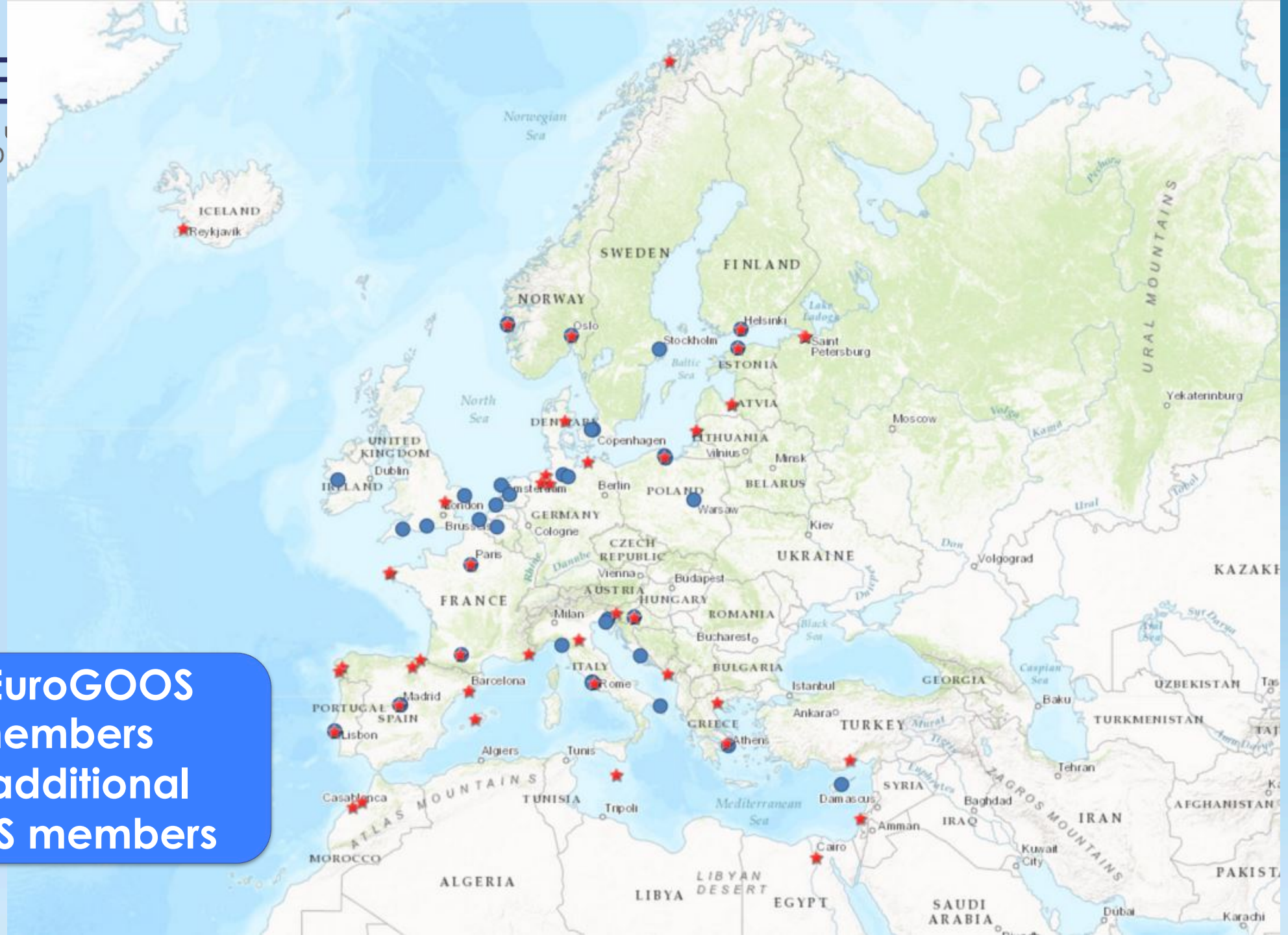
EuroGOOS
European Global Ocean Observing System

EuroGOOS overview
Erik Buch
EuroGOOS chair



41 EuroGOOS members
48 additional ROOS members

EuroGOOS
European Global Ocean Observing System

EuroGOOS Structure

BOOS (Baltic)

ARCTIC ROOS

MONGOOS (Mediterranean)

NOOS (Northwest shelf)

IBI-ROOS (Iberia-Biscay-Ireland)

Working Groups

Data-MEQ **Technology Planning** **Products** **Science Advisory** **Coastal Modelling**

Task teams

Tide Gauge **Ferrybox** **Glider** **HF radar** **Euro-ARGO** **Fixed Platforms** **Animal-Borne TT**

EuroGOOS
European Global Ocean Observing System

EuroGOOS Strategy 2014-2020

Strategic priorities

Promotion

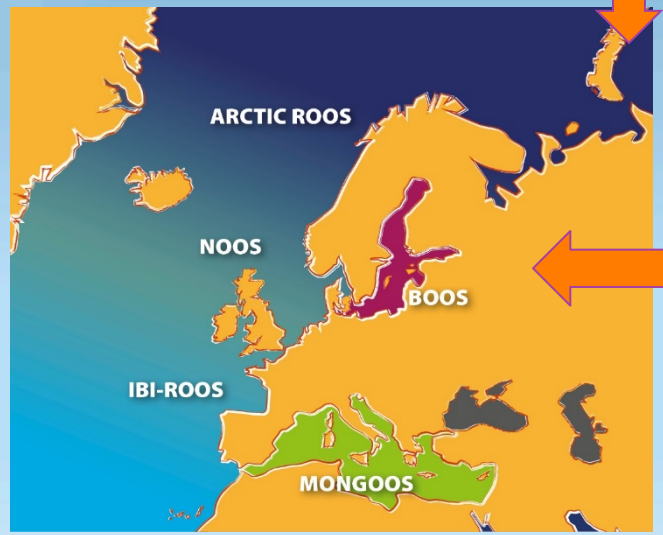
Co-Production

Cooperation

Sustained Observations

Implementation plan

Annual Workplans



Task teams

Working groups

WG/TT/ROOS meetings

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2016-2017 Principles

- Establish EuroGOOS as the "go to place" for operational Oceanography by being a trusted source of relevant and timely information to marine and maritime stakeholders in all European sea basins.
- Develop a framework for sustained end-to-end European Ocean Observing System (EOOS)
- Expand EuroGOOS membership to ensure that all active participants in European operational oceanography are represented by the organisation
- Demonstrate European leadership at global level by engaging fully with the Global Ocean Observing System (GOOS), Essential Ocean Variable panels, GOOS Regional Alliances Forum and with the Group on Earth Observations in the development of the Group on Earth Observations System of Systems (GEOSS)
- Provide an attractive Communications platform for the policy community to expand understanding of our community's activities and its relationship to key policy drivers

