OCEAN AND ENVIRONMENTAL TECHNOLOGIES AND SERVICES

Part 1 : Ocean Focus

Wednesday 20 October
9:00 AM to 01:15 PM

European Investment Bank

EUSPA
European Union Agency for the Space Programme

Copernicus Marine Service

EU & Global Ocean Observing System in-situ monitoring infrastructure

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OceanOPS

unesco
Intergovernmental Oceanographic Commission

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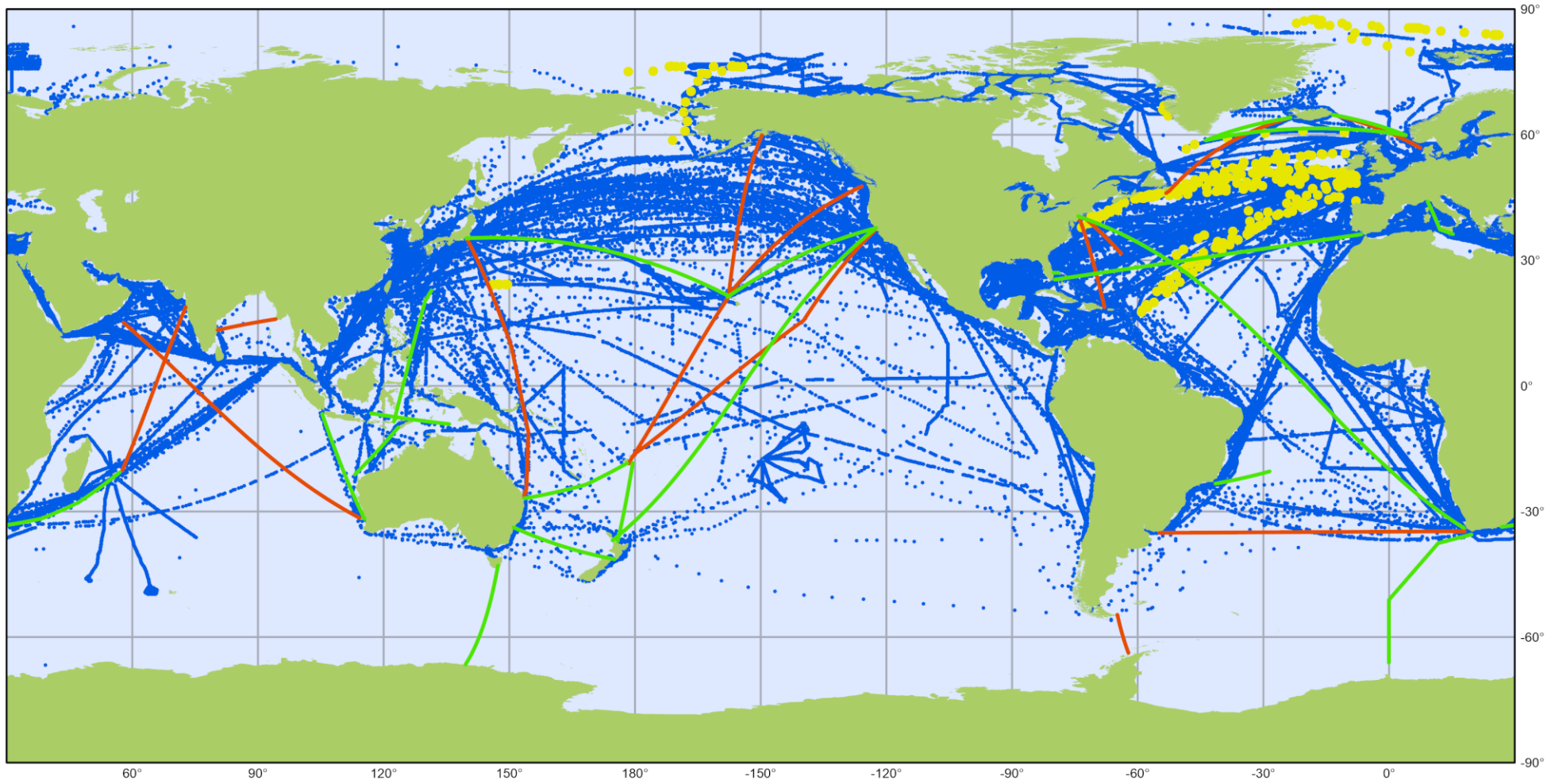
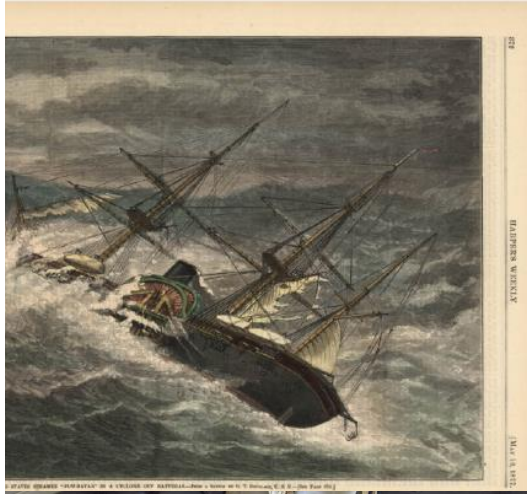




