

## **Open session**

### **Agenda Item 7. Activity updates from EuroGOOS Task Teams**

Document 07.1 Task Team reports

# Status Report for the EuroGOOS General Assembly 2024

Reporting period: May 2023-April 2024

## EuroGOOS body:

Task Team

## Full title:

FerryBox Task Team

## Co-Chair 1 (Name and affiliation)

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## Co-Chair 2 (Name and affiliation)

Anna Willstrand Wranne

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## Current members, affiliation and country

Andrew King, Pierre Jaccard, Kai Sørensen, Norwegian Institute for Water Research (NIVA), Norway  
Anna Willstrand Wranne, Voice of the Ocean (VOTO), Sweden  
Yoana Voynova, Helmholtz-Zentrum Hereon (Hereon), Germany  
Henning Wehde, Institute for Marine Research (IMR), Norway  
Alicia? Or Deniz? EuroGOOS, Belgium  
Jukka Seppala, Finnish Environment Institute (SYKE), Finland  
Bengt Karlson, Irena Draca, Madeleine Nilsson, Patrick Gorrings, Swedish Meteorological & Hydrological Institute (SMHI), Sweden  
Urmas Lips, Villu Kikas, Tallinn University of Technology (TTU), Estonia  
George Petihakis, Manolis Ntoumas, Constantin Frangoulis, Hellenic Centre for Marine Research (HCMR), Greece  
Loic Petit De La Villeon, French Institute for Ocean Science (IFREMER), France  
Kate Collingridge, Camille Visinand, Centre for Environment, Fisheries & Aquaculture Science (CEFAS), UK  
Anouk Blauw, Dutch institute for Delta Technology (Deltares), Netherlands  
Andre Cattrijsse, Thanos Gkritzalis, Flanders Marine Institute (VLIZ), Belgium  
Manuel Ruiz Villarreal, Gonzalo Gonzales Nuevo, Spanish Institute of Oceanography (IEO), Spain  
Carolina Cantoni, National Research Council Italy, Marine Sci. Institute (CNR-ISMAR), Italy  
Eric Delory, Oceanic Platform of the Canary Islands (PLOCAN), Spain  
Miguel Santos, Portuguese Institute for Sea and Atmosphere (IPMA), Portugal

## Website

[www.ferrybox.org](http://www.ferrybox.org); [eurogoos.eu/ferrybox-task-team/](http://eurogoos.eu/ferrybox-task-team/)

## Objectives:

- Act as the European component of the global community using ships of opportunity
- Develop links with other EuroGOOS TT/WG/ROOS, GOOS, Ocean OPS, ICOS, and other complementary activities
- Ensure the integration of FerryBox networks in the European ocean observing efforts and contribute to the development of EOOS
- Operate and promote a common European FerryBox data portal
- Ensure and enable data availability via the EuroGOOS ROOS data portals including data quality procedures and links to CMEMS and EMODnet

## Relevance to the EuroGOOS Strategy:

Stimulate communities of practice:

-Continued contribution to EU projects such as JERICO-S3/DS, EuroSea, CLAIM, NAUTILOS, MINKE, AQUARIUS, LandSeaLot  
-(Always) improving data flow/QC and feeding of data to CMEMS/EMODnet  
-Best practices and QC of underway autonomous carbonate system measurements and automated phytoplankton observations, long-time QC-ed datasets analysed & published

Advocate for coordinated and integrated ocean observations

-Build on links with GOOS/Ocean-OPS SOT and SOOPIP, also with ICOS for FB pCO<sub>2</sub> observations, EuroGOOS BIO and OL WGs, ROOSs

Strengthen/expand partnerships

-Added new partner institutes to the FB-TT, several new members from existing partner institutes, new co-chair elected in 2024, training new partner institutes  
-12th FB workshop planned for October 2024 in Helsinki organized by SYKE/FMI

Promote sustainability

-Participation in proposals/projects that include FB in infrastructure projects; continued to look for ways for FB Task Team to contribute to EOOS

Mobilise the public

-Promote citizen science and ocean literacy through FB-TT activities and research and with OL WG

### **Key achievements in the reporting period (May 2023-April 2024):**

HCMR: first CO<sub>2</sub> recordings in the Eastern Mediterranean using a FB; CO<sub>2</sub> data are not uploaded yet, but at I hope to do this for the next SOCAT submission i.e. in 2025; FB system up and running for 6 months, but then the ship operators changed routes

NIVA: new FerryBox complete on coastal steamer MS Richard With, also with General Oceanics pCO<sub>2</sub> sensor for ICOS Norway, soon will apply for ICOS station labeling; eDNA and IFCB deployments on MS Color Fantasy as part of H2020 projects; nearly complete with re-establishing data links with EMODnet and beyond.