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Priority 1: Marine data

Marine data underpin the operational oceanographic system in Europe today with observations collected for real-time monitoring, assimilation into forecast models and archived long-term for climate and assessment purposes. EuroGOOS will focus on the following elements:

- Within the EOOS development map the data availability in European regions:
- Real-time transmission: develop initiatives that increase the real-time delivery of data from various platforms deployed in European seas.
- Unlocking data sets: highlight inconsistencies in geographic and temporal coverage of key data sets and assess how data currently unavailable can be made available to the wider user community.
- Enhancing and increasing Biogeochemical observations: Evolve observing system to have a higher proportion of biogeochemical measurements as part of the overall number of observations
- Provide open access to data: using existing portals and examining data policies in the regional sea basins, ensure data are openly shared with the user community with minimal bureacracy and complications
- Establish an interface with users of data (both end and intermediate users),

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Priority 2: Sustained Observing System

Building an ocean observing system that can be sustained over decades will enable key societal questions to be addressed including ocean health, supply of ocean goods and services, real time operational services, and climate assessments. A framework is required to enable funders, implementers and users to interact ensuring longer term sustainability of the ocean observing system, fully integrated into GOOS and GEOSS strategies for global coverage.

- **EOOS: Develop the framework for a European Ocean Observing System (EOOS) , set up and facilitate a steering group for EOOS, draft a roadmap, engage stakeholders for feedback, and develop an EOOS communication and stakeholder engagement strategy (i.e. ensure relevant, up-to-date information and interface for the EOOS implementers, funders, and users.**
- **Membership: Encourage ROOS members to become full members of Scan the landscape for members contributing to filling the identified data and observing system gaps.**
- **Regional Systems: promote our ROOSes and ensure good succession of steering group members and chairs of each ROOS. Ensure consistency of strategies between EuroGOOS and ROOSes.**
- **Task Teams: set up a coordination mechanism to ensure a full alignment of the Task Team activities with the EuroGOOS strategies for EOOS and ROOSes.**

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Priority 3: Products

The operational oceanography community develops products for a variety of users for ecosystem assessments, fisheries studies, real-time decision support to marine operations, emergency scenarios, e.g. search and rescue, oil and pollution spills and for tourism and leisure activities in our seas. EuroGOOS has a role in product development through its 40 members and by building collaborations with CMEMS, EMODnet, ICES, GEO, GOOS and other users.

- Fit for purpose: Working with key stakeholders, including industry partners reinvigorate the EuroGOOS Products working group to ensure a broad based membership and the production of fit for purpose products and services for end-users
- MSFD tailored products: One of the major drivers for monitoring in European regional seas is the Marine Strategy Framework Directive. EuroGOOS will ensure that tailored products are delivered to support this directive by engaging key implementers of the Directive over the coming 2 years.
- User uptake: EuroGOOS will work to enhance the update of data and products from the Copernicus Marine Environment Monitoring Service and EMODnet primarily by communicating with both users and producers to encourage the use of such products.

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Priority 4: Communication Interfaces

EuroGOOS to produce targetted material in both printed and on-line format. Use social media tools such as Twitter and through the EuroGOOS website. The EuroGOOS communications strategy will underpin all the EuroGOOS strategic activities.

- Bridging the science/policy divide: produce policy briefs and other relevant information, if needed, in liaison with European Marine Board and engage with European policy and decision-makers.
- Work with member organizations to inform Member States' decision-makers of the EuroGOOS priorities (e.g. via national workshops or targeted communications).
- Promote member products: Using social media and websites, ensure frequent updates.
- Assist member activities with communication plans: assisting members communicate issues related to the ocean observing system, ocean forecasting and operational oceanographic products e.g. EuroARGO, ROOS activities, Working Group outputs etc.
- Wider Operational Oceanographic community: EuroGOOS will demonstrate European Leadership at global level by engaging fully with the Global Ocean Observing System (GOOS), Essential Ocean Variable panels, GOOS Regional Alliance and the Group on Earth Observations System of Systems (GEOSS)


EuroGOOS
COMMUNICATION STRATEGY
OBJECTIVES
Demonstrate value to members
Improve interfaces with Policy and Industry
Support EuroGOOS Strategy
Maintain and expand stakeholder network
Scan the landscape for trends, gaps, priorities
Pave the way to EOOS
TARGETS
Ocean Obs Community (phys., chem., bio…)
Policy (EU, regional, national)
Industry
Young researchers & students
Partner networks and organizations (both EU and third countries)
Society
TOOLS
Websites (EuroGOOS, ROOS)
News briefs (Members, externals)
Targeted mailings
Profiling materials (brochures, fact sheets, videos, etc)
Press releases
Publications in scientific journals
Events for targeted audience (e.g. EC, EP, Regions)
Social media
Presentations
Exhibitions
IMPACT
Communication strategies built in the activities
Impact monitoring protocol
Lessons learnt
Targeted outputs
Uptake records
Feedback analysis
Dina Eparkhina, EuroGOOS, May 2015, updated Sept 2015

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Priority 5 Cross-cutting activities

involve more than one of the five key areas identified in the 2014-2020 strategy i.e. Priorities , Promotion, Cooperation, Co-production and sustained observations

- EC Projects and tenders: EuroGOOS is involved in various projects e.g. AtlantOS, JERICO-NEXT, ENVRI+, COLUMBUS and contracts including Pro-Atlantic, Baltic Checkpoint, CMEMS INSTAC, EMODNet Physics. Delivering high-quality outputs from these projects in a timely manner is critical to EuroGOOS over the coming years.
- Task teams: It is critical that EuroGOOS retains the expertise to plan and prioritise the various platforms that make up the observing system. Similarly, EuroGOOS must ensure that the terms of reference are relevant and evolve as priorities change.
- Working Groups: Appropriate expertise is retained through these working groups with adapative terms of reference.
- Advisory role: It is seen as a strategic activity and should be continued in the coming years. Communication: EuroGOOS communication underpins all the activities, via promotion, enhancing cooperation and co-production, and aiding setting strategic priorities for an integrated and sustained European Ocean Observing System, set in a global context.