Ship Observations Team

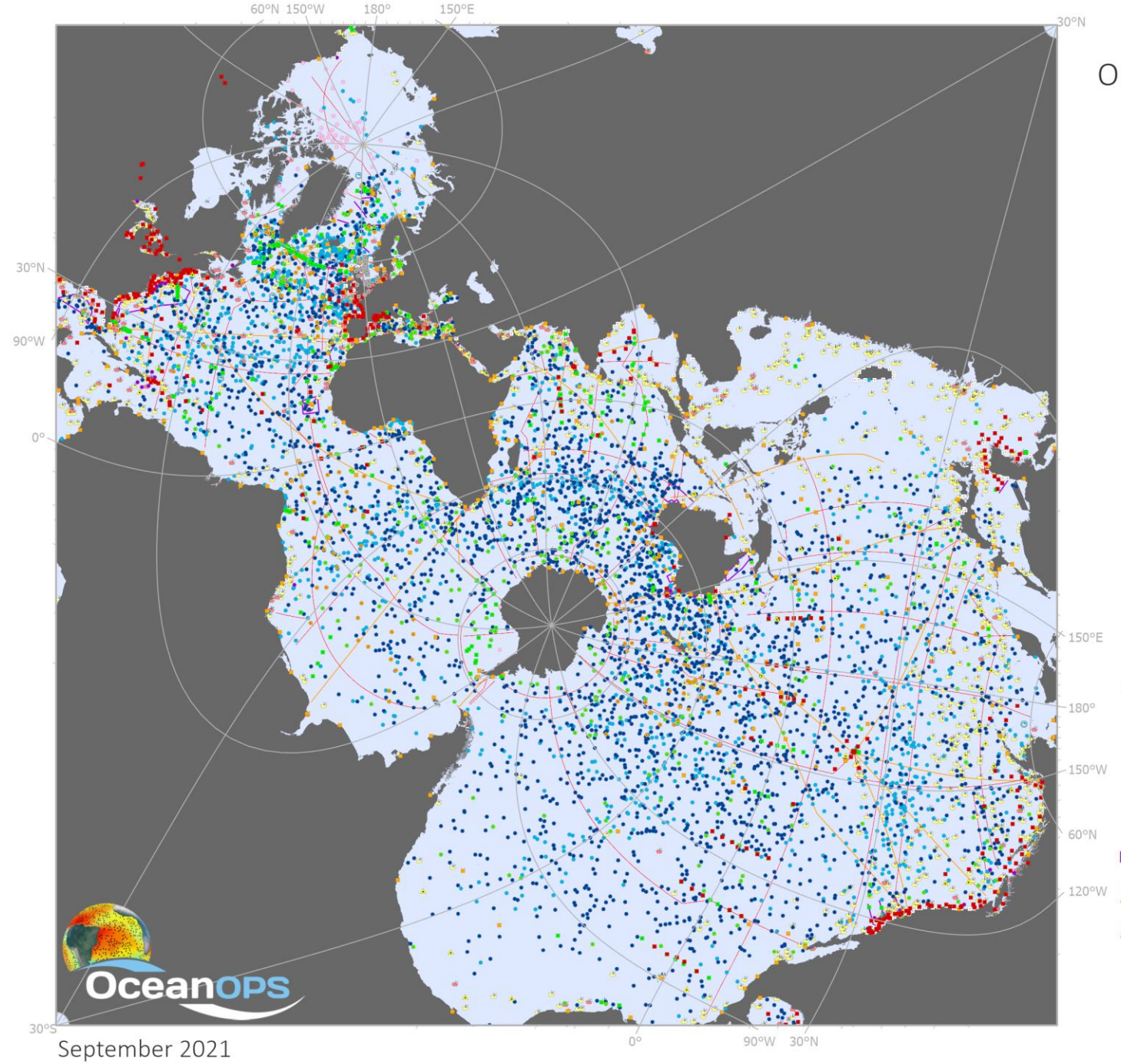
Networks Status

ASAP launches, VOS observations and Covid-19 impact on XBT lines

September 2021

- VOS monthly observations (276774)
- ASAP monthly launches (368)
- XBT line sampled since June 2020 (19)
- XBT line not sampled since June 2020 (14)

Generated by www.ocean-ops.org, 2021-10-03
Projection: Plate Carree (-150.0000)



One ocean observing system

In situ operational platforms monitored by OceanOPS

Mobile systems

- Core floats - Argo (3877)
- Deep floats - Argo (190)
- Biogeochemistry floats - Argo (428)
- Underwater gliders - OceanGliders (46)
