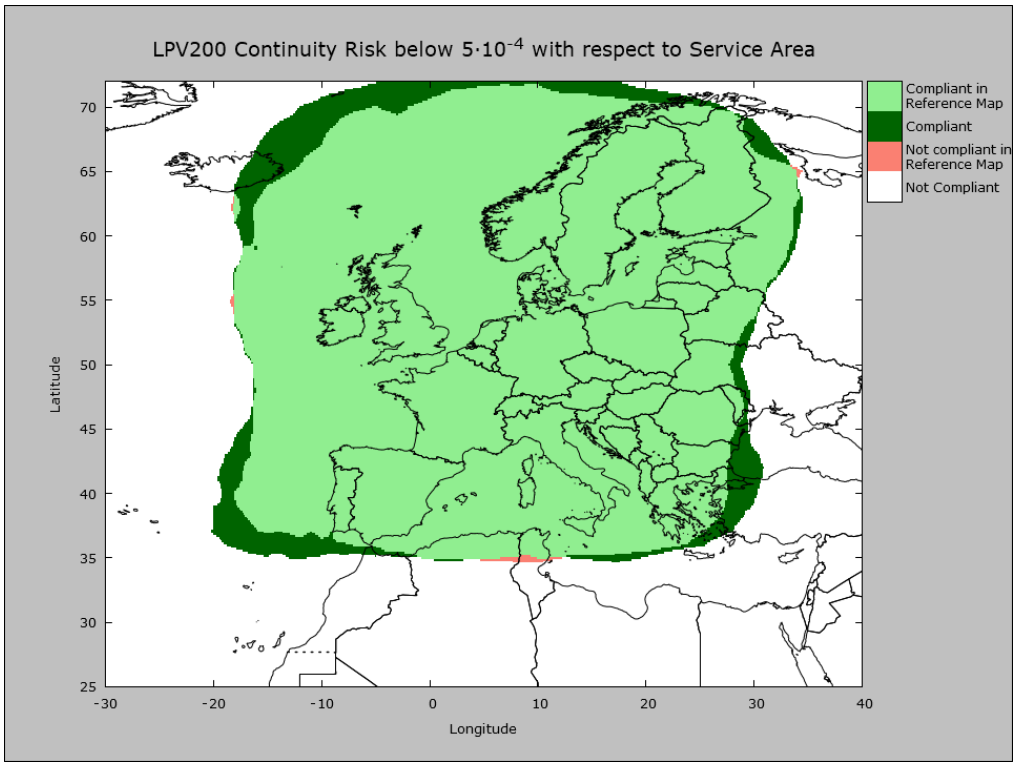

Figure 33: LPV-200 Continuity Risk ($5{\cdot}10^{-4}$) map regarding the reference map – from 01/01/25 to 31/12/25

In Figure 33, the legend should be interpreted as follows:

- Compliant on the Reference Map: the portion of the Service Area where LPV-200 continuity exceeded 5·10-4.
- Compliant: the area outside the Service Area where LPV-200 continuity also exceeded 5·10-4 (coverage extension regarding the commitment).
- Not compliant on the Reference Map: the portion of the Service Area where LPV-200 continuity was below 5·10-4.
- **Not compliant (white):** any other area outside the Service Area where LPV-200 continuity was below 5·10-4.

During the reporting period, the LPV-200 continuity performance was met across central Europe: the entire LPV-200 5·10-4 Continuity Risk Area was covered, except for a limited area along the southern border.

Using the SDD [RD-1] map as a reference, the percentage of points that comply with the $5{\cdot}10^{-4}$ LPV-200 Continuity Risk Area (5.10^{-4}/15sec) is **99.80%**. It should be noted that the comparison with the SoL SDD for aviation [RD-1] commitment map is provided for information purposes only. The commitment map is defined on a monthly basis, whereas the reporting period covers a full year.

3.4.7 EGNOS LPV-200 vertical accuracy

Compared to APV-I, LPV-200 is subject to more stringent performance requirements, including a Vertical Navigation System Error (VNSE) of 4 m (95%) and a Vertical Alert Limit (VAL) of 35 m. Additionally, specific requirements are defined in terms of the probability that the VNSE exceeds 10 m under nominal system operation conditions, set at 10^{-7}/per approach, or 15 m under degraded system conditions, defined as a 10^{-5}/per approach.

An Accuracy Major Event (AME) occurs whenever the instantaneous VNSE exceeds 10 m under nominal conditions or 15 m under system failure scenarios.

Figure 34 presents the histogram and cumulative distribution function of VNSE, calculated at the RIMS stations located within the LPV-200 Service Area, on a per-second basis over the entire period. Values greater than 10 metres are grouped in the final bar.

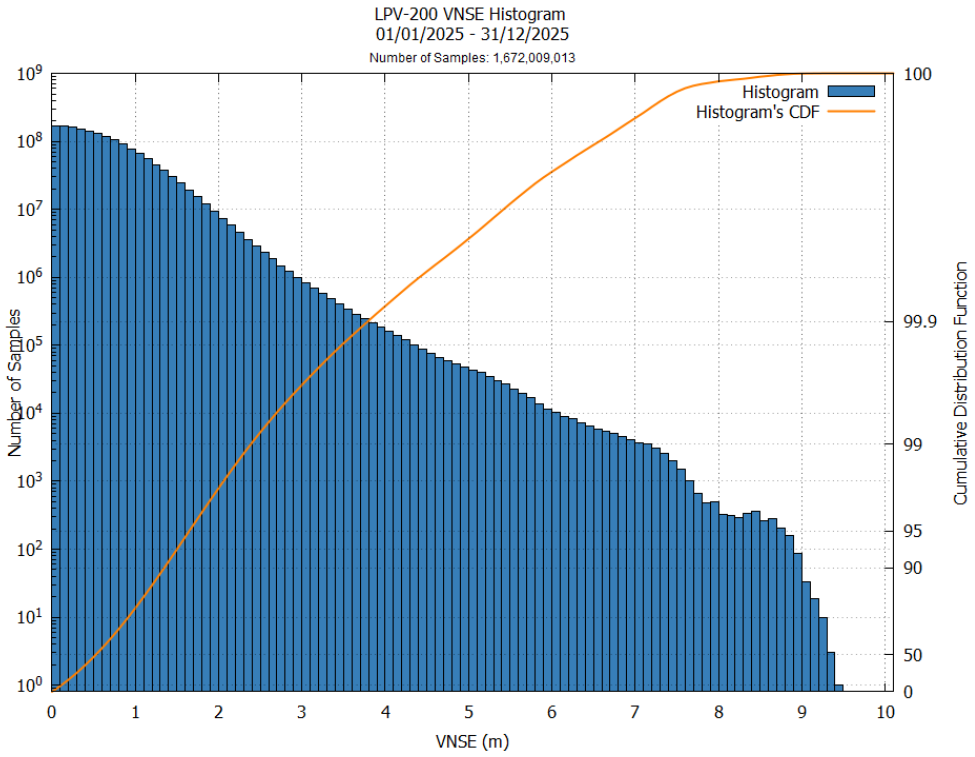

Figure 34: EGNOS LPV-200 Vertical Accuracy Histogram and Cumulative Probability

Throughout the year, no RIMS were affected by AMEs.

Even though the objective of Figure 34 is not to show the daily compliance at the RIMS, but rather to illustrate the absence of AMEs (VNSE > 10 m) over the year considering all monitoring stations, it is worth clarifying that the daily LPV200 accuracy target has not been met at 100% at all RIMS.

Figure 35 shows the absolute maximum VNSE values recorded during the year at RIMS within the LPV-200 Service Area (see Figure 22 at 90%).

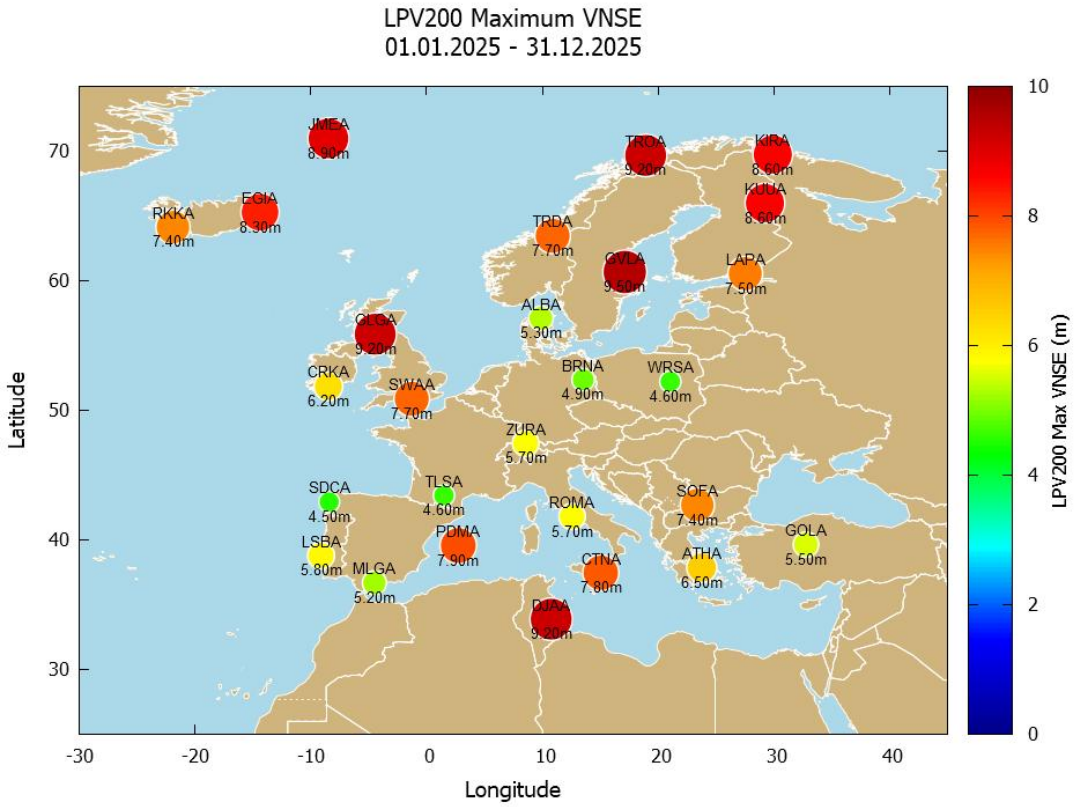

Figure 35: Maximum VNSE in the RIMS within the LPV-200 commitment

3.5 Open Service (OS)

EGNOS OS availability performance is defined as the percentage of time during which the instantaneous HNSE is below 3 metres and the instantaneous VNSE is below 4 metres, calculated over the total number of samples with a valid PA navigation solution. Figure 36 illustrates the minimum compliance area for different percentages:

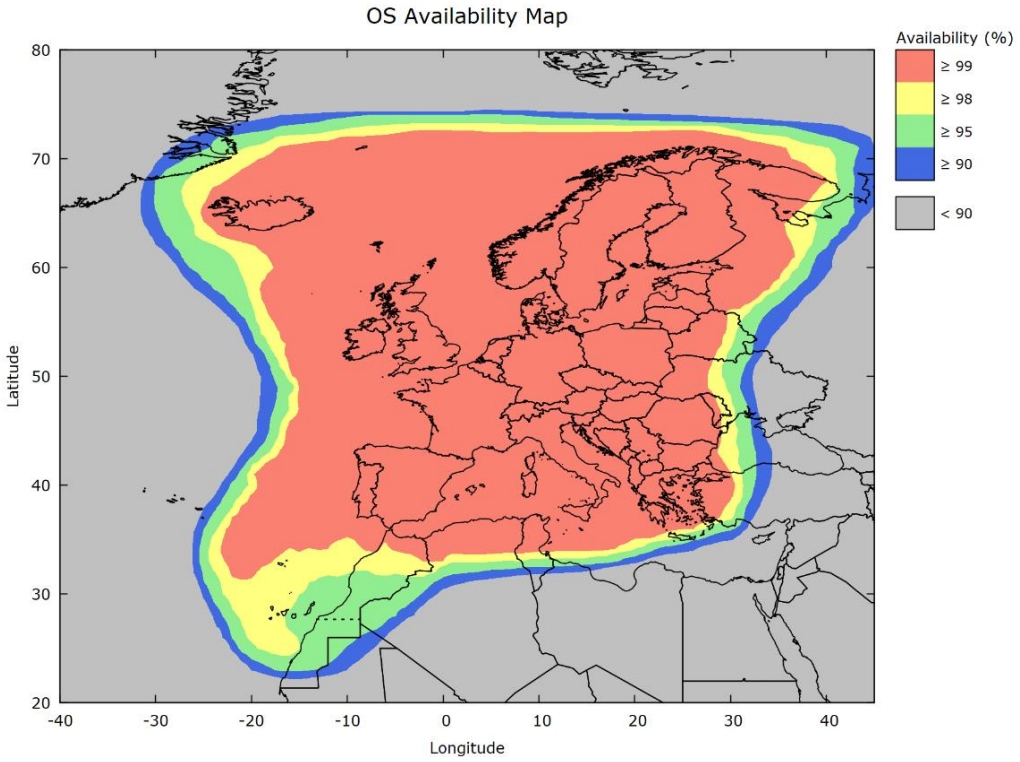

Figure 36: EGNOS OS compliance area

Further details can be found in the EGNOS OS Service Definition Document [RD-2]. Additionally, OS performance is reported in the EGNOS Monthly Performance reports available on the EGNOS User Support website.

3.5.1 RIMS monitoring network

Figure 37 shows the location of the deployed RIMS mentioned in Table 6.

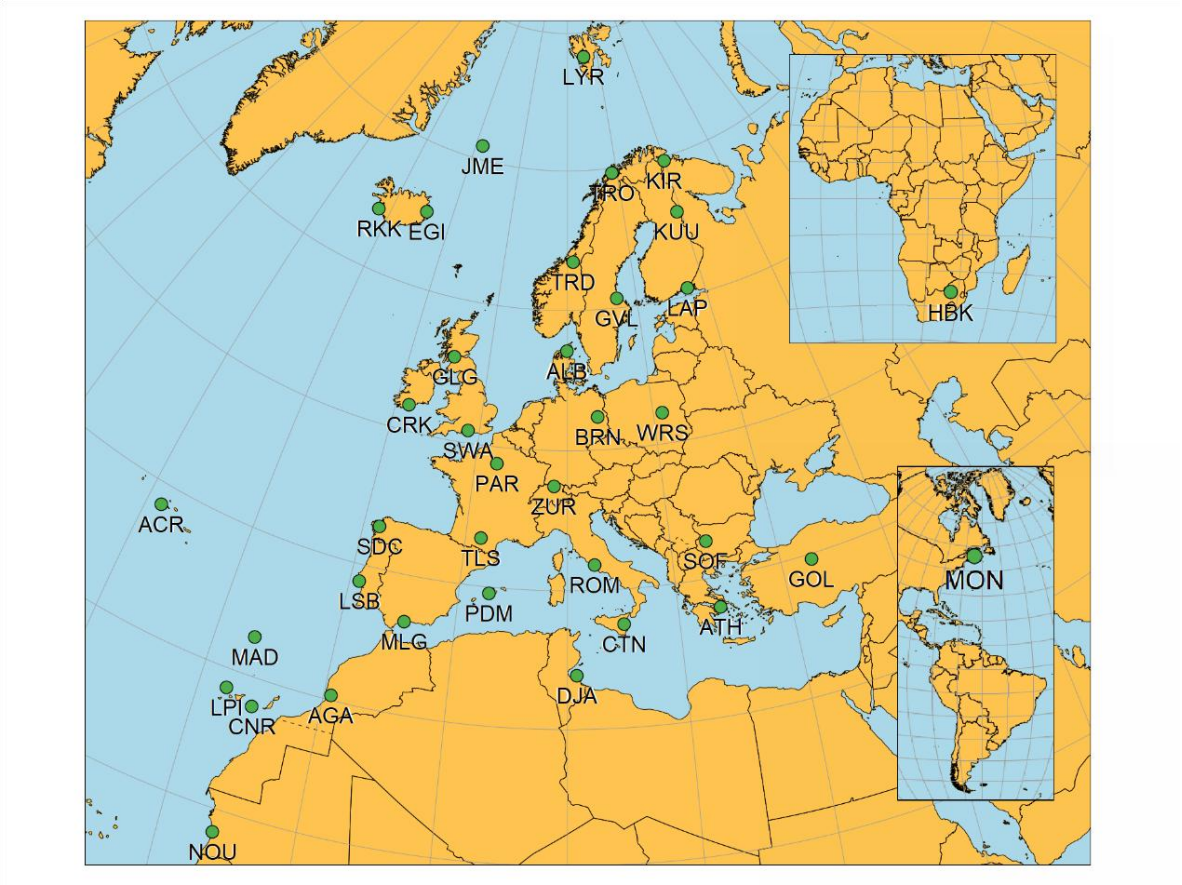

Figure 37: RIMS locations

The receiver network used to assess Open Service performance corresponds to the subset of RIMS located within the EGNOS OS SDD [RD-2] commitment map.

ID	Location name	Country	ID	Location name	Country
ALB	Aalborg	Denmark	MLG	Malaga	Spain
ATH	Athens	Greece	PDM	Palma de Mallorca	Spain
BRN	Berlin	Germany	RKK	Reykjavik	Iceland
CRK	Cork	Ireland	ROM	Rome	Italy
CTN	Catania	Italy	SDC	S. de Compostela	Spain
EGI	Egilsstadir	Iceland	SOF	Sofia	Bulgaria
GLG	Glasgow	United Kingdom	SWA	Swanwick	United Kingdom
GVL	Gävle	Sweden	TLS	Toulouse	France
JME	Jan Mayen	Norway	TRD	Trondheim	Norway
KIR	Kirkenes	Norway	TRO	Tromsoe	Norway
KUU	Kuusamo	Finland	WRS	Warsaw	Poland
LAP	Lappeenranta	Finland	ZUR	Zürich	Switzerland
LSB	Lisbon	Portugal			

Table 6: List of RIMS sites where OS performance is reported

3.5.2 Horizontal and Vertical Accuracy

EGNOS OS Horizontal (resp. Vertical) Accuracy *is expressed as the 95th percentile of the Horizontal Navigation System Error - HNSE (resp. VNSE) over the period at the monitored sites when applying EGNOS messages.*

Table 7 provides the 95% accuracy values, expressed in metres, measured during the reporting period. The target values of 3 metres for horizontal accuracy and 4 metres for vertical accuracy are met at all stations.

Station	HNSE 95% (m)	VNSE 95% (m)	Station	HNSE 95% (m)	VNSE 95% (m)
Aalborg	0.80	1.40	Malaga	1.30	1.70
Athens	1.00	1.80	Palma de Mallorca	1.00	1.50
Berlin	1.00	1.40	Reykjavik	1.30	2.30
Catania	1.10	1.80	Roma	0.90	1.50
Cork	0.90	1.30	S. de Compostela	1.10	1.30
Egilsstadir	1.00	1.80	Sofia	1.20	1.80
Gävle	0.80	1.60	Swanwick	1.10	1.50
Glasgow	0.90	1.50	Toulouse	0.90	1.30
Jan Mayen	1.40	2.40	Tromsoe	1.10	2.20
Kirkenes	1.10	2.00	Trondheim	0.90	1.70
Kuusamo	1.00	1.80	Warsaw	1.00	1.30
Lappeenranta	0.90	1.60	Zürich	0.90	1.30
Lisbon	1.30	1.80			

Table 7: EGNOS Open Service accuracy (95%)

Figure 38 and Figure 39 present the histograms and cumulative distribution function of the HNSE (Horizontal Navigation System Error) and the VNSE (Vertical Navigation System Error), calculated at the stations listed in Table 7 on a per-second basis over the entire period and across the value range.