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Project participation

- AtlantOS
- Columbus
- JERICO Next
- ENVRI+
- EMODnet Data Ingestion
- EMODnet Checkpoints
  - Baltic
  - Atlantic
- Copernicus INSTAC
- Copernicus - MERCATOR
- EEA (EUMETNET/EuroGOOS/ICOS)

- INTAROS
- SeaDataCloud
- EMODnet III
- MEDOS

EOOS

European Ocean Observation System

MSFD

MSP

CFP

Operational users

Products/services for Blue Growth sectors

Collect once

Use many times

assessments

Essential Ocean Variables and readiness level

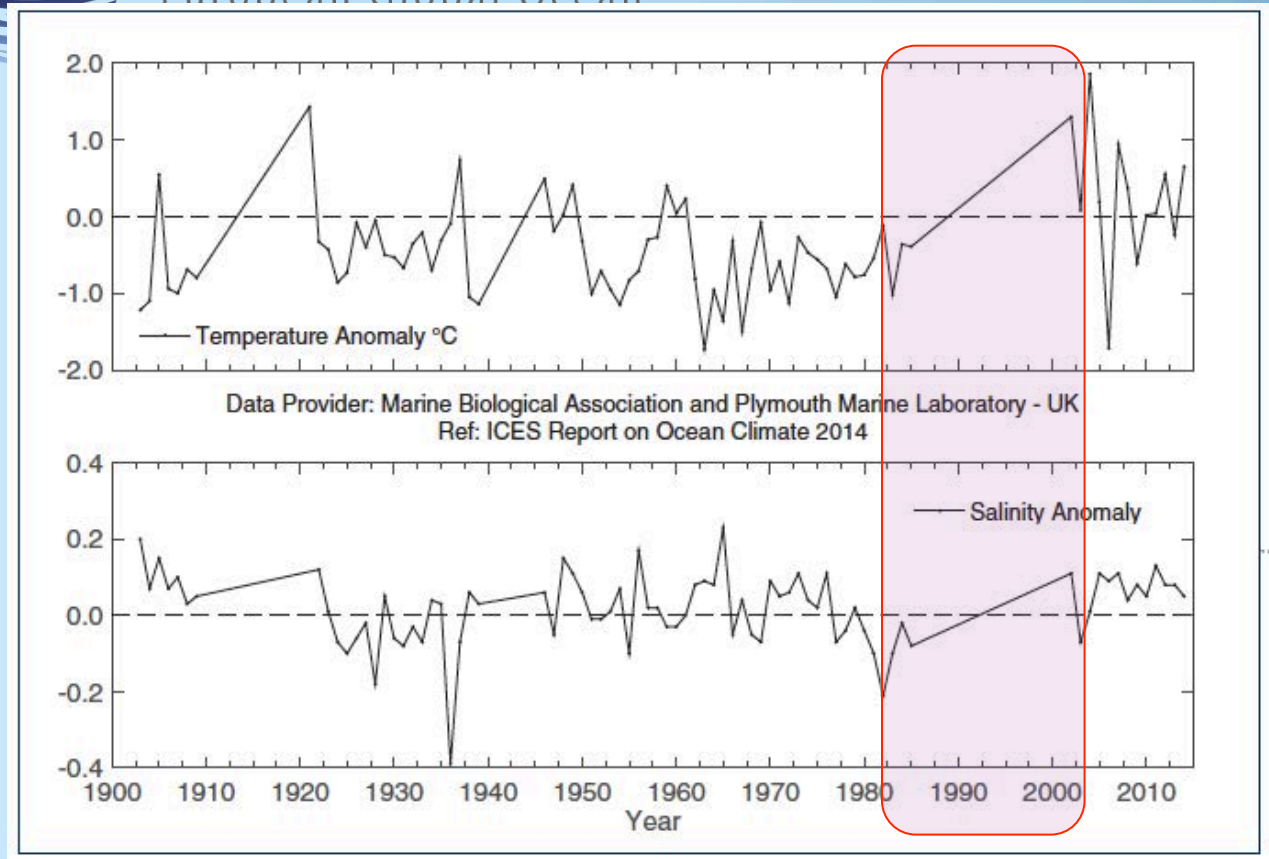
CONCEPT **PILOT** **MATURE**

Physics
- Sea State
- Ocean surface vector stress
- Sea Ice
- Sea level
- SST
- Subsurface temperature
- Surface currents
- Subsurface currents
- SSS
- Subsurface salinity

Biogeochemistry
- Oxygen
- Inorganic macro nutrients
- Carbonate system
- Transient tracers
- Suspended particulates
- Nitrous oxide
- Carbon isotope (^{13}C)
- Dissolved organic carbon

Biology and Ecosystems
- Phytoplankton biomass and productivity
- HAB incidence
- Zooplankton diversity
- Fish abundance and distribution
- Apex predator abundance and distribution
- Live coral cover
- Seagrass cover
- Mangrove cover
- Macroalgal canopy

What is missing ?