- Drifting buoys - DBCP (1523)
- Polar buoys - DBCP (61)
- Animal borne sensors (53)

Fixed systems

- Offshore platforms - DBCP (96)
- Moored buoys - DBCP (377)
- Tsunameters - DBCP (35)
- Ocean reference stations - OceanSITES (380)
- Sea level gauges - GLOSS
- High Frequency radars

Ship based measurements

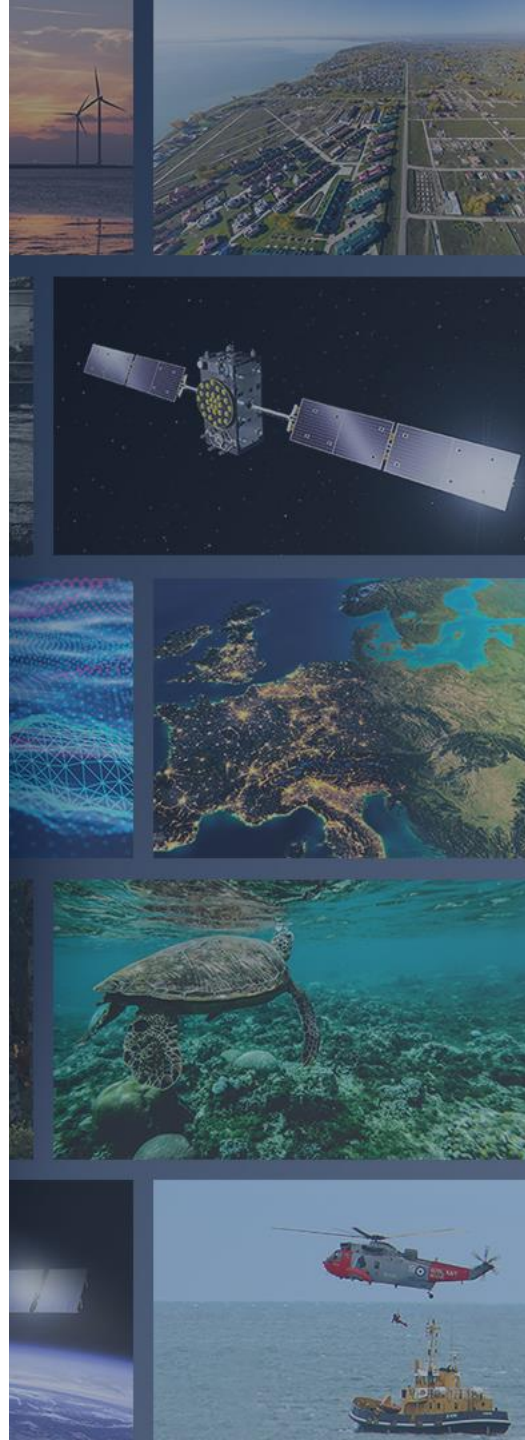
- Automated weather stations - SOT/VOS (380)
- Manned weather stations - SOT/VOS (1308)
- Radiosondes - SOT/ASAP (16)

Reference lines and areas

- Sampled sites - OceanGliders (38)
- eXpendable BathyThermographs - SOT/SOOP (32)
- Repeat hydrography - GO-SHIP (63)

