

GLOSS OCG-16 report

Prepared/submitted by GLOSS chair and Steering Committee

1. Highlight the key network successes

- 30 Jan – 1 Febr 2024: GLOSS Steering Committee meeting in the Maritime and Defense Technology Hub of St. Petersburg, Tampa (Florida, USA): Attendants: GLOSS chair and secretariat, past GLOSS chairs, data portals representatives and external experts. Discussion topics: GLOSS Terms of Reference and implementation plan, new data management structure including development plan for a Unified Data GLOSS Data Portal, new work on metadata, GLOSS station definition, capacity development.
- 11 – 14 March 2025: XVIII Session of the Group of Experts for the Global Sea Level Observing System in Panamá City. 54 participants including 27 national focal points, GLOSS national data centers and Steering Group members, and observers. Discussion topics: status of the network and GLOSS data centers activities, overview of national networks, link to other programmes (e.g. GOOS-OCG, IHO TWCWG, Tsunami), steps for new Implementation Plan, splinter sessions for three different working groups. New Chair election: Begoña Pérez Gómez (Puertos del Estado, Spain).

2. How has the network advanced across the OCG Network Attribute areas¹

- Mission: the Global Sea Level Observing System aims to develop a well-structured, high-quality in-situ sea level observing network to support a wide range of research and operational users at global, regional, national and local levels. Sea level is one of the most useful oceanographic variables, used for a wide variety of scientific, economic and social purposes. Its data enhances the understanding of the impacts of climate change on mean sea level and extreme sea level events along coastlines worldwide. Additionally, it contributes to ocean circulation studies, storm surge forecasting and early warning systems, including those for tsunamis.
- Spatial scale: Global. GLOSS maintains the definition of the GLOSS Core Network, consisting of 290 tide gauge stations across more than 90 countries and territories, ensuring high-quality global coverage. Its goal is to meet key scientific requirements at regional and global scales ([GLOSS Core Network](#)),

¹ <https://oceanexpert.org/downloadFile/45372>

with an homogeneous distribution and data availability for monitoring aspects of global ocean circulation (e.g. main current systems, straits, etc). In addition, hundreds of in-situ sea level observations, primarily derived from national networks designed to meet specific national and local needs, have been globally integrated into GLOSS data portals since as far back as 1933, with monthly mean sea levels aggregated by the Permanent Service for Mean Sea Level (PSMSL). Additional data centers handling higher-frequency data from 1 min to 1 hour, have been developed over the past decades (University of Hawaii Sea Level Center-UHSLC, British Oceanographic Data Centre-BODC, Flanders Marine Institute-VLIZ). The University of La Rochelle/SONEL group is the GLOSS data assembly centre for vertical land movement data from GNSS (Global Navigation Satellite Systems) stations at or near tide gauges. All these data have formed the foundation of numerous significant publications including many that have contributed to the Intergovernmental Panel on Climate Change (IPCC) reports over the years.

- Sustainability: sustained observations and data availability are requirements for Member States contributing to GLOSS, primarily ensured through various national funding programs. This is made possible by the multi-purpose and interdisciplinary nature of in-situ sea level observations, supported by national oceanographic institutes, ports, geographic institutes, seismic networks, meteorological offices and other entities.
- Best practices: GLOSS has published over the years several manuals with recommendations and best practices in terms of instrumentation, calibration, sensors upgrade, and quality control. There are also a number of manuals available at national level or developed by other programs which could overlap with those of GLOSS. A review of these manuals to decide which are good and which ones need to be updated or improved is one key action identified in GLOSS for the next two years.
- FAIR and open access data standards: objective of GLOSS data centers through the years, on-going initiatives of GLOSS data portals to improve in this aspect, including metadata management.
- Capacity development and technology transfer: strong involvement of GLOSS data centers and experts along the years. Several groups including UHSLC have contributed to the development and maintenance of the GLOSS Core Network of stations. UHSLC technicians have significantly expanded the in-situ sea level observation network, especially in the Pacific and Indian Oceans, with many of these stations regularly visited and serviced by the UHSLC.

3. Future Plans² and Opportunities - at network and/or cross-network OCG level

- Implementation Plan 2025.
- Unified GLOSS data access point and website: on-going initiative already started by all GLOSS data centers.
- Best practices review and update
- Three working groups established in the XVIII GLOSS Group of Experts meeting in Panamá (March 2025), for the next intersessional period (2025-2027): 1) Sensor Performance including GNSS-IR (Global Navigation Satellite System Interferometric Reflectometry) technique; 2) Data Archaeology; and 3) Quality control, data processing and data management. Specific actions for the next two years were provided by each WG during their first splinter sessions in Panama (March 2025).
- GLOSS Steering Committee: Terms of References and membership.
- Enhancing coordination with IHO Tides, Water Level and Currents Working Group (IHO TWLCWG) and with GOOS – Observations Coordination Working Group, along with other relevant international programmes.
- UN Ocean Decade: exploring potential links and opportunities over the next 2 years.

4. Challenges and Concerns - at network and/or cross-network OCG level

- Maintenance funding and data policy issues in certain countries, especially in Africa, Asia and the Mediterranean Sea.
- Lack of unique identifier: relate to the definition of a tide gauge station. On-going work within the Steering Committee, to be reflected in the Implementation Plan. Continued collaboration with OceanOPS including an assessment of the suitability of the WMO WIGOS passport for tide gauge requirements.
- Metadata standards and management, including easy-to-use tools to get these data from national providers.
- New low-cost sensors and technologies that require validation and assessment.
- Unified data processing chain (replicability of sea level products)
- Faster response to societal needs: from research to operational users

5. Asks from OCG (Exec, networks, OceanOPS, and/or GOOS) and any priority topics that should be addressed at OCG-16

² Future plans on implementation, instrumentation, data management, test, new sensors, plan for new EOVS/ECV observations, capacity development, etc.

- Are any funding cuts or data policy issues foreseen for any of the observing components?
- How do other networks manage the availability and quality of metadata, including changes of sensor, technology, maintenance problems, and detailed information required at national level?

6. Recent publications, articles, etc. (if you want to share)

Additional considerations:

- What requirements do you base your system design/completeness on - e.g. for the report card? Are you utilizing / are responsive to any requirements from e.g., GCOS, WMO RRR? If yes, what and how?
- What would you like to see in OceanOPS 2026-2030 strategic plan?
- Questions for other networks, networks specific questions for discussion at the session, and highlight cross OCG questions for discussion next day session
- What are your links to the Ocean Decade? (List programs etc. you are involved in)