Spatial gaps

- horizontal – SE European seas;
- vertical – deep sea is under-sampled;

Temporal gaps

- few complete time series;

Parameter gaps

- biogeochemical; sensors are now available;

Long term commitments

- more than 70% based on short term research funding;

Integrated monitoring strategy at

EuroGOOS
European Global Ocean Observing System

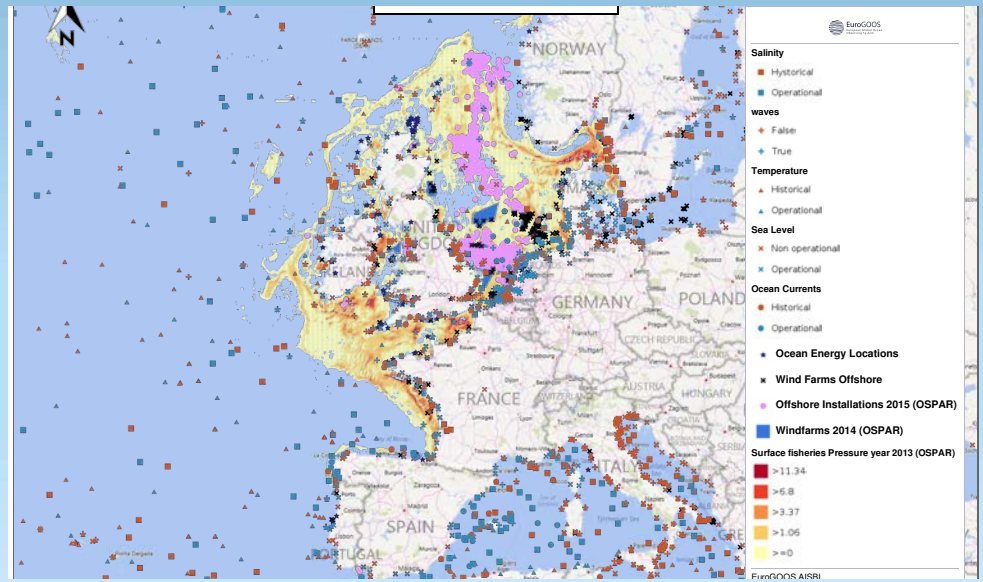
Closing gaps

- EuroGOOS have had initial look at gaps (high level)
  - Biological and chemical variables make up small part of observing network (ca. 10%)
  - Not sure how well shelf processes are monitored
  - Very few current measurements
- AtlantOS is looking at requirements and gaps

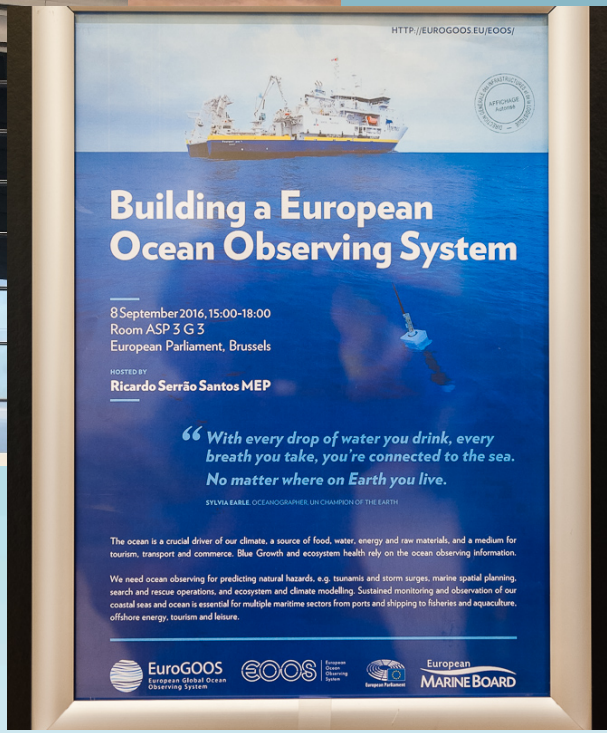
(in progress IOC and EuroGOOS)

- Processes inshore of boundary currents
  - Includes ocean/human health e.g. HAB, pathogens, water quality
  - Fisheries recruitment, migration routes
  - Fluxes on and off shelf: some activity in AtlantOS WP4

- Design of OSE/OSSE experiments to include multiple platforms
- Mapping human activities onto model forecast skill



‘Building a European Ocean Observing System’ EOOS Conference at the European Parliament (8 September)



Europe requires an integrated ocean observing system

http://eurogoos.eu/eoos/

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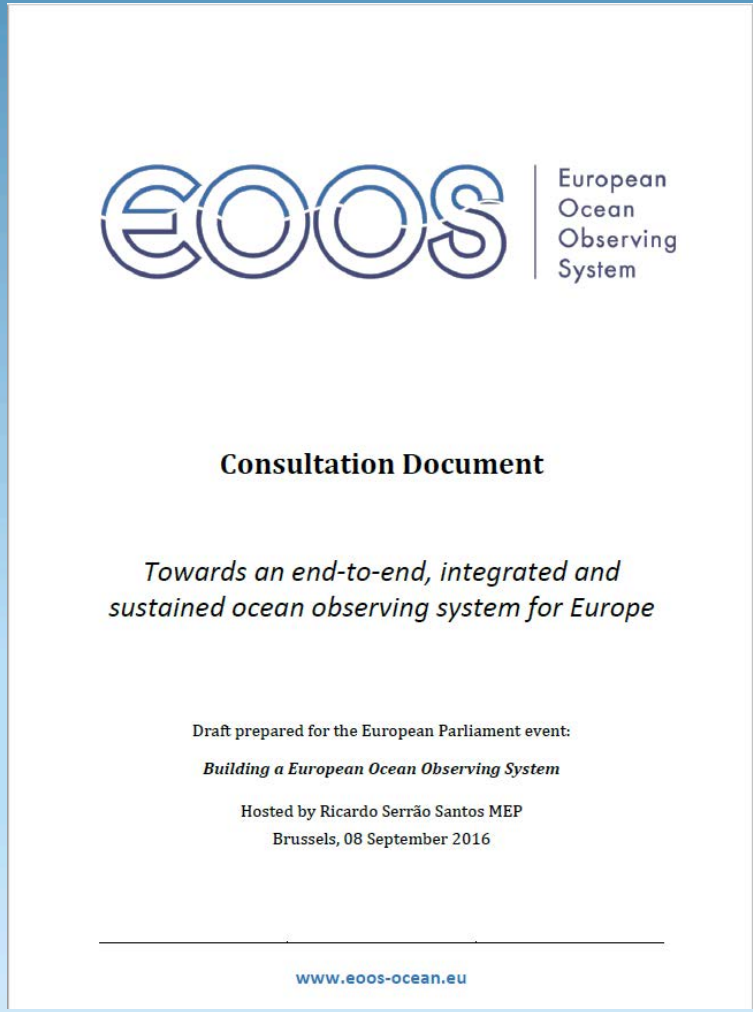
Actions and next Steps