September 2021

Generated by www.ocean-ops.org, 2021-10-06
Projection: WGS 1984 Spilhaus Ocean Map in Square



The GOOS …

- What it delivers to society:

- How it is implemented, organized, funded

- Challenges & gaps:
  - International cooperation: **expand**
  - Decreasing or flat national budgets: **augment**
  - Fragmentation: **integrate**
  - Transition from research to sustained funding: **operationalize**
  - Multi disciplinary turn (from metocean to biogeochemistry): **upgrade**
  - Geographical bias (North/South) and high seas responsibility: **balance**
  - National sovereignties (EEZ): **facilitate**
  - Boost the demand to boost industrial market (platform, sensors manufacturers)

- Not yet considered as a vital **infrastructure**, cornerstone of essential societal applications today and certainly even more for future generations.

Our three focus areas reflect major societal needs. They correspond to our mandate to contribute to the United Nations Framework Convention on Climate Change (UNFCCC), the UN Convention on Biodiversity and Intergovernmental Oceanographic Commission (IOC) and World Meteorological Organization (WMO) mandates to provide operational services.

Climate

Climate change is ocean change. Accurate modelling, mitigation and adaptation require long-term, in-depth observations.

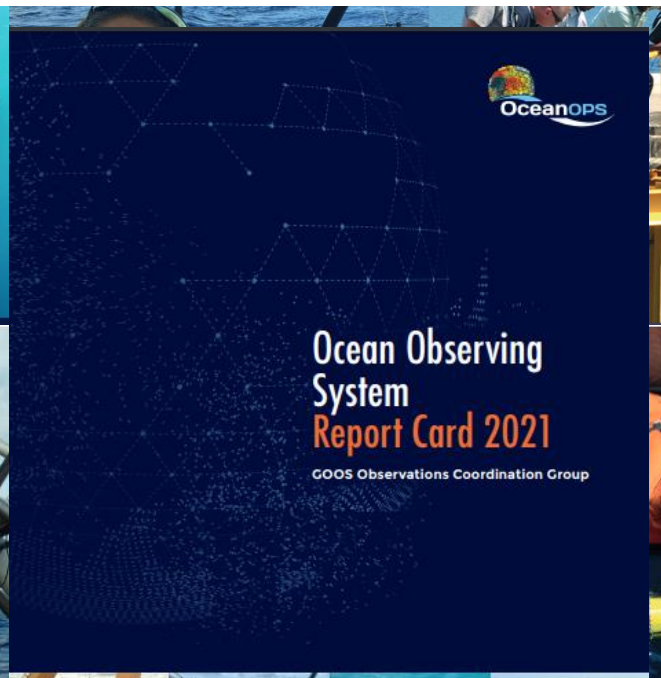
Forecasts and warnings

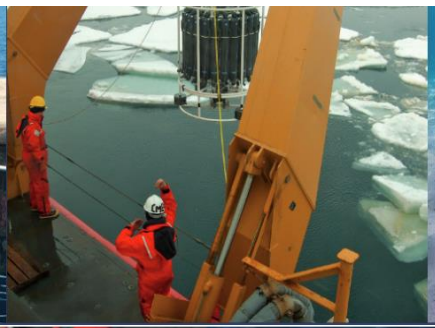
Effective data flow enables businesses and individuals to make more informed and better decisions.

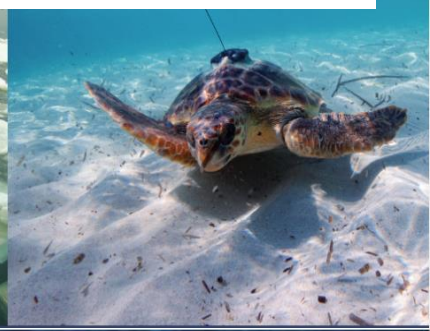
Ocean health

Scientific evidence shows that marine ecosystem health is impacted by and can impact human activities.