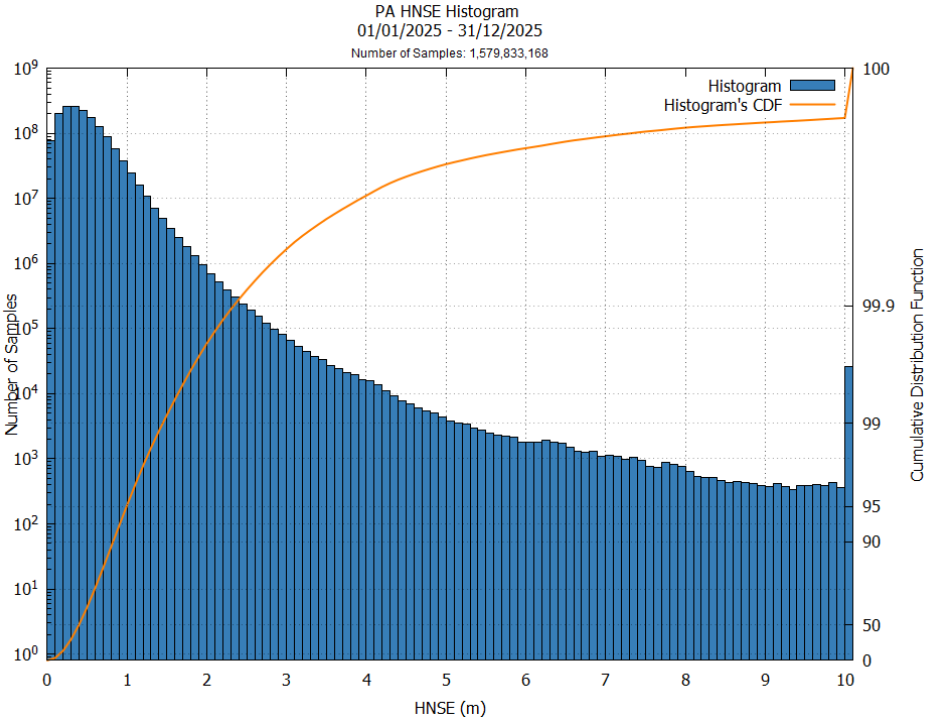

Figure 38: EGNOS Open Service HNSE Histogram and Cumulative Probability[10]

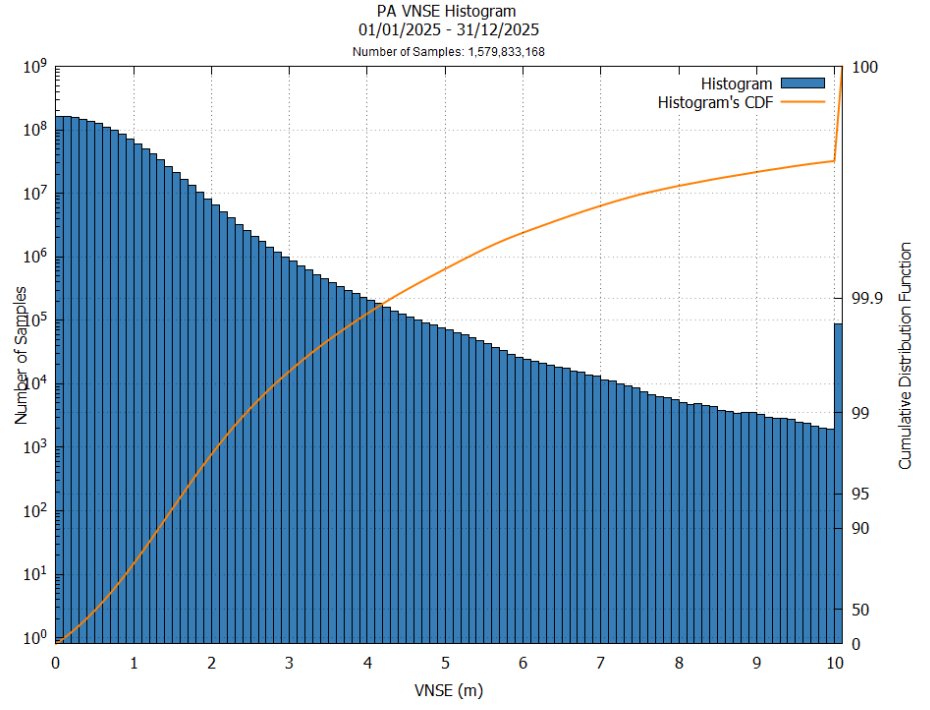

Figure 39: EGNOS Open Service VNSE Histogram and Cumulative Probability[10]

[10] It should be noted that certain periods may have been excluded from the calculation of the histograms presented in this document. These exclusions correspond to stations showing poor-quality data affected by local environmental conditions. The removed data relate to RIMS data where an OR affecting data quality was identified, where cycle slips affecting performance were detected, or where other data anomalies were traced as the cause of daily degradations.

The 95th percentile of the observed accuracy performance is below 1.0 metres in the horizontal domain and 1.7 metres in the vertical domain.

Table 8 provides the monthly maximum values for Horizontal and Vertical Accuracy (i.e., for each day, the 95th percentile of the horizontal/vertical error is computed, and the highest of these daily values is reported) when using EGNOS messages broadcast by PRN123/121 and PRN136.

Worst (PRN123/121-PRN136)		Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Average
ALBA	H	2.12	1.31	1.78	1.14	1.27	1.06	0.87	0.86	1.22	0.94	1.42	1.19	1.27
	V	2.93	2.14	2.49	1.81	1.50	1.41	1.22	1.65	2.41	1.73	2.33	2.84	2.04
ATHA	H	1.34	1.22	1.46	1.47	1.12	1.36	1.04	1.14	1.33	0.98	1.75	1.05	1.27
	V	2.08	1.97	2.19	2.11	2.02	3.26	2.55	2.47	2.36	2.23	3.70	1.94	2.41
BRNA	H	1.87	1.05	1.40	1.30	1.33	1.35	1.07	1.13	1.58	1.20	1.47	1.10	1.32
	V	2.02	1.81	2.12	1.91	1.58	1.66	1.41	1.49	1.86	1.69	3.04	1.97	1.88
CRKA	H	2.64	1.10	1.61	1.08	1.20	1.20	0.96	0.92	1.51	1.91	1.89	1.15	1.43
	V	4.21	1.90	2.10	1.40	1.49	1.22	1.32	1.47	2.76	1.78	2.76	1.73	2.01
CTNA	H	1.60	1.92	1.57	1.67	1.44	1.49	1.25	1.28	1.57	1.34	1.90	1.05	1.51
	V	1.75	1.93	2.20	2.42	2.25	5.06	2.37	2.18	2.43	2.27	5.06	1.82	2.65
EGIA	H	3.00	1.59	1.98	1.22	1.19	1.23	0.93	0.98	1.79	1.63	1.40	1.71	1.55
	V	5.27	3.27	4.56	2.44	2.32	2.02	1.70	1.86	3.16	3.01	3.11	3.29	3.00
GLGA	H	1.85	1.11	1.46	1.06	1.01	1.11	0.84	1.04	1.42	1.29	1.58	1.05	1.24
	V	4.96	2.09	2.80	1.66	1.47	1.54	1.28	1.79	2.66	2.09	2.50	2.01	2.24
GVLA	H	2.00	1.34	1.54	1.26	0.84	1.04	0.87	1.01	1.36	1.38	1.86	1.26	1.31
	V	3.25	3.26	2.82	2.39	1.94	1.38	1.62	2.68	3.75	2.55	3.54	2.35	2.63
JMEA	H	3.98	2.25	2.52	1.61	1.23	1.31	1.17	1.28	2.75	2.23	1.79	1.82	2.00
	V	5.30	4.34	4.88	2.97	2.36	2.99	2.55	2.53	3.18	3.70	3.35	3.72	3.49
KIRA	H	2.14	2.67	2.63	1.68	0.88	1.26	0.77	1.10	1.58	2.10	1.61	1.65	1.67
	V	6.24	3.88	4.66	2.85	2.06	2.46	1.63	2.80	4.22	3.92	3.82	2.74	3.44
KUUA	H	1.83	2.18	1.74	1.23	0.94	1.06	0.84	1.05	1.91	1.59	1.55	1.35	1.44
	V	4.82	3.70	3.87	2.63	1.85	1.90	1.50	2.54	3.16	2.97	3.32	2.57	2.90
LAPA	H	1.98	1.46	1.67	1.19	0.91	1.20	0.90	1.00	1.24	1.71	1.78	1.76	1.40
	V	3.31	2.79	2.69	2.47	1.77	1.67	1.60	2.16	2.90	2.45	3.43	2.22	2.46
LSBA	H	1.82	1.82	2.11	2.01	1.58	1.34	1.36	1.49	2.33	1.52	1.31	1.55	1.69
	V	2.61	2.20	2.38	2.51	2.06	2.82	1.93	2.02	2.35	2.40	2.23	1.79	2.28
MLGA	H	1.83	3.49	2.54	2.05	1.39	1.37	1.65	1.47	2.82	1.70	1.19	1.32	1.90
	V	2.98	2.40	2.59	2.46	2.07	3.41	2.13	2.29	3.24	2.04	3.04	1.65	2.53
PDMA	H	1.49	1.23	1.69	1.82	1.20	1.45	1.10	1.26	1.79	1.44	1.91	0.98	1.45
	V	1.80	1.70	2.44	1.89	1.77	4.15	1.69	1.69	2.08	1.92	2.53	1.58	2.10
RKKA	H	3.56	2.53	2.64	1.64	1.28	1.39	1.08	1.46	2.15	2.17	1.92	2.00	1.99
	V	5.99	4.96	4.66	3.25	2.06	2.86	2.03	3.24	4.42	3.44	4.23	3.26	3.70
ROMA	H	1.36	1.14	1.45	1.31	1.07	1.35	0.95	1.19	1.40	1.13	2.35	0.95	1.30
	V	2.14	1.86	1.82	1.86	1.61	3.62	1.82	1.60	2.01	1.98	2.00	1.83	2.01
SDCA	H	1.81	1.55	1.78	2.19	1.46	1.11	1.12	1.24	1.49	1.17	1.30	1.17	1.45
	V	2.95	1.68	2.13	1.75	1.45	1.70	1.79	1.64	2.00	1.71	1.66	1.40	1.82
SOFA	H	1.60	1.37	1.98	1.79	1.32	1.59	1.23	1.31	1.57	1.26	2.18	1.21	1.53
	V	2.37	2.30	2.28	2.24	2.16	3.02	2.04	1.98	2.78	1.86	1.82	1.89	2.23
SWAA	H	1.50	0.98	1.27	1.64	0.89	0.96	0.89	0.97	1.44	1.16	1.06	1.07	1.15
	V	2.17	2.22	2.35	2.01	1.85	1.92	1.79	1.73	1.86	2.17	2.05	2.01	2.01
TLSA	H	2.36	1.16	1.39	1.19	1.23	1.29	1.10	1.05	1.90	1.76	1.98	1.26	1.47
	V	2.88	1.77	2.16	1.74	1.64	1.60	1.53	1.78	3.52	1.70	2.64	1.65	2.05
TORJ	H	1.42	1.29	1.57	1.44	1.23	1.20	0.99	1.11	1.62	1.24	1.04	1.17	1.28
	V	2.15	1.66	1.88	1.64	1.53	2.06	1.71	1.51	2.23	1.76	2.02	1.61	1.81
TRDA	H	2.11	1.81	1.74	1.21	1.06	1.04	0.91	1.07	1.33	1.34	1.38	1.32	1.36
	V	4.37	3.70	3.36	2.84	1.45	1.50	1.49	2.84	3.14	2.11	3.34	2.78	2.74
TROA	H	2.20	2.17	1.90	1.48	1.04	1.10	0.88	1.29	1.71	1.65	1.75	1.54	1.56
	V	5.06	3.68	3.84	3.03	2.22	2.25	2.13	3.04	3.50	2.96	3.69	3.17	3.21
WRSA	H	2.00	1.03	1.36	1.23	1.22	1.39	1.02	1.09	1.52	1.22	1.45	1.09	1.30
	V	2.29	1.75	1.92	1.80	1.44	2.29	1.26	1.49	1.46	1.58	2.67	1.87	1.82
ZURA	H	1.52	1.08	1.31	1.26	1.06	1.51	0.95	0.97	1.63	1.13	1.03	1.05	1.21
	V	1.79	1.68	1.74	1.85	1.53	2.17	1.32	1.33	2.88	1.64	3.40	1.47	1.90

Table 8: Monthly Horizontal/Vertical Accuracy (in metres) – Worst values between PRN 123/121 and PRN136.