Hereon: Lysbris Seaways is offline since November, 2023 due to new ballast water treatment system installed; Magnolia Seaways is operating, now along the route Immingham-Cuxhaven since February 2024; FunnyGirl Ferry was not operating last year, and should start again this spring; Cuxhaven and Tesperhude Stations are both operational. Cuxhaven station is a Pilot ICOS Estuarine station in ICOS-D since January 2023; RV Ludwig Prandtl will be soon replaced by RV Coriolis, which will have a FerryBox onboard.

Cefas: We are developing a database so colleagues can access our Ferrybox data. It is still in progress.

SYKE: celebrating 30 years of FerryBox measurements in Algaline "project"; demonstrated the operationality of plankton Imaging (IFCB, Cytosense) in FINNMAID (Helsinki-Travemunde) for 5 month period, coupled with short term scientific studies on phytoplankton parasites, nitrogen fixation of cyanobacteria (IOW) and remote sensing reflectance.

FMI: pCO<sub>2</sub> measurements onboard Silja Serenade (Helsinki-Stockholm) joining ICOS OTC.

TalTech: upgraded FerryBox system installed onboard Victoria I (Tallinn-Helsinki/Stockholm)

SMHI: comprehensive FerryBox system onboard R/V Svea operational during national monitoring cruises and including plankton imaging and pCO<sub>2</sub>; Ferry Transpaper back in business in Baltic (after some random-walk cruising in other European seas); Ferrybox with several sensors and Imaging Flow Cytobot successfully operated during monthly cruises with R/V Svea in the North Sea, Skagerrak, Kattegat and Baltic Sea. Improvements regarding pH analysis; Merchant vessel Tavastland back in the Baltic Sea in 2024. The Ferrybox is now operational again on a route covering the Gulf of Bothnia and the Baltic Proper. Methane was added to the analysis system by replacing a detector in the General Oceanics CO<sub>2</sub>-analysis system; Successful observations of the carbonate system as part of ICOS; Near real time delivery of Ferrybox data to CMEMS

Umeå University / Swedish Coast Guard ship: 4H-JENA system installed, data available since spring 2023

Univ Tartu: ferry Baltic Queen (Tallinn-Stockholm) fully operational

### **Bottlenecks or obstacles during the reporting period (May 2023-April 2024):**

NIVA: 5 year research infrastructure project has come to an end - funding continued operations are now again a priority!

SMHI: Merchant vessel Tavastland was moved to the Mediterranean Sea with no possibilities for maintenance of Ferrybox system.

Hereon: We have decreased internal funding since 2 years, which is affecting our current operations.

HCMR: funding has been a challenge

Cefas: an Algal Online Analyser has been fitted to our Ferrybox, however so far we have not got enough expertise to QC the data.

### **Main priority areas (2024-2025):**

All: revisit FerryBox white book from 2017 and work on a revised or new document; find possible links to research vessel flow-through systems?

Cefas: Make our Ferrybox data accessible.

SYKE: Continue using imaging in Baltic; Look forward having scientific papers from previous studies

SMHI: Continued operation of Ferrybox systems on R/V Svea and Tavastland; focus on operational AI-assisted processing of data from automated plankton imaging (Imaging FlowCytobot) Instrument on R/V Svea; Continued observations of carbonate system; Improved calibrations of bio-optical sensors; Continued delivery of data to CMEMS

NIVA: Re-establish the long lost NRT data provision to European data aggregators

### **Other major activities (2024-2025):**

Cefas: Finish the Quality Control for our Ferrybox data for previous years.

SYKE: Business as usual

NIVA: Try to find ways to support and operate FerryBoxes in remote areas (Antarctica, Arctic)

### **Meetings during the reporting period (May 2023-April 2024):**

All: No FerryBox workshop between May 2023-April 2024. The 12th FB workshop planned for May 2024 has been postponed to 1-2 October 2024.

Cefas: internal meetings only to discuss QC progress and database design/progress.

NIVA: Presentation of Canadian Arctic FerryBox data at Ocean Sciences Meeting, 8-12 April 2024; UNESCO/IOC 12th Session of the Ship Observations Team 15-18 May 2023

SMHI: Presentation of IFCB results from R/V Svea during 20th International Conference on Harmful Algae

### **Next planned meetings (2024-2025):**

The 12th FB workshop planned for May 2024 has been postponed to 1-2 October 2024. Will be organized by SYKE/FMI in Helsinki, Finland. Maybe coupled with smaller project-related FerryBox meetings.