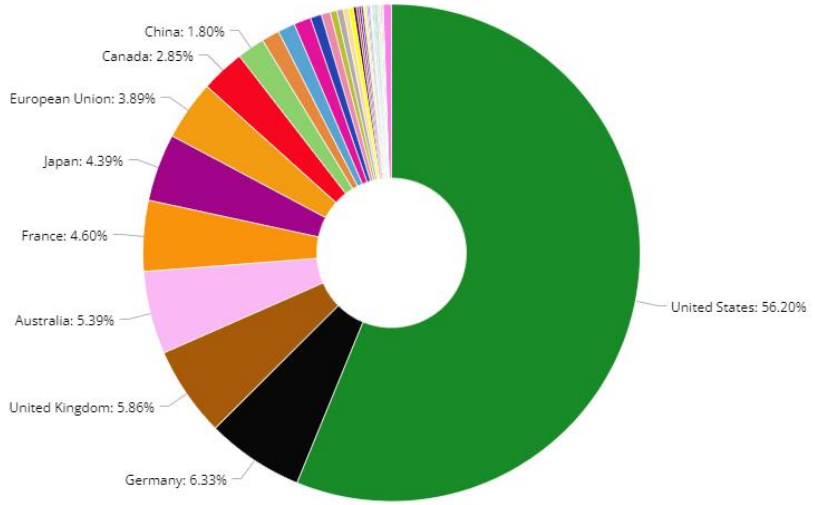
https://www.ocean-ops.org/reportcard/







EU partners & GOOS



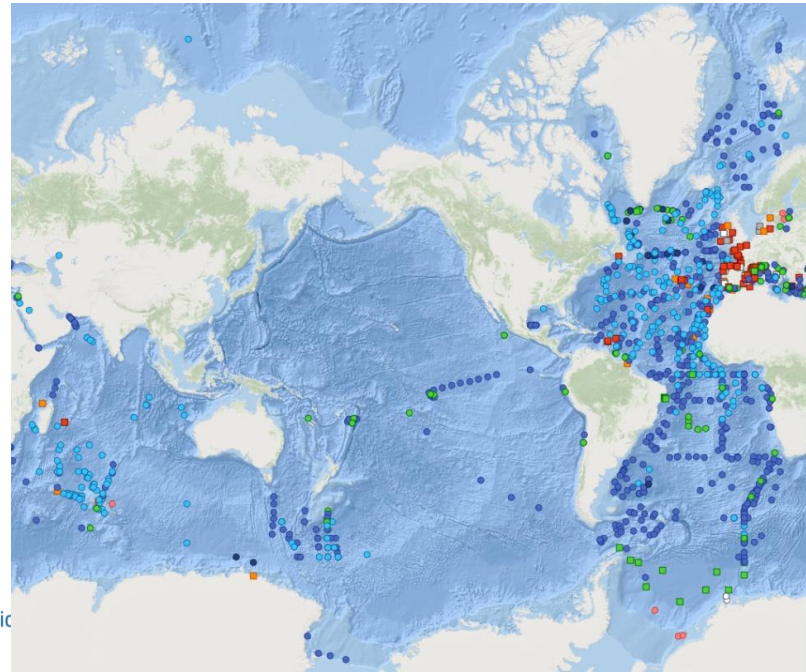
EU Operational Platforms as of October 2021

Status/Gaps

- European partners (at large) **operate 25%** of the system, and strictly speaking 19% with EU Members.
- Within the consolidated EU contribution, **2 Members sustain 60% (France/Germany)** and many Members are not contributing at all.
- (North) Atlantic focus leading to oversampling and poor contribution in high seas
- Market is too small to grow EU manufacturers and enable R&D
- Main telemetry system used for data transfer is not operated by EU

Recommendations

- Sustain, develop, **upgrade** and **control** the infrastructure, i.e **X2 !**
- Raise capabilities for **new EU partners** (run pilots – see SOCIB example in Med. Sea)
- **Boost the industrial market** (instruments, sensors)
- Unlock political barreers (EEZ access, 1/3 of ocean)
- Cooperate with private (e.g. **shipping** industry)
- Implement globally (2/3 of ocean is high seas)