- **EuroGOOS** and **European Marine Board** have set up a **Steering Group** for EOOS (comprising EuroGOOS, EMB, JPI Oceans, EC and Member State Experts)
- Develop an EOOS **Consultation Document** and **open this up to a wider community consultation** (Mid-Autumn 2016)
- On the basis of these results a **medium-term implementation plan** will be developed and seek resources to undertake early actions


EOOS European Ocean Observing System

Consultation Document

Towards an end-to-end, integrated and sustained ocean observing system for Europe

Draft prepared for the European Parliament event:

Building a European Ocean Observing System

Hosted by Ricardo Serrão Santos MEP
Brussels, 08 September 2016

www.eoos-ocean.eu

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European Global Ocean Observing System

Data

Public initiatives for open marine information

EuroGOOS
European Global Ocean Observi...

DG GROWTH

Copernicus INSTAC

www.copernicus.eu

Data Integration, Operational use, RT QC, **products, forecast models**

DG RESEARCH & INNOVATION

SeaDataNet

www.seadatanet.org

Data Discovery, **archiving**, standards and common vocabularies

DG MARITIME AFFAIRS & FISHERIES

EMODnet

www.emodnet-physics.eu

Data discovery, view, download, interoperable layers

EuroGOOS

Operational oceanography community

Open Marine data value Chain

Observations and monitoring activities (in situ and Satelite)

ORIGINATORS
- Research Projects
- Public national bodies
- Industry (O&G, Rene ble, etc)

AGGREGATORS
- Data Portals and Data Repositories

EMODnet
(Real Time data or data products)

CMEMS
(models and forecasts)

SeaDataNET
(Archived data)

INTERMEDIATE USERS

INNOVATIVE SERVICES AND PRODUCTS

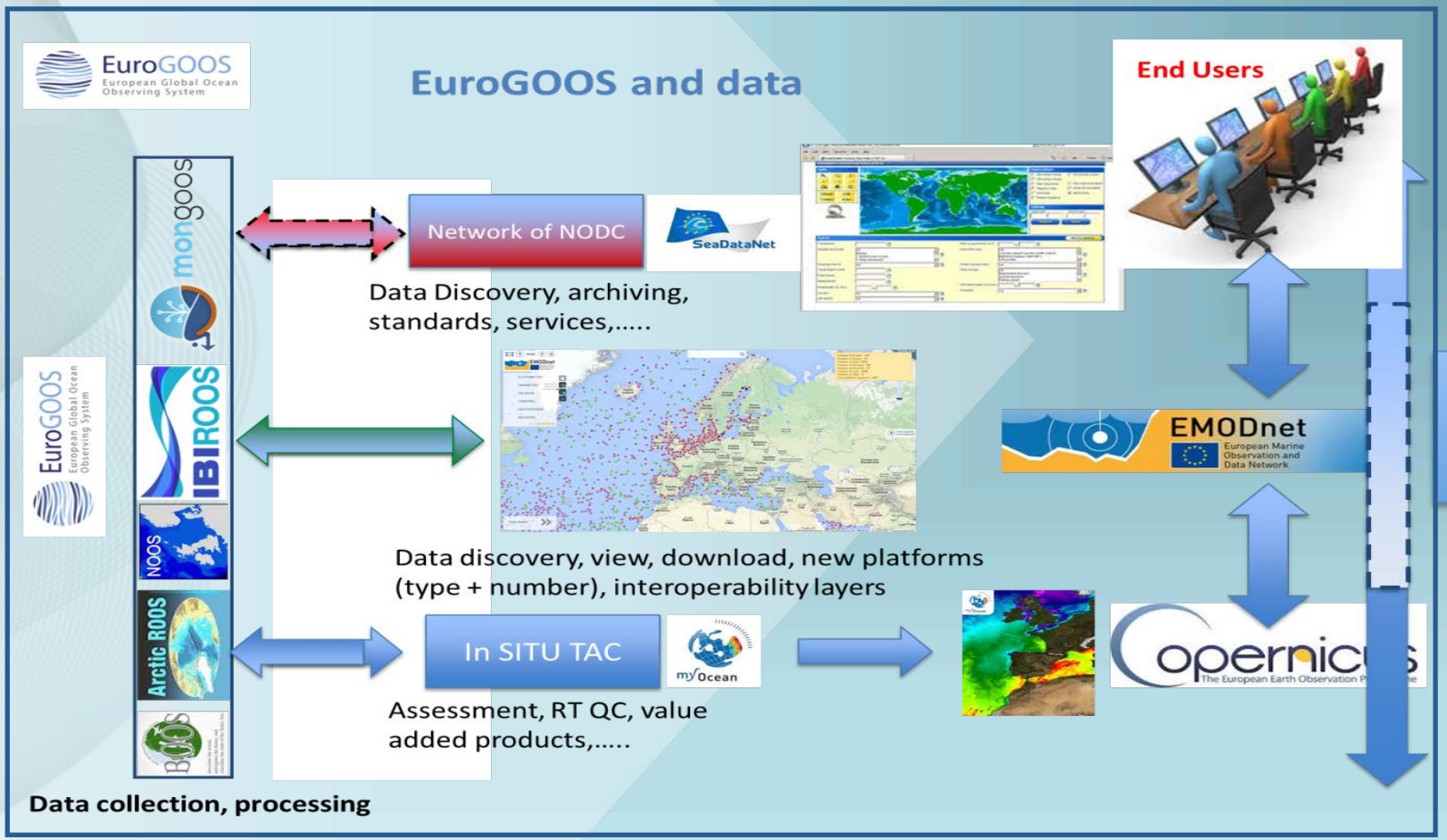
SME

FINAL USERS
- Research
- Public bodies/policies:
  - MSFD - MSP
- Civil Society
- Industry
  - Fisheries
  - Aquaculture
  - Maritime, coastal and cruise tourisme
  - Marine Transport
  - Biotechnology
  - Marine Energy

FEEDBACKS NEEDED!!