Values shown in red indicate results below the commitment threshold, while values in green indicate performance above the commitment (3 m for horizontal and 4 m for vertical). On average over the year, all RIMS met the commitment performance levels.

3.5.3 Open Service Availability

EGNOS OS Availability performance *is defined in this document as the percentage of time within the month during which the instantaneous HNSE is below three metres and the instantaneous VNSE is below four metres, calculated over the total number of samples with a valid PA navigation solution.*

Table 9 presents the worst monthly values for GEO PRN 123/121 and GEO PRN 136.

Worst (PRN123/121-PRN136)	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Average
ALBA	99.93%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.99%
ATHA	99.94%	100.00%	99.98%	99.89%	100.00%	99.89%	100.00%	100.00%	100.00%	99.99%	99.88%	100.00%	99.96%
BRNA	100.00%	100.00%	100.00%	100.00%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%	99.95%	100.00%	100.00%
CRKA	99.75%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.92%	100.00%	99.92%	99.99%	99.97%
CTNA	99.98%	99.98%	99.94%	99.54%	100.00%	99.53%	100.00%	99.98%	99.96%	99.99%	99.62%	100.00%	99.88%
EGIA	99.00%	99.48%	99.44%	99.94%	99.95%	99.96%	100.00%	99.97%	99.70%	99.81%	99.79%	99.74%	99.73%
GLGA	99.78%	100.00%	99.93%	100.00%	99.99%	100.00%	100.00%	100.00%	99.99%	99.97%	99.97%	99.99%	99.97%
GVLA	99.81%	99.85%	99.96%	100.00%	99.98%	100.00%	100.00%	99.95%	99.88%	99.96%	99.80%	99.99%	99.93%
JMEA	97.89%	98.18%	97.75%	99.75%	99.95%	99.75%	99.99%	99.91%	99.53%	99.21%	99.29%	99.35%	99.21%
KIRA	98.13%	98.49%	98.59%	99.77%	99.98%	99.97%	99.99%	99.87%	99.41%	99.49%	99.56%	99.80%	99.42%
KUUA	99.34%	99.18%	99.48%	99.90%	100.00%	99.99%	100.00%	99.73%	99.76%	99.80%	99.78%	99.82%	99.73%
LAPA	99.82%	99.91%	99.92%	99.98%	100.00%	100.00%	100.00%	99.82%	99.94%	99.91%	99.87%	99.91%	99.92%
LSBA	99.95%	99.96%	99.85%	99.91%	100.00%	99.99%	99.99%	100.00%	99.92%	99.97%	99.99%	100.00%	99.96%
MLGA	99.90%	99.62%	99.61%	99.85%	100.00%	99.97%	100.00%	100.00%	99.68%	99.94%	99.96%	100.00%	99.88%
PDMA	99.97%	100.00%	100.00%	99.73%	100.00%	99.73%	100.00%	100.00%	99.98%	100.00%	100.00%	100.00%	99.95%
RKKA	97.80%	97.22%	97.85%	99.50%	99.78%	99.78%	99.92%	99.47%	98.76%	99.33%	99.21%	99.40%	99.00%
ROMA	99.91%	100.00%	100.00%	99.93%	100.00%	99.93%	100.00%	99.99%	99.99%	99.99%	99.99%	100.00%	99.98%
SDCA	99.97%	100.00%	100.00%	99.97%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
SOFA	99.71%	99.97%	99.97%	99.98%	100.00%	99.98%	99.99%	100.00%	99.99%	99.96%	100.00%	99.89%	99.95%
SWAA	99.85%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.83%	100.00%	100.00%	99.99%	99.97%
TLSA	99.98%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
TORJ	99.99%	100.00%	100.00%	99.96%	100.00%	100.00%	100.00%	100.00%	99.97%	100.00%	100.00%	100.00%	99.99%
TRDA	99.69%	99.51%	99.52%	99.98%	100.00%	100.00%	100.00%	99.99%	99.95%	99.94%	99.89%	99.86%	99.86%
TROA	98.17%	98.97%	98.88%	99.89%	99.98%	99.97%	99.99%	99.87%	99.69%	99.74%	99.52%	99.64%	99.53%
WRSA	99.98%	100.00%	99.98%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.99%	99.97%	99.99%	99.99%
ZURA	99.98%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.92%	99.99%	99.95%	100.00%	99.99%

Table 9: OS Availability – Worst values between PRN 123/121 and PRN136.

Figure 40 illustrates the OS availability value throughout the year for each location, showing the worst-case value between GEO PRN 123/121 and GEO PRN 136.

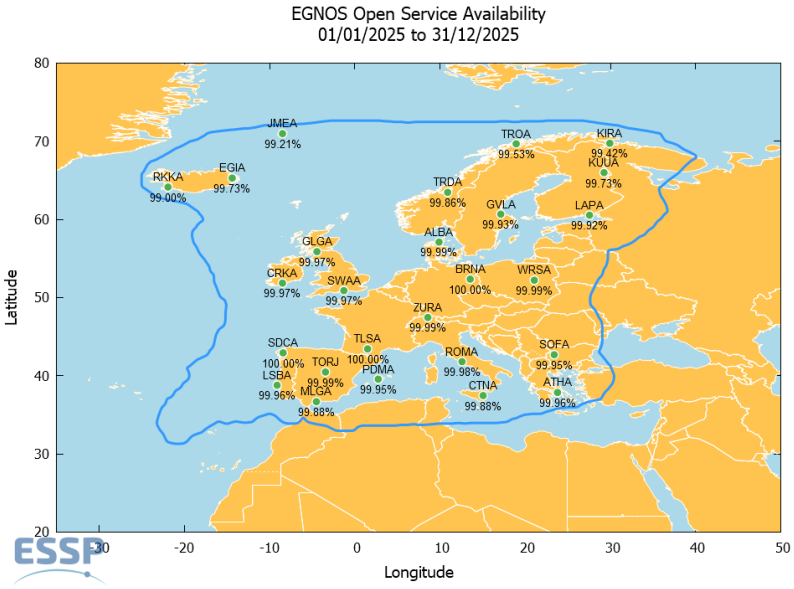

Figure 40: Worst OS availability between PRN 121/123 and PRN 136 for the RIMS stations

As shown in Figure 40, the worst observed overall Open Service Availability performance exceeded 99% at all stations.

3.6 Maritime accuracy

The Maritime Service Horizontal Accuracy *is defined, for each RIMS, as the 95th percentile of the HPE after filtering out samples with HDOP > 4.*

The values obtained for 2025 at the RIMS locations relevant to the maritime service are presented in Table 10. All RIMS were compliant with the target value of 10 metres (see EGNOS ESMAS SDD [RD-3])

Station	Horizontal Accuracy (m)
Agadir	3.40
Aalborg	0.70
Athens	0.90
Catania	1.00
Cork	0.80
Djerba	1.50
Egilsstadir	0.90
Gävle	0.70
Glasgow	0.80
Jan Mayen	1.30
Kirkenes	1.00
Lappeenranta	0.80
Lisbon	1.20
Madeira	1.90
Malaga	1.20
Palma de Mallorca	0.90
Reykjavik	1.20
Roma	0.80
S. de Compostela	1.00
Swanwick	1.00
Tromsoe	1.00
Trondheim	0.80

Table 10: Maritime Service Horizontal Accuracy per RIMS.

The Maritime Service Availability of Accuracy *is defined as the percentage of time during which the instantaneous horizontal position error is less than or equal to 10 m and the horizontal precision dilution is less than or equal to 4, calculated over the total number of samples for which a Maritime position is available.*

The values obtained during the year at the different RIMS locations are shown in Figure 41. The blue line represents the 95% availability isoline from the performance characterisation map included in the Maritime Service SDD [RD-3].

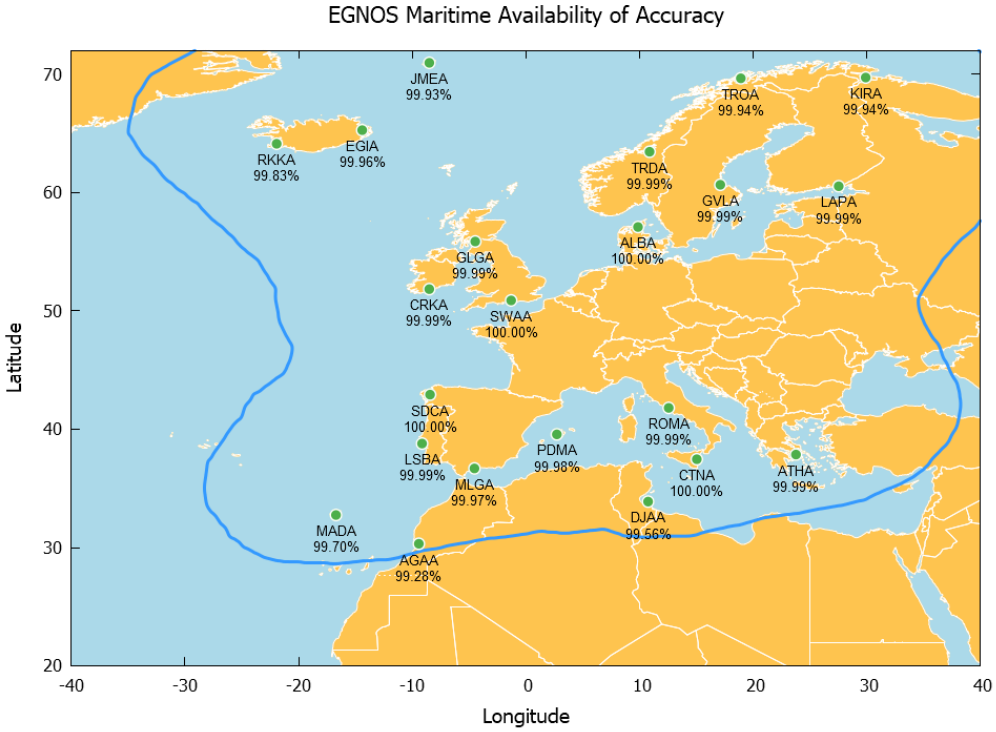

Figure 41: Maritime Service Availability of Accuracy per RIMS stations (Worst between PRN 121/123 and PRN136).