Annual Baltic calibration WS and related meeting in Febr 2025  
Ocean Optics 2024 6-11 October 2024 <https://oceanopticsconference.org>

**Links and synergies with other EuroGOOS ROOS/Working Groups/Task Teams:**

- Links to BioWG on using imaging
- Links to OL WG on interactions with public
- Links to ROOSs when requested (recent presentation at MONGOOS GA)

**Links and synergies with non-EuroGOOS initiatives:**

- IOC/FAO Intergovernmental Panel on Harmful Algal Blooms; Publication:  
FAO, IOC & IAEA. 2023. Joint FAO-IOC-IAEA technical guidance for the implementation of early warning systems for harmful algal blooms. Fisheries and Aquaculture Technical Paper, No. 690. Rome, FAO.  
<https://doi.org/10.4060/cc4794en>
- IOC/SCOR GlobalHAB, Harmful Algae Early Warning Systems see [www.globalhab.info](http://www.globalhab.info)
- ICES/IOC Working Group on Harmful Algal Bloom Dynamics - Harmful Algae Early Warning Systems
- ICOS pCO<sub>2</sub> observations
- Strong FB participation in JERICO-RI/S3
- Some connection with EOOS but still not clear the role of FB platforms, in particular
- Links for data provision with CMEMS and EMODnet

# Status Report for the EuroGOOS General Assembly 2024

Reporting period: May 2023-April 2024

## EuroGOOS body:

Task Team

## Full title:

Fixed-Platform Task Team

## Co-Chair 1 (Name and affiliation)

Marcello Magaldi, National Research Council of Italy (CNR), Italy

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## Current members, affiliation and country

- ) Adam Gauci, University of Malta (UM), Malta
- ) Agnieszka Beszczynska-Möller, Institute of Oceanology, Polish Academy of Sciences (IOPAN), Poland
- ) Andrew Gates, National Oceanography Centre (NOC), UK
- ) Angelika Renner, Institute of Marine Research (IMR), Norway
- ) Arianna Orasi, Italian National Institute for Environmental Protection and Research (ISPRA), Italy
- ) Branko Čermelj, National Institute of Biology (NIB), Slovenia
- ) Carl Johan Andersson, Swedish Meteorological and hydrological institute (SMHI), Sweden
- ) Conall O'Malley, Marine Institute (MI), Ireland
- ) Dijana Klaric, Croatian Meteorological and Hydrological Service (DHMZ), Croatia
- ) Giuditta Marinaro, National Institute of Geophysics and Volcanology (INGV), Italy
- ) Giuseppe Magnifico, National Research Council of Italy (CNR), Italy - resigning co-chair
- ) Holger Brix, Helmholtz-Zentrum Hereon (HEREON), Germany
- ) Jitze P. van der Meulen, Royal Netherlands Meteorological Institute (KNMI), Netherlands
- ) Joseph Nolan, European Global Ocean Observing System (EuroGOOS), Belgium
- ) Julien Mader, Fundación AZTI, Spain
- ) Kai Herklotz, Federal Maritime and Hydrographic Agency (BSH), Germany
- ) Laurent Coppola, French National Centre for Scientific Research (CNRS), France
- ) Marcello Magaldi, National Research Council of Italy (CNR), Italy
- ) Marta de Alfonso Alonso-Muñoyerro, Puertos del Estado (PdE), Spain
- ) Michael Fettweis, Royal Belgian Institute of Natural Sciences (RBINS), OD NATURE, Belgium
- ) Michel Repecaud, French Research Institute for Exploitation of the Sea (IFREMER), France
- ) Mustafa Yücel, Institute of Marine Sciences, Middle East Technical University (METU), Turkey
- ) Nikolas Flourentzou, Cyprus Marine and Maritime Institute (CMMI), Cyprus
- ) Nuno Zacarias, Hydrographic Institute (IH), Portugal
- ) Paolo Favali, European Multidisciplinary Seafloor and water column Observatory (EMSO ERIC), Italy - resigning co-chair
- ) Paris Pagonis, Hellenic Centre for Marine Research (HCMR), Greece
- ) Pieter Gurdebeke, Agency for Maritime and Coastal Services (MDK), Coastal Division, Belgium
- ) Raquel Somavilla, Spanish Institute of Oceanography (IEO), Spain
- ) Sebastiano D'Amico, University of Malta (UM), Malta
- ) Sólveig Rósa Ólafsdóttir, Marine and Freshwater Research Institute (HAFRO), Iceland
- ) Urmas Lips, Tallinn University of Technology, Marine Systems Institute (MSI), Estonia
- ) Vanessa Cardin, National Institute of Oceanography and Experimental Geophysics (OGS), Italy
- ) Vidar Lien, Institute of Marine Research (IMR), Norway
- ) Vlad Radulescu, National Institute of Marine Geology and Geoecology (GEOECOMAR), Romania
- ) Zacharias Siokouros, Cyprus Marine and Maritime Institute (CMMI), Cyprus

## Website

<https://eurogoos.eu/fixed-platforms-task-team>



## **Objectives:**

The EuroGOOS Fixed-Platform Task Team aims to:

- ) Develop Europe's Fixed Platform network and assist in the standardization of operations by sharing best practices, also in keeping with other relevant programmes at global level (such as OOI, ONC, IMOS, DONET).
- ) Contribute to the development of the European Ocean Observing System (EOOS).
- ) Ensure the integration of Fixed Platforms in the open and coastal ocean.
- ) Provide European input to the OceanSites community and other relevant initiatives.
- ) Enhance the number of biogeochemical measurements in European seas.
- ) Ensure data availability via the EuroGOOS ROOS data portals and hence to CMEMS and EMODnet.
- ) Deliver recommendations on data structure, format, and dissemination (interoperability of datasets) and quality control procedures.
- ) Foster the cooperation with Research Vessel operators in terms of existing networks, projects, and other relevant coordination initiatives with large and well-equipped facilities (e.g., ERVO, OFEG and EurofleetsPlus project).
- ) Establish a link with DBCP (Data Buoy Cooperation Panel) and E-SURFMAR in order to coordinate activities and best practices.
- ) Link with EuroGOOS ROOSes, Working Groups and Task Teams and relevant ongoing programmes/projects (e.g., CMEMS INSTAC, EMODnet, JERICO-RI, etc.) and Research Infrastructures (such as EMSO ERIC) to avoid duplication of efforts.

## **Relevance to the EuroGOOS Strategy:**

Ocean observing Fixed Platforms are deployed in all the European seas to carry out a large variety of measurements. Fixed platforms are a major contributor to European ocean observing that deliver data to the major European data aggregators, e.g., CMEMS, EMODnet and SeaDataNet. The EuroGOOS Fixed Platforms Task Team aims at integrating the European fixed point observatories, both in the open and coastal ocean. As all EuroGOOS Task Teams, this activity is an important building block towards an integrated end-to-end European Ocean Observing System, EOOS.

## **Key achievements in the reporting period (May 2023-April 2024):**

- ) A first map showing 205 existing fixed platforms from 13 European countries was put forth and presented in May 2023 as an abstract and poster at the 10th EuroGOOS International Conference
- ) A co-chair was nominated after the resignation of the last two co-chairs in March 2024

## **Bottlenecks or obstacles during the reporting period (May 2023-April 2024):**

- ) Difficulties in organizing meetings
- ) Difficulties in finding the second incoming co-chair

## **Main priority areas (2024-2025):**

- 1) Sharing of Experience, Knowledge, Expertise, Best Practices and Standards
- 2) Dealing with Technological Issues
- 3) Fostering Links and Synergy inside and outside EuroGOOS
- 4) Delivering Recommendations, Proposals and Solutions on Data/Metadata
- 5) Developing Joint Initiatives and Projects
- 6) Contributing to EOOS
- 7) Expanding Observations in European Seas
- 8) Contributing to SDGs/UN Decade

## **Meetings during the reporting period (May 2023-April 2024):**

No meetings held during the reporting period

## **Next planned meetings (2024-2025):**

- ) An on-line meeting has already been called to be held before the next GA in May 2024 (date to be confirmed, likely either on May 9 or May 15)
- ) A second meeting will be planned as soon as the second co-chair is nominated

### **Links and synergies with other EuroGOOS ROOS/Working Groups/Task Teams:**

A survey among the members showed that links are established with all ROOSes, with the Technology Plan and Data management, Exchange and Quality WGs and with the Ferry Box, Tide gauges and HF radar TTs

### **Links and synergies with non-EuroGOOS initiatives:**

OCEANSITES  
DBCP  
Eurofleets  
EuroGO-SHIP  
ITINERIS  
JERICO  
EuroSea  
MINKE  
AMRIT  
EMSO ERIC  
OceanOPS



# Status Report for the EuroGOOS General Assembly 2024

Reporting period: May 2023-April 2024

## EuroGOOS body:

Task Team

## Full title:

EuroGOOS HF Radar Task Team

## Co-Chair 1 (Name and affiliation)

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## Current members, affiliation and country

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Silvia Piedracoba, CETMAR, Spain

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Bartolomeo Doronzo, Bernardo Gozzini, Carlo Brandini, Giovanni Ficca, Stefano Taddei, Consorzio LaMMA, Italy

Antonio Novellino, ETT, Italy

Mikko Lensu, Finnish Meteorological Institut, Finland

Anna Konstantinidou, Gerasimos Korres, HCMR, Greece

Gisbert Breitbach, Jochen Horstmann, Johannes Schulz-Stellenfleth, Marius Cysewski, Helmholtz-Zentrum Geesthacht, Germany

Thomas Helzel, HELZEL Messtechnik, Germany

Guillaume Charria, Louis Marié, Ifremer, France

Stipe Muslim, Vlado Dadic, Institute of Oceanography and Fisheries, Croatia

Vânia Lima, Instituto Hidrografico, Portugal

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Bruno Zakardjian, Céline Quentin, Charles-Antoine Guérin, MIO – Univ. of Toulon, France