REQUIREMENTS??

EuroGOOS and data



World Meteorological Organization
Weather · Climate · Water

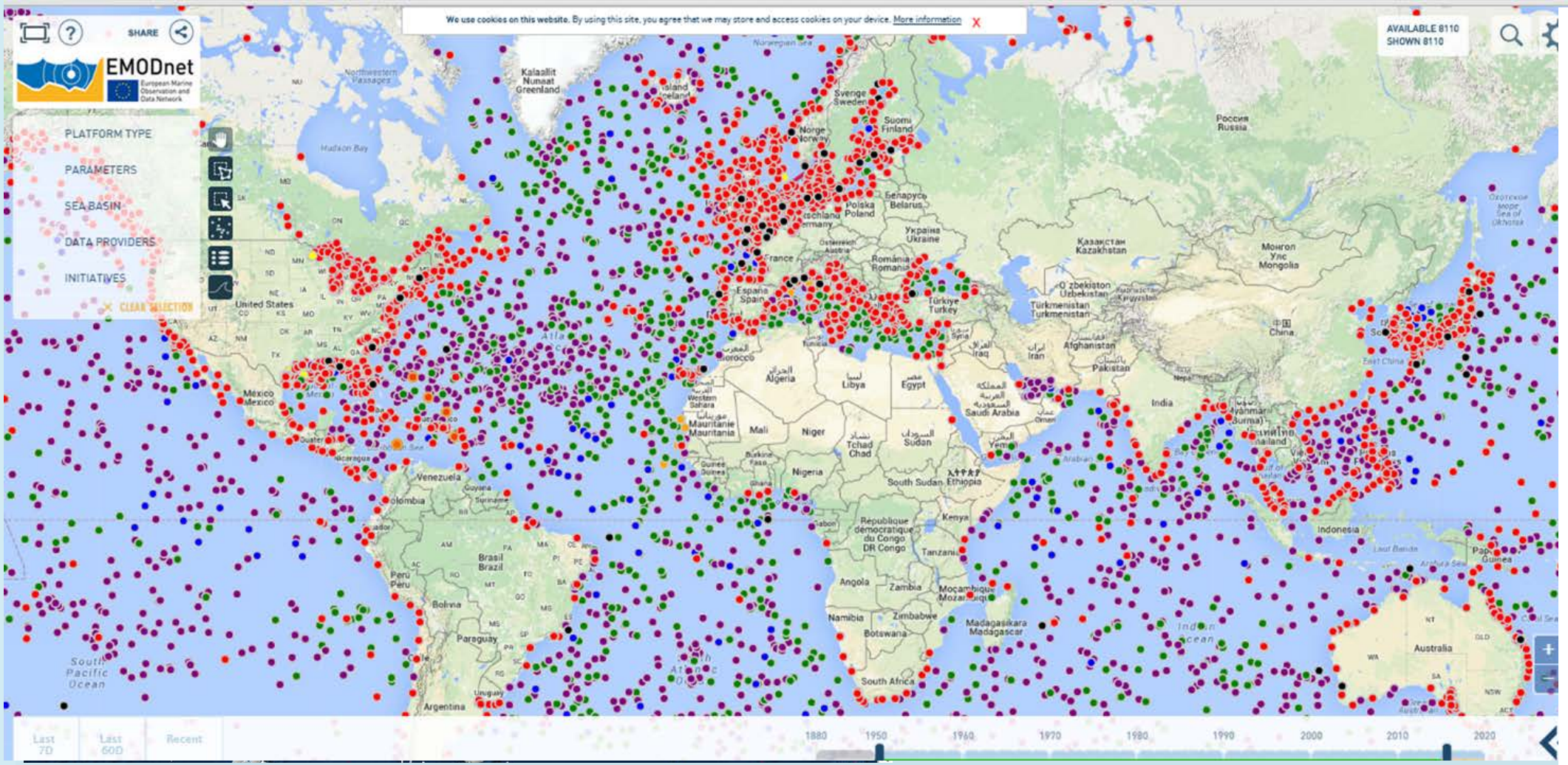
GEO GROUP ON EARTH OBSERVATIONS

The Global Ocean Observing System
GOOS

European Environment Agency

EMSA

Global



GOOS data portal

EU DG Mare supportive

GRA members

EMODnet Physics – looking forward, phase III

River outflow data

- Make discoverable, accessible and downloadable river data products

Underwater noise

- Define and setup a European data flow and data dissemination infrastructure

CTD

- Provide CTD data from both near real time data streams and historical repositories

Data Ingestion

- PANGAEA
- Statoil
- Nord Stream
- Galway bay cable observatory

……..and many more

Keep improving the portal, unlocking more data, improving web-services and machine-to-machine data distribution services,……,……