All stations exhibited a Maritime Service Availability of Accuracy greater than 95% during the year.

Regarding the commitment values of ESMAS Time to Alert (<5.2s), as specified in the EGNOS Safety of Life assisted service for Maritime users [RD-3], were also met by design.

Note that, according to the ESMAS SDD, the reference corresponds to the total number of samples in a day, not only the periods with a solution. Therefore, the results presented here may be worse.

3.7 EGNOS Data Access Service (EDAS)

EGNOS Data Access Service (EDAS) provides free, internet-based access to EGNOS and GNSS (GPS & GLONASS) data, both in real time and via an archive. This includes data generated by EGNOS ground stations.

Like all the other EGNOS Services, EDAS is governed by its own EDAS Service Definition Document [RD-4]. Among other aspects, the EDAS SDD defines the committed performance for EDAS (applicable under nominal conditions) in terms of availability and latency:

- **Availability:** the percentage of time during which EDAS provides its services in accordance with the specifications. The availability of EDAS services is measured at the EDAS system output, excluding external network performance.
- **Latency:** the elapsed time between transmitting the last bit of the navigation message from the space segment (the EGNOS and the GPS/GLONASS satellites) and the moment the data leaves the EDAS system, formatted according to the applicable service-level specification. EDAS latency is a unidirectional parameter defined for real-time services.

Based on these definitions, Table 11 and Table 12 provide the minimum availability and maximum latency for EDAS services:

SL0	SL2	SISNeT	FTP	Data Filtering	Ntrip
98.5%	98.5%	98%	98%	98%	98%

Table 11: EDAS services minimum availability

SL0	SL2	SISNeT	FTP	Ntrip	Data Filtering	
					SL0	SL2
1.3 seconds	1.450 seconds	1.150 seconds	N/A	1.75 seconds	1.6 seconds	1.75 seconds

Table 12: EDAS services maximum latency

It should be noted that EDAS services availability performance is nominally higher, and latency performance is nominally lower than the above figures.

EDAS performance is reported in the EGNOS Monthly Performance reports, available on the EDAS-Maritime User Support Website.

Figure 42 presents the availability achieved over the reporting period.

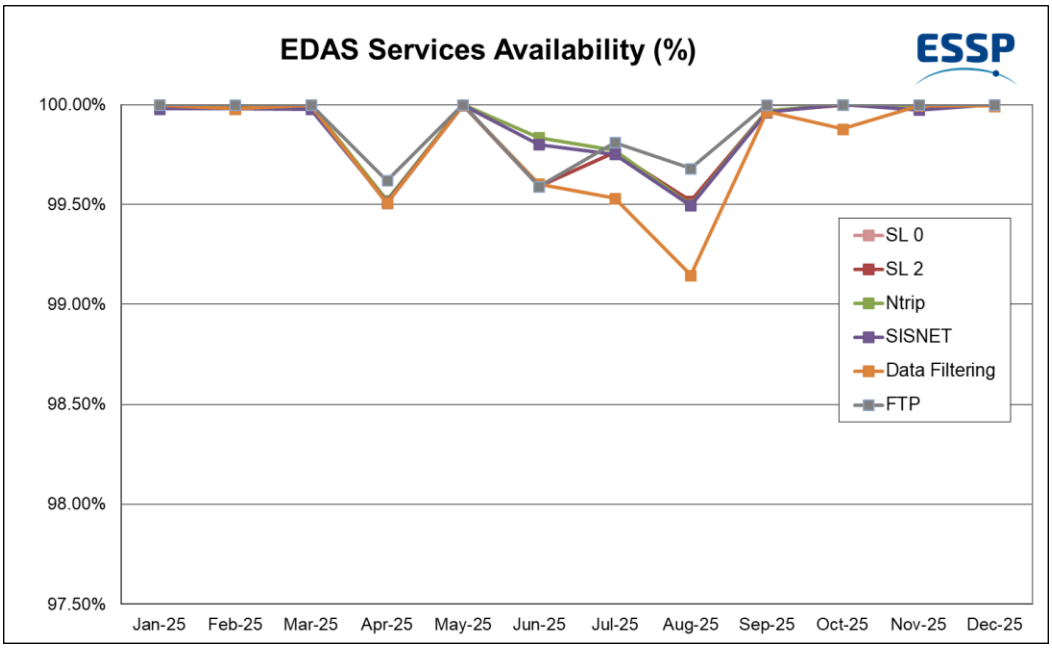

Figure 42: EDAS Services Availability (from January 2025 to December 2025)

The availability figures shown above were mainly affected by EDAS service outages on 3, 4, 5, and 28 April, and on 6, 13, and 21 August, as well as by service interruptions during notified maintenance activities on 24 June, 31 July, and 25 August 2025. Additionally, the EDAS SISNeT and FTP services were affected by the EGNOS service outage occurred on 13 October, with impact in GEOs data accessibility, not affecting the availability of the services.

The latency for real-time services (excluding the FTP service) over the previous year period is shown below. It is calculated as the average of the 95th percentile latency values monitored every five minutes throughout the period.

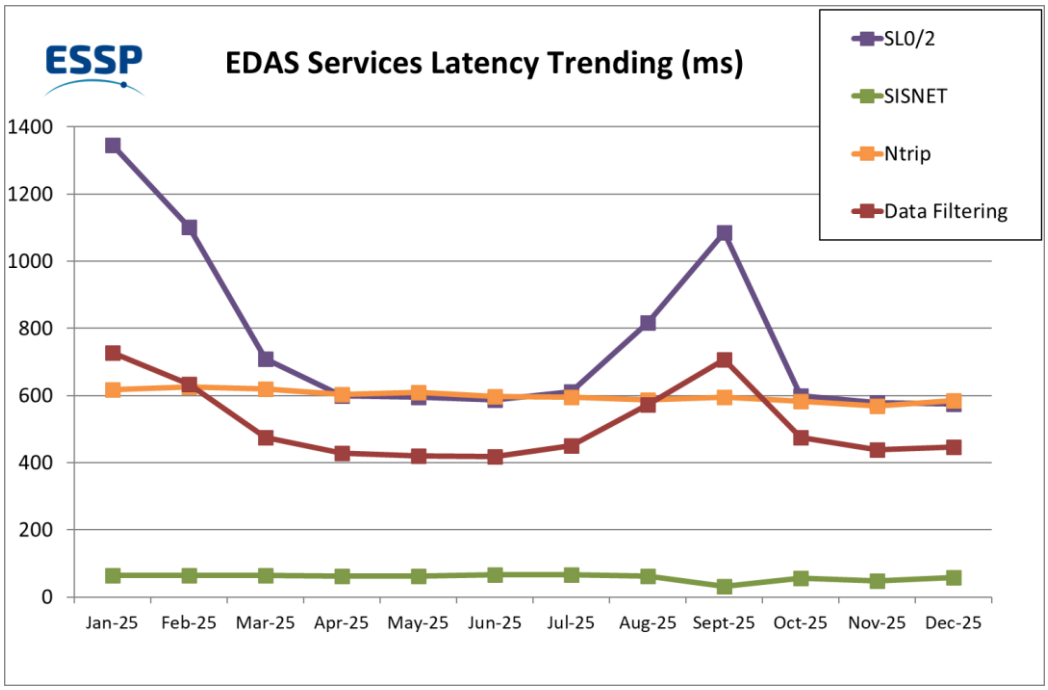

Figure 43: EDAS Services Latency (from January 2025 to December 2025)

As shown in Figure 43, EDAS services' latency remained consistently below the one-second threshold and well below the EDAS SDD [RD-4] commitment for all services throughout the reporting period, except for SL0 in January 2025.

3.8 NOTAM Proposals Service Performance

EGNOS NOTAM Proposals are provided according to the following notification deadlines:

- Scheduled GNSS events are communicated at least 72 hours in advance.
- Unscheduled GNSS events (EGNOS and GPS) are communicated within 2 hours (24/7).

The current service level is therefore in line with ICAO recommendations for the notification of scheduled events (72 hours' notice), whereas it is not yet fully compliant with the recommendation for unscheduled events (15-minute delay). However, the actual delays observed in notifying predicted EGNOS service outages have typically been in the 30-minute range.

Warning NOTAM proposals are generated manually and therefore do not depend on alarms or operator reaction times; therefore, they are not considered in Figure 44. The frequency axis reflects the number of alarms raised to operators for new EGNOS NOTAM proposals awaiting confirmation for transmission, considering only those events for which notifications were finally sent.

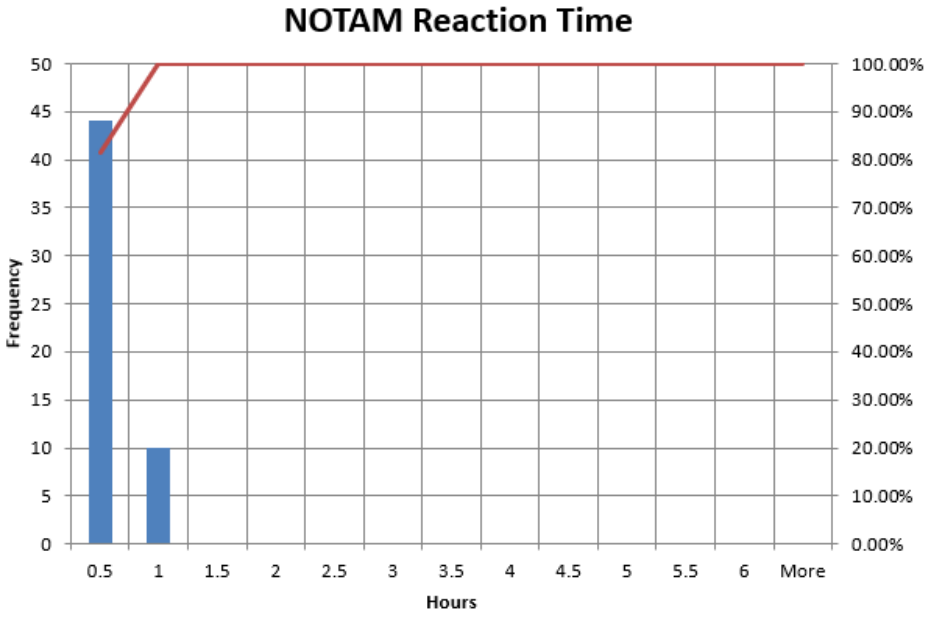

Figure 44: NOTAM reaction time during 2025

Regarding the NOTAM service, user feedback is systematically considered when planning enhancements. Each year, these inputs are evaluated in a dedicated improvement plan. Based on this feedback, a new feature was implemented this year to allow multiple AFTN addresses for submitting EGNOS NOTAM proposals.