Branko Cermelj, Matjaz Licer, Vlado Malacic, National Institute of Biology, Slovenia

Michael Hartnett, National University of Ireland, Ireland

Paul Bell, National Oceanography Centre (NOC), United Kingdom

Bruce Hackett, Sune Jensen, Kai Christensen, Kjetil Stiansen, Snorre Ronning, Vegar Kristiansen, Norwegian Meteorological Institute, Norway

Rui Caldeira, Ocean Observatory of Madeira, Portugal

Laura Ursella, Vanessa Cardin, OGS, Italy

Carlos Barrera, Joaquin Brito, Ruben Marrero, PLOCAN, Spain

María Isabel Ruiz Gil de la Serna, Pablo Lorente, Puertos del Estado, Spain

Maria Fernandes, Andres Alonso Martirena, Jorge Sanchez, Qualitas Remos, Portugal and Spain

Herman Peters, Mando de Jong, Marc Philippart, Rinus Schroevers, Rijkswaterstaat, Netherlands

Cariou Valérie, Franck Dumas, Stéphanie Louazel, SHOM, France

Maja Jeromel, Slovenian Environment Agency, Slovenia

Patrick Gorringe, SMHI, Sweeden

Guiomar López, Emma Reyes, Joaquin Tintoré, SOCIB, Spain

Hezi Gildor, Institute of Earth Sciences, Israel

Anne-Claire Bennis, University of Caen, France  
Thomas Schlick, University of Hamburg, Germany  
Adam Gauci, Aldo Drago, University of Malta, Malta  
Enrico Zambianchi, Pierpaolo Falco, University of Naples Parthenope, Italy  
Fulvio Capodici, Giuseppe Ciraolo, University of Palermo, Italy  
Daniel Conley, University of Plymouth, United Kingdom  
Lucy Wyatt, University of Sheffield, United Kingdom  
Alkiviadis Kalampokis, Vassilis Zervakis, University of the Aegean, Greece  
Jose González Fernández, Ramiro Varela, University of Vigo, Spain  
Concepción Bueno, Generalitat de Catalunya, Spain  
Jordi Isern-Fontanet, Lucía Quirós, Justino Martínez, Joaquim Ballabrea-Poy, Emili García-Ladona, Institut de Ciències del Mar (CSIC), Spain  
Rosemary Lawlor, Ireland Met Office, Ireland

## Website

eurogoos.eu/high-frequency-radar-task-team &  
<https://www.hfrnode.eu/>

## Objectives:

1. To develop the European High Frequency Radar (HFR) network and assist the standardization of HFR operations, data and applications, including:
  - All applications of coastal radars (surface current, wave, target detection...)
  - Applications in integration with other technologies (including satellite, X-band, fixed platforms, gliders, numerical modeling...)
2. To contribute to the development of the European Ocean Observing System (EOOS)
3. To ensure the integration of HFR networks in the European Coastal Marine Service
4. To act as the European component in the global HFR community
5. To ensure data availability via the ROOS data portals
6. To provide recommendations (from operators to end-users) on:
  - Data structure, format and dissemination (FAIRness of datasets)
  - Quality control procedures
  - Technological solutions
7. To be a framework for:
  - sharing success stories and difficulties;
  - improving administrative procedures, regulations at European level that can be adopted in member states;
  - providing and exchanging tools (data analysis, applications...);
  - promoting scientific synergies for key questions;
  - filling gaps and looking for complementarity with other technologies or modeling products;
  - promoting joint progress through networking (e.g. creating synergies between different local consortia).

## Relevance to the EuroGOOS Strategy:

- SO1. Stimulate communities of practice
- Community building and governance of the European HF Radar network
  - Monitoring community activities
  - Harmonisation and recommendation on HFR operations and data management (OBPS)
  - Contribution and alignment to Global initiatives (OBPS, OCEANOPS, IOC-HFR Global network)
  - Support the delivery of fit for purpose high-quality data to services
  - Support joint development of new products and services
- SO2. Advocate for coordinated and integrated European ocean observing and operational oceanography
- Contribution in EOOS Operations Committee
  - Monitoring of the network and support for harmonised open data flow
  - Active contribution for improving coordination and integration within coastal observatories
- SO3. Strengthen and expand partnerships
- Identify all relevant stakeholders and develop an engagement strategy based on good practices
  - Co-produce of oceanographic services and information
  - Support the development of sustained Coastal Research Infrastructure
  - Support the global network for connection to OCEANOPS
- SO4. Promote sustainability across the value chain of operational oceanography and ocean observing
- Endorsement and support to the platform operators
  - Good practices of stakeholder commitment shared in the community

SO5. Mobilise the public on the importance of the ocean and its services

- Communication material that can be integrated in wider promotion made by EuroGOOS office or Ocean Literacy WG