CMEMS-INSTAC platform analysis in the Arctic

Oct 2015 – Oct 2016

Last year: Oct 2015 – Oct 2016

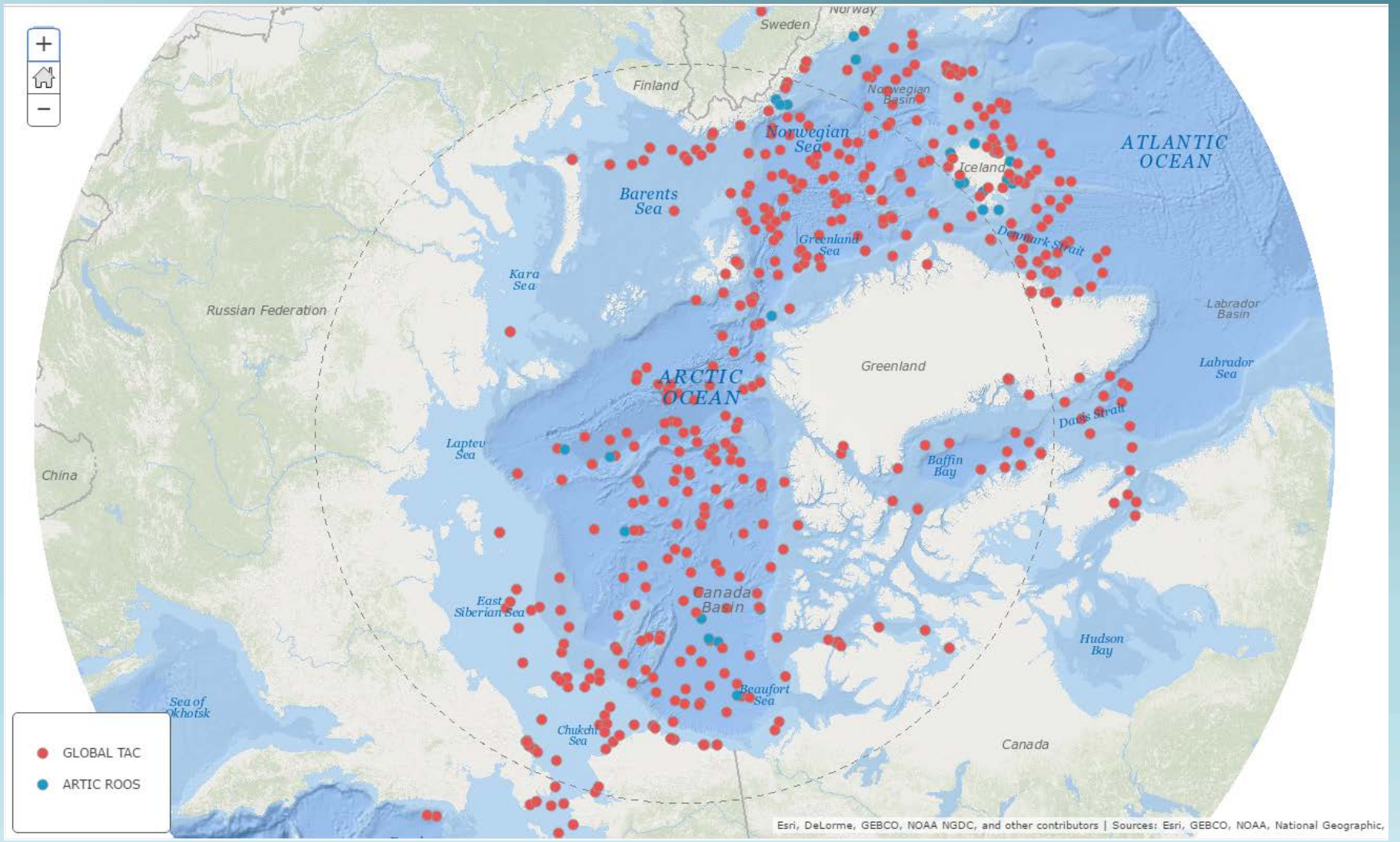
523 total platforms

By Regional TAC:

ARTIC ROOS	27
GLOBAL TAC	496

By EOV:

Temp	458
Salinity	156
Waves	10
Currents	113
Oxygen	20
Chlorophyll	12
Sea Level	0 (if excluding NOOS and BOOS)