Regarding the double GEO outage event in October, the NOTAM service responded appropriately to ensure notifications to all registered locations (aerodromes, heliports and routes with EGNOS-based procedures). This major event also enabled ESSP to detect minor deficiencies in the registered locations, which have since been analysed and corrected as part of the service improvement process.

4 EGNOS SERVICES PROVISION

4.1 Service Definition Documents, Service Notices and Service Implementation Roadmaps over the period

4.1.1 Service Definition Document (SDD)

No Service Definition Documents were updated during 2025. The SDDs currently applicable are available at: https://egnos.gsc-europa.eu/documents/field_gc_document_type/89.

The most recent update to the various SDDs was issued in 2024, and this last version remains applicable (see [RD-1]).

Figure 45: EGNOS Service Definition Documents published in 2024

4.1.2 Service Notices (SNs)

In 2025, ESSP issued several SNs to provide supplementary information to users and temporarily amended the applicable version of the EGNOS Service Definition Documents.

The first SN (SN32 v1.0) was published on 21/02/2025 to communicate changes in EGNOS LPV-200 service availability above 60°N latitude and the associated operational impact. This notice was subsequently updated to v2.0 and v3.0 to reflect the evolution of the system status: partially recovered (SN32 v2.0 on 21/05/2025) and fully recovered (SN32 v3.0 on 03/07/2025). All versions of this SN32 have been set to Expired during 2025 as well, as the system is fully recovered.

Another SN (SN33) was published on 08/08/2025 to announce a configuration change of the EGNOS Space Segment during the deployment of System Release 2.4.3. On 08/09/2025, SN34 was published to inform users of Entry Into Service of ESR 2.4.3, effective as of 1 September 2025.

In October 2025, four Service Notices (SN#35) were published to inform users of the EGNOS service outage that occurred on 13/10/2025 and its progressive resolution. These SNs evolved through four versions as the situation developed and the service was fully recovered: v1.0 (13/10/2025), v2.0 (14/10/2025), v3.0 (16/10/2025), and v4.0 (17/10/2025), the lattest confirming full-service recovery. The first three versions of the SN35 are set to Expired as the last applicable version is v4.0.

Regarding the status update of the SNs that were already published:

- SN24 was set to Expired on 15/01/2025 and on 24/03/2026 SN30 was revised and set to Expired as well.
- Finally, the status of SN26, SN27 and SN31 was revised, all three SNs were set to Superseded during on 24/03/2026.

In summary, ESSP published and/or updated the following Service Notices (their status as of 20/04/2026 is provided after the description of the corresponding Service Notice):

- Service Notice 24: Potential EGNOS underperformance linked to new EGNOS RIMS configuration (This new RIMS configuration refers to the decommissioning of RIMS Abu Simbel (ABS – Egypt) and Alexandria (ALY – Egypt)). **[Expired]**
- Service Notice 26: EGNOS Space Segment changes in the Second and Third Quarters of 2023. **[Superseded]**
- Service Notice 27: EGNOS Space Segment Update. **[Superseded]**
- Service Notice 30: EGNOS System Release 242B entry into service. **[Expired]**
- Service Notice 31: Updated EGNOS Services User Support Website and Helpdesk following the declaration of the new EGNOS Safety of Life (SoL) assisted service for MAritime userS (ESMAS). **[Superseded]**
- Service Notice 32: LPV-200 service level fully recovered above 60°N latitude. **[Expired]**
- Service Notice 33: EGNOS Space Segment Update (related to the GEO satellite configuration change whereby Eutelsat 5 West B (PRN 121) transitioned to Operational status and ASTRA 5-B (PRN 123) transitioned to Test status). **[In Force]**
- Service Notice 34: EGNOS System Release 2.4.3 Entry Into Service. **[In force]**
- Service Notice 35: EGNOS Service Fully Recovered (related to the service outage on 13 October 2025). **[In force]**

For SNs issued in multiple versions, the latest applicable version and its corresponding status are indicated above.

In conclusion, the following Service Notices remain in force:

- Service Notice 17: EDAS FTP RINEX navigation files. **[In force]**
- Service Notice 25: Potential EGNOS underperformance due to Solar Cycle. **[In force]**
- Service Notice 29: Potential EGNOS underperformance in the South-East linked to new EGNOS RIMS configuration. **[In force]**
- Service Notice 33: EGNOS Space Segment Update (related to the GEO satellite configuration change whereby Eutelsat 5 West B (PRN 121) transitioned to Operational status and ASTRA 5-B (PRN 123) transitioned to Test status.) **[In Force]**
- Service Notice 34: EGNOS System Release 2.4.3 Entry into Service. **[In force]**
- Service Notice 35: EGNOS Service Fully Recovered (related to the service outage on 13 October 2025). **[In force]**

The Service Notices are available at: https://egnos.gsc-europa.eu/documents/field_gc_document_type/87

4.1.1 Service Implementation Roadmap (SIR)

Two updates to the Service Implementation Roadmap were published in 2025 (05/02/2025 and 02/07/2025) to communicate the expected evolutions of the EGNOS system. The latest SIR is available at: https://egnos.gsc-europa.eu/documents/field_gc_document_type/93.

4.2 User Consultations and Improvement Actions

Each year, EUSPA and ESSP jointly conduct a comprehensive EGNOS User Satisfaction Process covering the four EGNOS Services (SoL, OS, ESMAS, and EDAS). The objective of this process is to gather valuable feedback on the use of EGNOS and the performance of ESSP, identify areas for improvement, and define recommendations for the EGNOS services.

This process consolidates feedback received through multiple channels and interfaces, such as the EGNOS Service Provision Workshop, EGNOS User Support activities, ESSP's participation in multimodal forums, GNSS implementation projects, working groups and other relevant events. However, its primary input is the user satisfaction survey, which is widely distributed among key users and stakeholders of each EGNOS Service.

The 2024 EGNOS User Satisfaction Survey was launched in October 2024 and closed on 28 February 2025. It was conducted using the European Union's dedicated online platform (EUSurvey). The results are available in the EGNOS Bulletin 2025 (https://egnos.gsc-europa.eu/news-events/egnos-bulletin) and are also published on the EGNOS User Support Website.

The 2025 User Satisfaction Action Plan is currently under execution based on user feedback.

In the Figure 47 below, the preliminary results of the 2025 EGNOS User Satisfaction Survey are presented. The user satisfaction action plan 2026 is currently under preparation based on these results.

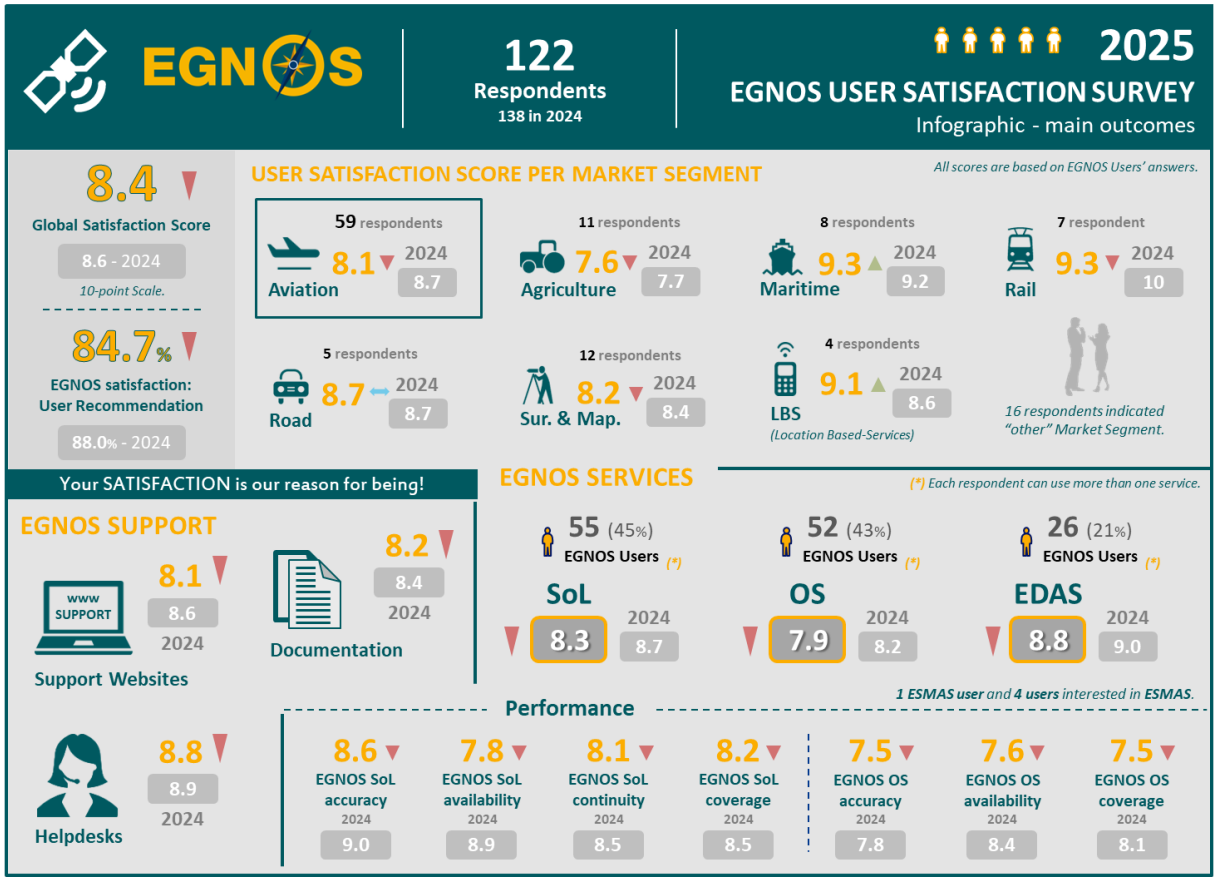

Figure 46: Summary of results from the User Satisfaction Survey

4.3 2025 EGNOS Multimodal Adoption Plan

The 2025 EGNOS Multimodal Adoption Plan targeted several market segments: Aviation & Drones, Maritime & Inland Waterways, Fisheries & Aquaculture, and Rail, as the main lines of work, complemented by transversal activities addressing different topics not linked to a specific market segment.