### **Key achievements in the reporting period (May 2023-April 2024):**

1- Management and Community building / Sustainability

- Internal Communication newsletter: Taking the pulse of the coastal ocean – read the EuroGOOS HF Radar community newsletter, October 2023.
- Further discussions on governance during the progress meeting: reorganization of the Implementation Plan.
- Publication of the EU HFR Node website (<https://www.hfrnode.eu/>)
- Integration of new networks in the operational workflow for the distribution of Near Real Time and Delayed Mode surface current datasets: HFR-Vestlandet (Western Norwegian Coast), HFR-ICATMAR (Catalunya), HFR-Granitola (Sicily Channel).
- Allocation of WMO platform codes to the European HFR stations and integration of wmo\_platform\_code global attribute in HFR radial datasets.
- Periodic revision/update of the documentation of the European standard HFR data model (available on the OBPS repository at <https://doi.org/10.25607/10.25607/OBP-944.2>).
- Allocation of DOIs to all the connected HFR networks.
- Improvement of the operational monitoring of the European network (Contributions from EuroSea, JERICO-S3: Operational map; HOORT).
- Election of new co-chair.

2- HF Radar Node

- Setup and publication of the ERDDAP Data Server for discovery and access of Near Real Time surface current data (<https://erddap.hfrnode.eu>)
- Development and entry in service of the new Python3 toolbox for the operational workflow for the distribution of Near Real Time and Delayed Mode surface current datasets ([https://github.com/LorenzoCorgnati/EU\\_HFR\\_NODE\\_pyHFR](https://github.com/LorenzoCorgnati/EU_HFR_NODE_pyHFR)).
- Integration of the WMO codes (wmo\_platform\_code global attribute) in HFR radial datasets.

3- Research & Developments, Products & Services

- Monitoring R&D community activities (ZOTERO)
- Contribution opportunities (newsletters)
- Contribution in final outputs of EU H2020 EuroSea project

### **Bottlenecks or obstacles during the reporting period (May 2023-April 2024):**

- Working groups are not progressing as expected because all the components are extremely busy. A new mechanism for engagement and commitment is needed and will be discussed in the next in person meeting.
- Some members have difficulties in carry on the scheduled activities because of the lack of specific funding.
- Improvable connections with other key communities (satellite, modelling) for improving the impact of HF Radar data.
- Unlock HFR data potential: boost the integration of HFR data in data downstream services, engage end-users, more science-based from HFR observations, enhance the applications development, promote the development and delivery of operational added-value products.

### **Main priority areas (2024-2025):**

1- Management and Community building / Sustainability

1.1 Update ToR taking into account EuroGOOS guidelines & updated requirements

1.2 Bianual newsletters

1.3 Organize in person meeting together with another significant event (ROW Fall 2024, possibly first week of September)

1.4 In person meeting for a deeper redefinition of our workplan 2024-2026

Progressing in the implementation of the governance

Joint actions with stakeholders

Integration in Multiplatform approach

New joint R&D topics

...

- 2- HF Radar Node2.1 Enhance the implementation & use of the NODE tools: Annual monitoring
- 2.2 Contribute in the Global Data Implementation Strategy to the HF Radar network - particularly looking at ERDDAP data services and the m2m exchange of metadata with OceanOPS
- 2.3 Organize dedicated online training session for HOORT (HFR Online Outage Reporting Tool)
- 3- Research & Developments, Products & Services
- 3.1 Specific online meetings for Technical Groups to be launched (WAVE, DFG, Coastal Upw., ...)

### **Other major activities (2024-2025):**

- 1- Management and Community building / Sustainability
  - Networking activity for the integration of new HFR networks in the operational dataflow.
  - Following opportunities of collaboration with existing or future Marine RIs.
  - Contribution to a paper describing a new maturity model for ocean practices to be applied within OBPS (partially funded by JERICO-S3).
- 2- HF Radar Node
  - Porting of IT architecture of the NRT workflow on hyperconvergent computing system for improving performances.
  - Development of the Python3 package for HFR current data management and analysis.
- 3- Research & Developments, Products & Services
  - Design and development of advanced Quality Control procedures based on Artificial Intelligence and non velocity-based parameters.
  - Development of added-value products (gap-filling, physical components of the surface field, other data from HF radars)
  - Launch of specific online meetings for Technical Groups (WAVE, DFG, Coastal Upwelling, ...).

### **Meetings during the reporting period (May 2023-April 2024):**

HF RADAR TASK TEAM PROGRESS MEETING - Online, 18 January 2024

### **Next planned meetings (2024-2025):**

HF RADAR TASK TEAM PROGRESS MEETING at Radiowave Oceanography Workshop 2024 (ROW2024) - University of Plymouth, 3-5 September 2024

### **Links and synergies with other EuroGOOS ROOS/Working Groups/Task Teams:**

- Collaboration with DATAMEQ on FAIRness and improvement of the HFR data model.
- Centralized support from the HFR Node for Regional HFR data products to be distributed in Copernicus Marine In Situ TAC.