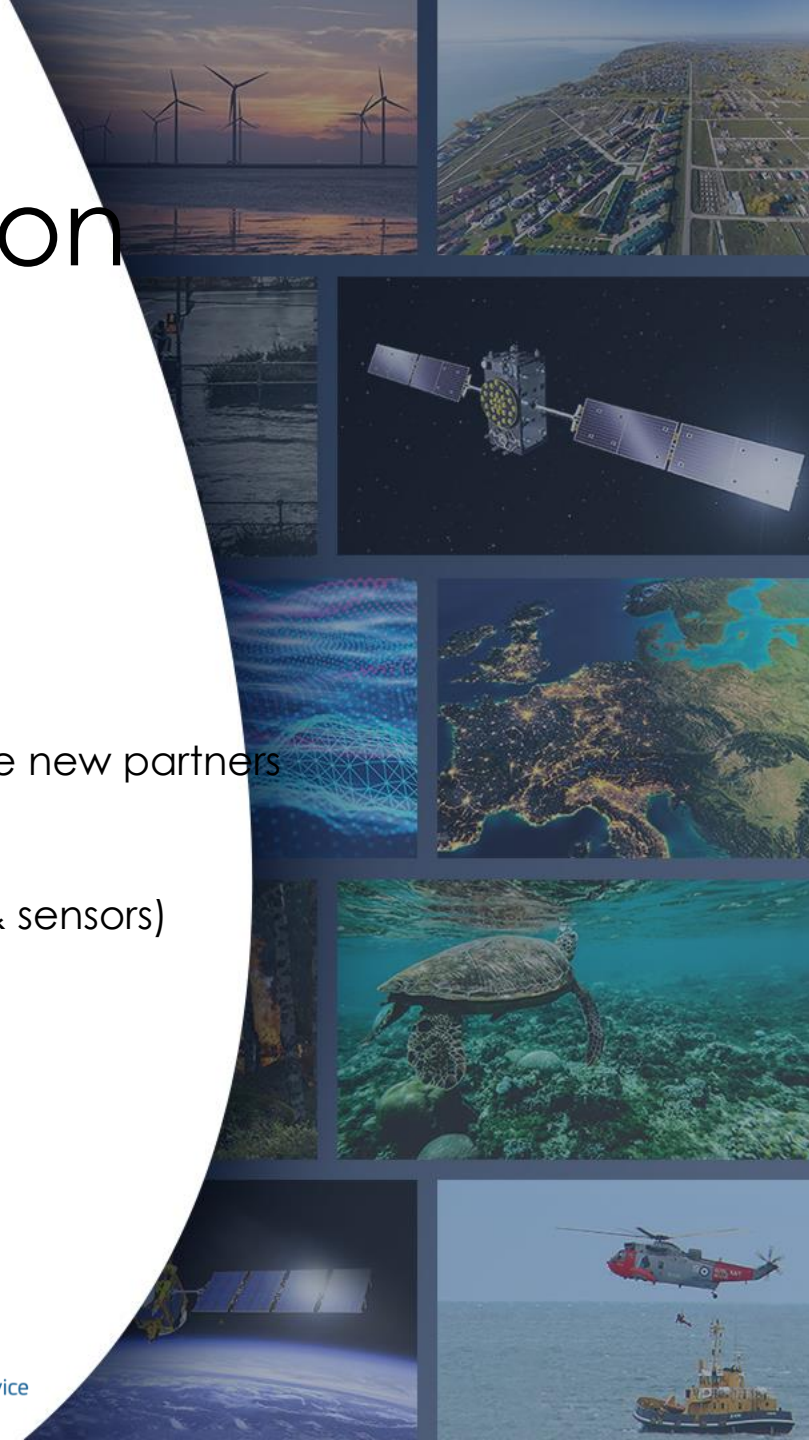
Vision: a stronger EU contribution

Benefits

- Global, National, Regional. Short/long run
- Secure and improve services (Copernicus)
- Sustain, and increase the industrial capability and innovation
- Raise operational hubs of the infrastructure connected to the global ocean
- Lead international effort

Recommendations

- Level of Investment x2 (50/50 Members/EU ?)
- Develop regional pilots to engage new partners with tangible outputs
- fund instruments … (data buoys & sensors)



as society faces the impacts of climate change, more ocean data will be needed to better adapt and forecast extreme weather and climate events such as drought, flooding, wildfires, heatwaves and tropical cyclones

"*The weather forecasting systems will run off the rails if they don't have the surface pressure information over the ocean to constrain them*,"

Lars Peter Riishojgaard, Director of the Earth System Branch at the World Meteorological Organization (WMO).

'*If you like your 7 day weather forecast, thank an oceanographer.'*

Craig McLean, Acting Chief Scientist NOAA, House Committee on Science, Space, and Technology Subcommittee on Environment, June, 2021.

« Observing is forecasting,

… forecasting is governing … »