This section summarises the key highlights and outcomes of the activities performed throughout the year.

Aviation & Drones

The number of EGNOS-based procedures continued to increase throughout 2025. During the year, 60 LPV200 and 25 APV-I procedures were published, bringing the total number of EGNOS-based procedures to 1,104. Notably, many of the newly published procedures are LPV200, with several upgraded from APV-I to LPV200. This trend reflects ANSPs' preference for the higher level of service provided by LPV200, which offers improved vertical and lateral guidance down to 200 ft.

Concerning non-IREs (Instrument Runway End), several aerodromes have expressed interest in publishing LPV procedures, and support activities are currently underway with several of them. This support includes guidance on approach chart design, preliminary safety assessments, and advice on the publication process.

On the operator side, several companies confirmed that they either already have EGNOS capability onboard or intend to implement it in the future. Overall, in commercial aviation, nearly 30% of A320 aircraft orders will be delivered with SLS (Service Level Specification) functionality implemented or retrofitted; this figure rises to 33.5% across all other aircraft models.

During discussions with these and other operators, Radio-Frequency Interference (RFI) was repeatedly identified as a key concern. Consequently, the topic has been (and is currently being) addressed in depth to determine the extent to which EGNOS/LPV is affected by RFI, and to address the solutions currently available or under development to help mitigate, detect, or counteract it. The analysis confirmed that RFI typically occur at specific, known locations, mostly in conflict areas. Several mitigation options exist, the most promising being the CRPA (Controlled Reception Pattern Antenna) antenna, which Industry efforts are increasingly focused on, as it enables discrimination and filtering of unwanted signals. In summary, RFI remains a concern for EU operators, who are awaiting robust solutions from manufacturers and OEMs (Original Equipment Manufacturer).

Regarding EGNOS implementation through STCs (Supplemental Type Certificate) and/or SBs (Service Bulletin), approximately 76.46% of the EU fleet could potentially request this capability, and new solutions and developments continue to emerge for other aircraft models.

In the field of drones, further progress has been made in collaboration with EUROCAE on the development of ED-348: Guidelines for the use of multi-GNSS solutions for UAS (Unmanned Aircraft System) – Medium Risk, within WG105 SG6. This work will help pave the way for the use of EGNSS in such operations. Complementing this activity, a scientific paper entitled "Assessment of GNSS Performance and Error Bounding for SAIL (Safety Assurance Integrity Level) III UAS Operations" was published in MDPI.

In addition, to maximise the use of EGNOS in the drone sector, a training course for drone operators was successfully delivered at the 6th DLR Flight Test Convention in Germany. This hands-on training aimed to support configuration activities and address their concerns.

EGNOS was also promoted at several events throughout the year to raise awareness, establish new contacts, and provide support for evaluation and implementation activities. These included Airspace World, the Collins Symposium, the DLR Flight Test Convention, the MRO Europe, and the DroneX/Helitech.

Maritime & Inland Waterways

Following the declaration of the ESMAS Service in March 2024, a key phase began in which adoption activities across the entire stakeholder value chain became the priority. Special attention has been placed on raising awareness and securing commitment among four main stakeholder groups: maritime authorities, navigation equipment manufacturers, classification societies, and shipowners.

Feedback from maritime authorities has been largely positive, confirming the usefulness of the ESMAS service. However, they have also expressed concern about the current lack of a type-approved receiver, which remains a barrier to full adoption of ESMAS services. To sustain and further strengthen their confidence, continued engagement is required, particularly through clear, transparent information on the service evolution roadmap and user performance.

Concerning navigation equipment manufacturers, it is essential to ensure they are fully informed about the ESMAS service, including the steps required to obtain IEC 61108-7 certification. Some receiver manufacturers requested information and support related to the update and certification of IEC 61108-7. A dedicated presentation entitled “ESMAS ready for maritime safe navigation using EGNOS” was delivered at the CIRM Annual Conference and received positive general feedback on both ESMAS and EGNOS.

A new stakeholder group has also been addressed this year: the Classification Societies. Discussions are underway to explore the feasibility and convenience of incorporating ESMAS either through the creation or modification of an existing class notation or as part of a dedicated Type Approval item.

Shipowners’ associations perceive ESMAS as an interesting added value for maritime navigation. However, shipowners operating in the Baltic and Eastern Mediterranean regions are currently mainly concerned about RFI in those areas and therefore seeking resilient navigation equipment solutions.

Further efforts are therefore required to enhance stakeholders’ understanding of the service, including its main features, technical requirements (such as receiver specifications), service commitments, expected performance levels, and the added value of complementary services, particularly notification and warning proposals.

The use of the EGNOS Open Service and EDAS also demonstrates remarkable operational applications in the maritime and inland waterways markets. The Port of Seville now uses EGNOS-based corrections to enhance vessel tracking along the Guadalquivir River, improving accuracy and helping authorities manage narrow inland waterways more safely. This use case is described in the 2025 issue of the EGNOS bulletin. In addition, the use of EGNOS in Portable Pilot Units has been confirmed by both manufacturers and users of these devices, improving the pilotage experience when vessels enter ports under specific operational conditions.

EGNOS was present in several events, including Europort and Metstrade in November 2025.

Fisheries & Aquaculture

The potential use and implementation of EGNOS by fisheries and aquaculture companies are being addressed with relevant industry stakeholders, taking into account applicable regulatory requirements on positioning accuracy or GNSS positioning, as well as the current level of adoption in Europe.

In the fisheries sector, fishing buoys and VMS systems are the most promising applications for benefiting from EGNOS. In Aquaculture, although SBAS is recommended, there is currently no regulatory requirement forcing any specific user to accommodate a specific positioning error, continuity, or other constraint. Consequently, the decision to equip with EGNOS remains at the user’s discretion, provided that its benefits are clearly demonstrated. Based on the discussions held to date, EGNOS may offer added value in alert systems such as buoys or animal-tracking applications; however, concrete use cases require further assessment.

Rail

In the rail sector, EGNSS devices installed for non-safety-related applications, particularly freight tracking devices, continue to be monitored. As a result of the extensive research and contact campaign, a clear trend emerged among rail freight companies to digitalise their freight wagon fleets with GNSS-based tracking sensors. By the end of 2024, 206,000 smart assets were equipped with EGNSS telematics devices, and more than 271,000 freight assets are expected to be retrofitted with EGNSS receivers by 2028. The study was shared with European organisations and was also presented in a dedicated article in the latest edition of the EGNOS bulletin.

4.4 Communication and EGNOS Promotion Activities

4.4.1 EGNOS workshop 2025

The European Union Agency for the Space Programme (EUSPA), together with the European Satellite Services Provider (ESSP), held the EGNOS Workshop in Berlin on 1-2 October 2025. This first hybrid edition gathered 80 online participants from 17 different countries and 108 on-site attendees from 50 organisations across 23 countries, including national air navigation service providers and authorities, civil aircraft operators, maritime receiver manufacturers, rotorcraft and drone operators, and maritime users and authorities. The two-day agenda focused on EGNOS service performance, roadmaps, market adoption, and current and future applications across different transport segments.

The first day opened with an update on the EGNOS programme, setting the context for the two-day event. This was followed by presentations on the EGNOS Safety-of-Life Assisted Service for Maritime Users (ESMAS). ESSP highlighted that ESMAS, already operational, is the first free-of-charge SBAS-based service designed to support safe maritime navigation. In the session dedicated to inland waterways and the IWETT project, WSV demonstrated how EGNOS improves navigation through higher accuracy, integrity, and seamless integration with AIS, RIS, and ECDIS systems.

The Port of Seville presented a case study demonstrating how EGNOS corrections contribute to safer, more efficient inland waterway operations.

After lunch, the workshop continued with the EGNOS multimodal application session. This included an update on the ICAO Space Weather Service and its relevance to aviation and GNSS. Drone-focused presentations followed, showcasing a high-precision GNSS module and outlining how integration with EGNOS V3 could enable scalable solutions for automotive, UAVs, and IoT.

The workshop then reviewed SBAS worldwide, where ANGA (Augmented Navigation for Africa) presented the satellite navigation service developed by and for Africa, launched as a demonstration in 2020 and planned to provide L1 services from 2029/2030, with DFMC services beyond 2032, benefiting aviation and the broader African economy. MSAS (Michibiki Satellite-based Augmentation Service) reviewed its progressive evolution since 2007 and described the transition in April 2025 to a new phase (Version 3), enabling full LPV operations in Japan. The Japan Civil Aviation Bureau (JCAB) continues its evaluations of LPV and future service improvements.

The final session of the day focused on the evolution of the EGNOS services portfolio. This included the MUGG project, initiated by EUSPA to develop a next-generation aviation SBAS DFMC receiver, and the EGNOS4Rail project, which aims to prepare and demonstrate EGNOS performance in the rail domain and to contribute to the definition of a future EGNOS for Rail service, aligned with sector needs and enabling GNSS-based localisation within the European rail system.

For on-site attendees, the programme also featured live demonstrations, allowing participants to engage directly with the IWETT project, Alberding's EGNOS-compatible hardware and software solutions, an offline real-time maritime performance demonstration, and a flight simulator experience. In the evening, a dedicated networking event took place, facilitating exchanges among on-site participants.

The second day focused on aviation. The opening session addressed the EGNOS Working Agreement for SoL Aviation. ESSP explained how the EGNOS Working Agreement (EWA) supports aviation users in complying with the Single European Sky Regulation. Currently, 92 EWAs are active across 27 EU and 8 non-EU countries, ensuring harmonised implementation. During the EGNOS Implementation session from a network perspective, EUROCONTROL addressed GNSS Radio frequency interference (RFI) as a major challenge for LPV operations and noted ongoing stakeholder efforts to integrate RFI monitoring with complementary PNT solutions. During the ANSP presentation, the DFS presented its use of EDAS within its GNSS Monitoring Next Generation system, which now plays a central role in legal recording, performance monitoring, and interference detection in Germany.