### **Links and synergies with non-EuroGOOS initiatives:**

- Contribution in EOOS OC
- Contribution in JERICO infrastructure strategy
- Contribution in Copernicus Marine In Situ TAC Technical WG
- Contribution in MIC WG (Joint Marine In Situ Coordination Group)
- Link with Global HFR network, OCEANOPS, ROW, ROWG



# Status Report for the EuroGOOS General Assembly 2024

Reporting period: May 2023-April 2024

## EuroGOOS body:

Task Team

## Full title:

Tide Gauge Task Team

## Co-Chair 1 (Name and affiliation)

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## Co-Chair 2 (Name and affiliation)

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## Co-Chair 3 (Name and affiliation)

Claire Fraboul, Systeme Hydrographique et Oceanographique de la Marine

## Email

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## Current members, affiliation and country

Anna Gyldenfeldt, Bundesamt für Seeschifffahrt und Hydrographie (BSH), Germany

Antonio Novellino, ETT Solutions, Italy

Arianna Orasi, Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Italy

Oda R. Ravndal, Norwegian Mapping Authority, Norway

Athanasia Papapostolou, Hellenic Centre for Marine Research (HCMR), Greece

Begona Perez Gomez, Puertos del Estado, Spain

Deirdre Fitzhenry, Marine Institute, Ireland

Luisa Lamas, Instituto Hidrographico, Portugal

Luis Melo, Instituto Hidrographico, Portugal

Endri Qershija, State Authority for Geospatial Information (ASIG), Albania

Fabio Raicich, Consiglio Nazionale delle Ricerche (CNR) Istituto di scienze Marine, Italy

Fernando Manzano, Puertos del Estado, Spain

Francisco Hernandez, Vlaams Instituut voor de Zee (VLIZ), Belgium

Daniele Galliano, Joint Research Centre (JRC), Italy

Georgios Sylaios, Democritus University of Thrace, Greece

Guy Westbrook, Marine Institute, Ireland

Guy Woppelmann, Univ La Rochelle, France

Ivan Haigh, Univ Southampton, UK

Ivica Vilibic, Ruđer Bošković Institute, Croatia

Patrick Gorringer, Swedish Meteorological and Hydrological Institute (SMHI), Sweden

Paul Swinburne, Environment Agency (EA), UK

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Per Knudsen, Danmarks Tekniske Universitet (DTU), Denmark

Sara Morucci, Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Italy

Stephane Tarot, Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER), France

Thomas Hammarklint, Swedish Maritime Administration, Sweden

Vibeke Huess, Danish Meteorological Institute (DMI), Denmark



## Website

<https://eurogoos.eu/tide-gauge-task-team/>

## Objectives:

The EuroGOOS Tide Gauge Task Team will address the following objectives:

1. As a European Tide Gauge Network assist in the standardization of tide gauge operations, data processing and management and data applications of a multi-purpose network, based on GLOSS and ICG/NEAMTWS and other user requirements, and fulfilling the following basic needs:
  - Sea level trends, variability and climate change
  - Sea level related hazards warning systems (storm surge, tsunamis)
  - Validation of numerical models and forecasts
  - Comparison with satellite altimetry and other sources of geodetic data
  - Determination of coastal Mean Dynamic Topography to contribute to the unification of different height systems
  - Fulfill the requirements of operational users.
2. Contribute to the development of the European Ocean Observing System (EOOS) with the identification of duplication and/or gaps on the geographical coverage and on the existing sea level data portals in Europe.
3. Work with other EuroGOOS entities (ROOS, task teams and working groups) towards internal integration e.g. sharing best practices, developing common standards and processes, facilitating product development etc.
4. Promote the integration of tide gauge networks in ongoing and future European initiatives and identify relevant products required by sea level users.
5. Act as a link between national agencies of tide gauge operators and data providers, the ROOSs data portals and as the European component in GLOSS.
6. Promote research and tests of new sea level monitoring technologies.
7. Promote the recovery of historical data and related studies relevant for Europe including North African countries.
8. Acknowledge existing data portals and ensure data availability according to the different applications. Assure delivery of tide gauge data to the ROOS data portals.
9. Promote the co-localization and use of additional instrumentation relevant for sea level applications such as ocean bottom pressure sensors, land movement monitoring stations (GNSS), atmospheric parameters, or tsunami sensors.
10. Ensure the implementation of new requirements on sea level quality control and data processing.
11. Provide recommendations (from operators to end-users) on:
  - Data structure, format and dissemination (interoperability of datasets)
  - Quality control procedures
  - Validation procedures
  - Technological solutions
  - Complementary instrumentation (through interaction with other groups, e.g. GNSS).
12. Collaborate with the satellite altimetry community for a better understanding of altimeter and tide gauge data calibration.
13. Be a framework for:
  - collation of a single database describing the in-situ monitoring equipment and its status across Europe, ensuring conformance with an internationally agreed data policy and adoption of a common citation.
  - sharing success stories and difficulties including analysis of the funding strategies and importance placed on this work in the different countries
  - providing and exchanging open source tools (data analysis, applications...)
  - promoting the installation and/or inclusion of further stations from Northern Africa
  - promoting scientific synergies for key questions