The second session focused on aviation implementation experiences. The German Armed Forces aerodrome operator explained how Rostock Laage became the first military aerodrome to implement SBAS procedures and expressed the intention to progressively extend implementation across other military airfields. A Lufthansa Group operator presented the airline's perspective on LPV operations, highlighting benefits such as safer landings in adverse weather, fewer delays and cancellations, and reduced fuel consumption and CO_2 emissions. Challenges were also noted, such as GNSS jamming and spoofing, the cost of upgrading older aircraft, and limited ILS CAT I restrictions at some destinations.

A concluding panel on end-to-end LPV implementation brought together industry experiences in retrofitting LPV capabilities on B737 Classic and B737 NG fleets. Logic Air explained that, in Canada, the only option had been the NDB (Non-Directional Beacon) approach until a customer requested the design and installation of LPV solutions. The company has now been equipping aircraft with LPV for over a decade, helping operators to benefit from the technology. CMC Electronics shared the company's long-standing expertise and presented features, including a high-integrity switch designed to ensure the best EGNOS signals are used. ASL Airlines Belgium shared how it became one of the first airlines to use EGNOS commercially, highlighting the integration challenges, investment decisions, and how CMC's pilot-friendly solution, together with Logic Air's support, enabled a smooth and effective transition.

The EGNOS Workshop 2025 closed with the EGNOS Awards, recognising organisations that had recently signed an EWA or published their first LPV procedure.

For further information on this edition of the EGNOS Annual Workshop, please refer to the presentations listed in the Agenda.

4.4.2 EGNOS workshop 2026

The date of the next EGNOS workshop had not yet been confirmed at the time this report was published.

Further details, including information on the registration process and the event agenda, will be published on the EGNOS User Support Website.

5 KEY ACTIVITIES PLANNED FOR THE YEAR AHEAD

5.1 Service delivery and management

5.1.1 EGNOS services user interface

Next year, all EGNOS services will have in common the general objective of progressing in the assessment of alternatives to improve the communication of service incidents affecting users. Particularly in case of total service loss, in collaboration with the relevant stakeholders, public notification improvements to explicitly indicate whether/which services are affected and the expected unavailability duration.

5.1.1.1 EGNOS Services-related document evolutions (SN, SDD)

EGNOS performance will be analysed in order to assess whether the commitment should be updated to reflect the real performance.

5.1.1 EGNOS services development

5.1.1.1 Aviation

The main activities planned for the development of the EGNOS SoL Service for Aviation will be as follows:

- Consolidation of the service provision framework for conventional users (ANSPs operating within ATS airspace) and specific non-ATS operational scenarios, in support of the European harmonised approach already in progress. In these contexts, the benefits of EGNOS are highly relevant for increased safety and accessibility, as well as for reduced reliance on ground-based navigation infrastructure costs.
- In relation with the general objective about improving public communications, for SoL aviation users:
    - Feasibility assessment for NOTAM Proposals timelines reduction..
    - Relevant information distribution to the EWA signatories (e.g. minimum time to restore, change of system configurations) targeting daily communications (i.e. Service Notice and/or EWA channel, as applicable).
- Continuation of activities aimed at characterising UAS needs for EGNOS services both within and outside U-space, particularly for medium-risk drone operations (e.g. SAIL III and IV).

5.1.1.2 Maritime

It is envisaged to continue the work carried out with several EU National Maritime Authorities and supporting agencies complementing the current collaboration achieved with Authorities from Spain, France, Ireland, Germany, Finland, and Norway. The main objective of this work is to get the endorsement of these actors and other relevant Maritime stakeholders (Manufacturers, Shipowners and Shipyards associations...) of ESMAS Service. This work will be presented inthe forthcoming European Maritime Radio Navigation Forum. (EMRF) in 2026.

Additionally, it is planned as well to continue the development within IALA of the additional technical content to enable the retransmission of EGNOS/SBAS corrections through VDES technology, including the required modifications to VDES ground and onboard systems to enable maritime and inland waterways users to benefit from EGNOS corrections via this retransmission method. This will be complemented with

further activities related to the standardisation of SBAS service provision, operations, and best practices in Maritime to increase the adoption of EGNOS/SBAS.

In the frame of IALA, it is also in the current plans to support the IALA World Wide Academy (WWA) with dedicated training sessions on GNSS and SBAS systems and services in the maritime domain for IALA members and other potential attendees (authorities, manufacturers, maritime users, shipowners, etc.).

Within the framework of CESNI, following the work carried out the previous year, effort will be committed in the development of a potential operational concept for a future EGNOS service for IWW through participation in the Inland-Multi-system Shipborne Radionavigation Receiver (I-MSR) task of the Vessels Tracking and Tracing (VTT) working group in CESNI: This will be complemented with the continuous promotion of EGNOS in Inland Waterways through the CESNI forum.

5.1.1.3 Rail

The main activities planned for 2026 are focused on the development of a future EGNOS Safety of Life service for application in the rail domain:

- Within the framework of the EGNOS4RAIL project, which aims to develop a regulatory framework for the introduction and use of EGNOS in railways, and to provide support to EUSPA on various tasks, including the review of technical deliverables and the definition of an EGNOS service concept. This is a joint initiative between the space and rail domains, coordinated by SNCF (France's national state-owned railway company), in collaboration with the European Space Agency (ESA), the European Union Agency for Railways (ERA), and rail industry flagship companies.
- In the frame of EU-Rail activities, support EUSPA in other relevant projects and ERJU Working Groups, such as:
    - Flagship Project 2 (FP2) R2DATO (Rail to Digital Automated up to Autonomous Train Operation), particularly in activities related to the potential use of EGNOS within Advanced Safe Train Positioning (ASTP).
    - Flagship Project 2 (FP6) FuTuRe, aimed at delivering innovative rail services to revitalise capillary lines and regional rail services, where the use of an EGNOS service could provide added value.

APPENDIX A LIST OF REFERENCE

[RD-1] EGNOS Safety of Life (SoL) for Aviation Service Definition Document, EGN-SDD-SoL; v.03-06 (https://egnos.gsc-europa.eu/sites/default/files/documents/egnos_sol_sdd_in_force.pdf)

[RD-2] EGNOS Open Service (OS) Service Definition Document (SDD), EGN-SDD-OS; v.03-00 (https://egnos.gsc-europa.eu/sites/default/files/documents/egnos_os_sdd_in_force.pdf)

[RD-3] EGNOS Safety of Life assisted service for Maritime users (ESMAS), EGNOS-SDD; v.01-00 (https://egnos.gsc-europa.eu/sites/default/files/documents/egnos_esmas_sdd_in_force.pdf)

[RD-4] EGNOS Data Access Service (EDAS) Service Definition Document, EGN-SDD-EDAS; v.03-00 (https://edas-maritime.gsc-europa.eu/sites/default/files/documents/egnos_edas_sdd_in_force.pdf)

APPENDIX B LIST OF ACRONYMS

ACRONYM	DEFINITION
AFTN	Aeronautical Fixed Telecommunication Network
AIS	Aeronautical Information System
ANSP	Air Navigation Service Provider
APV	Approach with Vertical Guidance
ASTP	Absolute Safe Train Positioning
ASN	Abstract Syntax Notation
ATC	Air Traffic Control
CEO	Chief Executive Officer
CRPA	Controlled Reception Pattern Antenna
DFMC	Dual-Frequency Multi-Constellation
DLR	Deutsches Zentrum für Luft- und Raumfahrt)
EASA	European Aviation Safety Agency
EDAS	EGNOS Data Access Service
EGNOS	European Geostationary Navigation Overlay Service
EMA	EGNOS Multimodal Adoption
ERJU	Europe´s Rail Joint Undertaking
ERTMS	European Rail Traffic Management System
ESA	European Space Agency
ESMAS	EGNOS Safety of Life (SoL) assisted service for MAritime userS
ESSP	European Satellite Services Provider
EU	European Union
EUG	ERTMS User Group
EUSPA	European Union Agency for the Space Programme
EWA	EGNOS Working Agreement

ACRONYM	DEFINITION
FTP	File Transfer Protocol
FutuRe	Future Regional railways
GBAS	Ground-Based Augmentation System
GEO	Geostationary Satellite
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HAL	Horizontal Alert Limit
HDOP	Horizontal Dilution Of Precision
HNSE	Horizontal Navigation System Error
HPE	Horizontal Position Error
HPL	Horizontal Protection Level
HSI	Horizontal Safety Index
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
ICAO	International Civil Aviation Organisation
IEC	International Electrotechnical Commission
ILS	Instrument Landing System
IMO	International Maritime Organization
IRE	Instrument Runway End
I-MSR	Inland-Multi-system Shipborne Radionavigation Receiver
LPV	Localizer Performance with vertical guidance
LWG	Location Working Group
MI	Misleading Information
MOPS	Minimum Operational Performance Standards
MRO	Maintenance, Repair, and Overhaul
MSAS	Multi-transport Satellite-based Augmentation System
MSI	Maritime Safety Information
MSR	MaSteR (MCC)

ACRONYM	DEFINITION
MT27	Message Type 27
NA	Not Applicable/ Not Available
NANU	Notice Advisory to Navstar Users
NLES	Navigation Land Earth Station
NOTAM	Notice To Airmen
NPA	Non-Precision Approach
NTRIP	Networked Transport of RTCM via Internet Protocol
OEM	Original Equipment Manufacturer
OP	Operation
OPS	Operations
OS	Open Service
PA	Precision Approach
PL	Protection Level
PoCs	Points of Contact
PRN	Pseudo-Random Noise
RD	Reference Document
RFI	Radio-Frequency Interference
RIMS	Ranging and Integrity Monitoring Station
RINEX	Receiver Independent EXchange format
RTCA	Radio Technical Commission for Aeronautics
RTCM	Radio Technical Commission for Maritime Services
SAB	Security Accreditation Board
SAIL	Safety Assurance Integrity Level
SARPS	Standards And Recommended Practices
SB	Service Bulletin
SBAS	Satellite-Based Augmentation System
SDD	Service Definition Document

ACRONYM	DEFINITION
SES	Single European Sky
SIR	Safety Incident Report
SIS	Signal-In-Space
SL0	Service Level 0
SL2	Service Level 2
SLS	Service Level Specification
SoL	Safety of Life
SPU	Service Provision Unit
STC	Supplemental Type Certificate
TAS	Thales Alenia Space
UAS	Unmanned Aircraft System
UTC	Universal Time Coordinated
VAL	Vertical Alert Limit
VDES	VHF Data Exchange System
VNSE	Vertical Navigation System Error
VPL	Vertical Protection Level
VSI	Vertical Safety Index

Table 13: List of Acronyms

EUSPA
European Union Agency for the Space Programme

LINKING SPACE TO USER NEEDS

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