## Relevance to the EuroGOOS Strategy:

The EuroGOOS Tide Gauge Task Team will address the following objectives:

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  - Sea level related hazards warning systems (storm surge, tsunamis)
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  - Comparison with satellite altimetry and other sources of geodetic data
  - Determination of coastal Mean Dynamic Topography to contribute to the unification of different height systems
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  4. Promote the integration of tide gauge networks in ongoing and future European initiatives and identify relevant products required by sea level users.
  5. Act as a link between national agencies of tide gauge operators and data providers, the ROOSs data portals and as the European component in GLOSS.
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### **Key achievements in the reporting period (May 2023-April 2024):**

The TGTT led the second EuroSea Tide Gauges Workshop, which was held in hybrid format, hosted at Puertos del Estado, Madrid during May 2023. This workshop focused upon data processing and quality control and included sessions on the status and future possibilities of GNSS-IR technique, a global overview of networks, datasets and data portals, automatic quality control and data processing (real time and delayed mode) and case studies based on tide gauge data. There were 4 keynote speakers and 21 delegate presentations and a discussion session to agree recommendations which were taken forward to the TGTT Annual Meeting in November 2023.

The TGTT led an initial IAPSO Tidal Analysis Best Practice Study Group meeting in Berlin at IUGG in July 2023.

The Marine Institute of Ireland secured ongoing funding to support the TGTT's Tide Gauge Metadata Inventory and the TGTT UK members at PSM SL issued a GLOSS data flow questionnaire to TG operators to assist with population of the portal.

The Copernicus Sea Level REProcessed product was updated in November 2023 with numerous new

stations incorporated into the product. An associated paper was published

<https://egusphere.copernicus.org/preprints/2023/egusphere-2023-733/>.

A hybrid Task Team Annual Meeting was held in Liverpool, UK in November 2023, to review progress in 2023 towards current actions and to agree further actions for the year ahead.

Discussion have been held to establish a GNSS-IR Special Interest Group globally to establish best practices for this developing area of sea level science.

The TGTT Annual Meeting was timed to coincide with a TGTT-led IAPSO Tidal Analysis Best Practice Study Group in Liverpool in November 2023, which aimed to produced recommendations for users of tidal analysis software

At the Puertos del Estado Open Day in February 2024, the Spanish TGTT members led a hybrid discussion amongst TG operators regarding the merits of various TG technologies.

### **Bottlenecks or obstacles during the reporting period (May 2023-April 2024):**

None

### **Main priority areas (2024-2025):**

Establish a Tide Gauge Metadata Inventory/Data Portal working group with membership from the TGTT to look at metadata provisions and data portal comparisons

Implement the global GNSS-IR Special Interest Group to establish Best Practices in GNSS-IR

Improve integration of ROOS and TGTT, specifically identifying members from IBI-ROOS and ArcticROOS

Deliver a recommendations report from the IAPSO Tidal Analysis Best Practice Study Group

Following on from the recommendations of the EuroSea 2nd workshop, TGTT identify funding and plan for a data quality control workshop.

### **Other major activities (2024-2025):**

N/A

### **Meetings during the reporting period (May 2023-April 2024):**

2nd EuroSea TG Workshop May 2023

TGTT Annual Meeting Nov 2023

IAPSO Tidal Analysis Best Practices Study Group meetings Berlin July 2023 and Liverpool Nov 2023

### **Next planned meetings (2024-2025):**

TGTT meeting Liverpool/Hybrid, July 2024

### **Links and synergies with other EuroGOOS ROOS/Working Groups/Task Teams:**

The TGTT has representatives in the following ROOS:

NOOS: Anna von Gyldenfeldt and Martin Verlaan

MONGOOS: Begoña Pérez Gómez

BOOS: Thomas Hammarlink

### **Links and synergies with non-EuroGOOS initiatives:**

TGTT members are working to update the CMEMS Sea Level Reprocessed product to complement the near real time data product, using Copernicus funding.

TGTT members are also working on the IAPSO initiative to evaluate tidal analysis and prediction methods and also have membership/links to the Global Sea Level Observing System (GLOSS) Group of Experts, which have been used to discuss a co-ordinated approach to data standards and dissemination.

A joint EuroGOOS/GLOSS GNSS-IR Special Interest Group is under discussion