CMEMS-INSTAC platform analysis in the Arctic

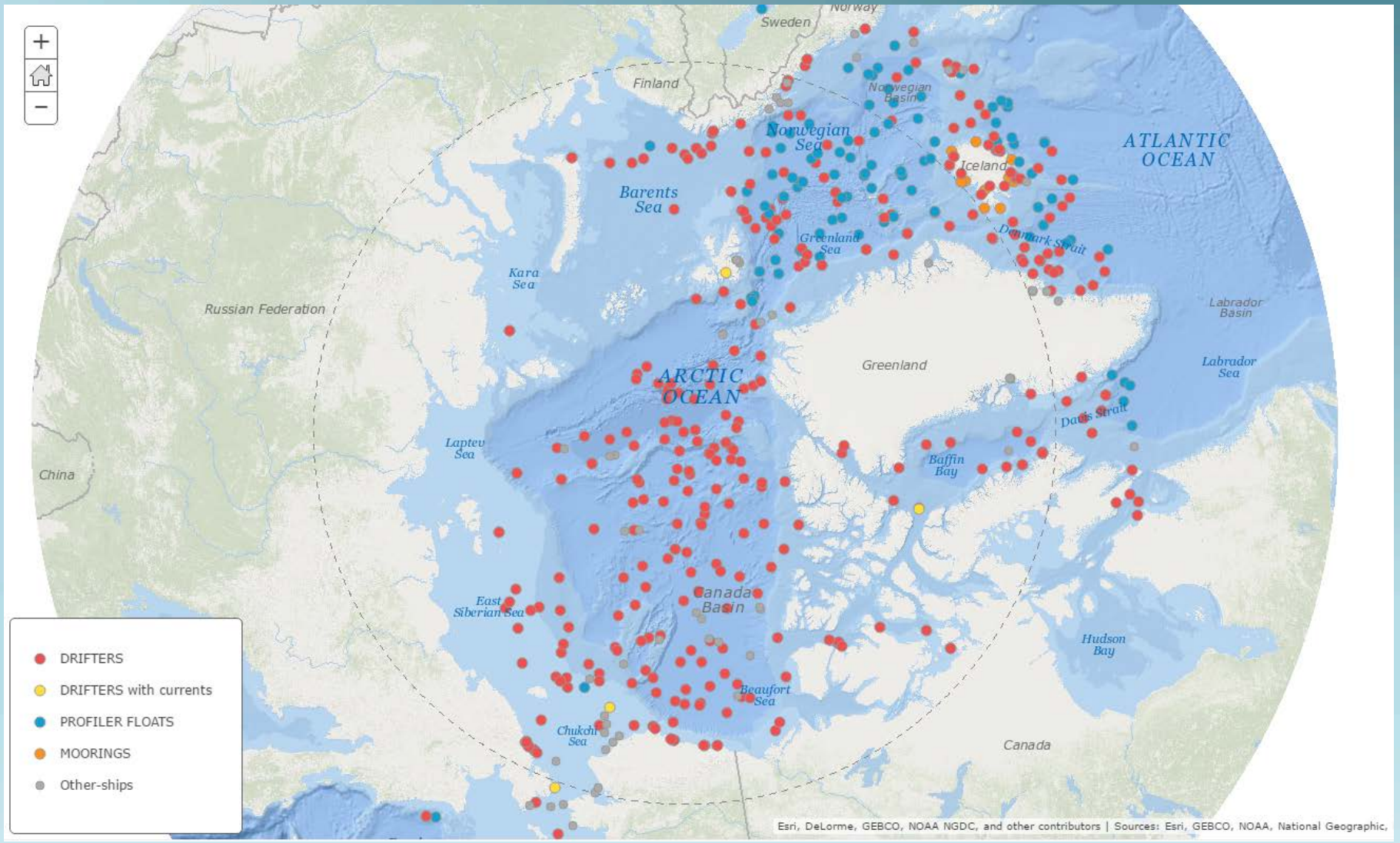
Oct 2015 – Oct 2016

523 total platforms

By Platform:

Drifter	350
Drifter with current	4
Profilers	95
Moorings	11
Other-ships	63

Last year: Oct 2015 – Oct 2016



EMODNET PHYSICS platform analysis in the Arctic

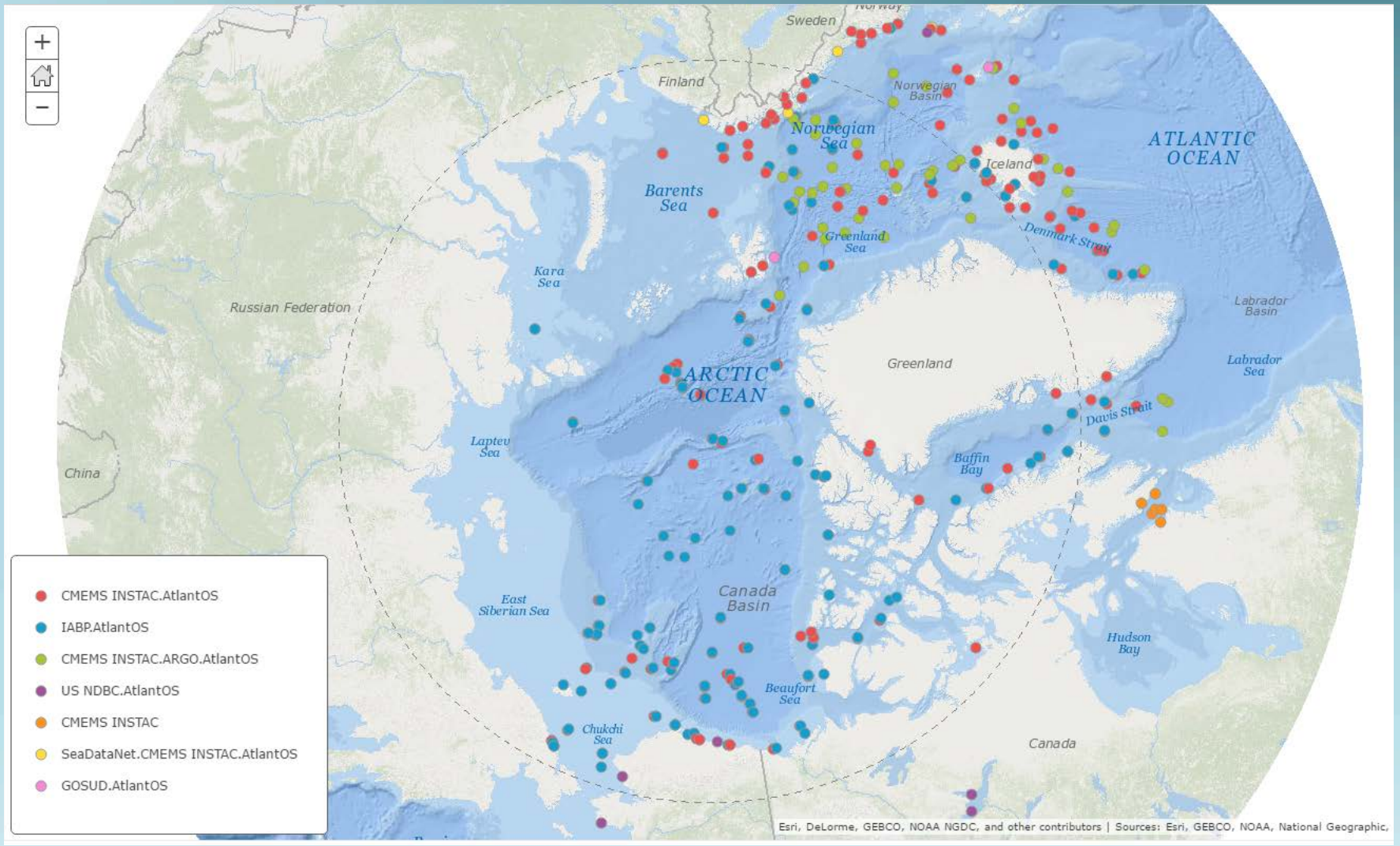
Networks included in EMODnet in the Artic: INSTAC + PSML (Archived Permanent Service for Mean Sea Level) + IABP (International Artic Buoy Program) + US NDBC + GOSUD

NRT (last 60 days)

385 total platforms

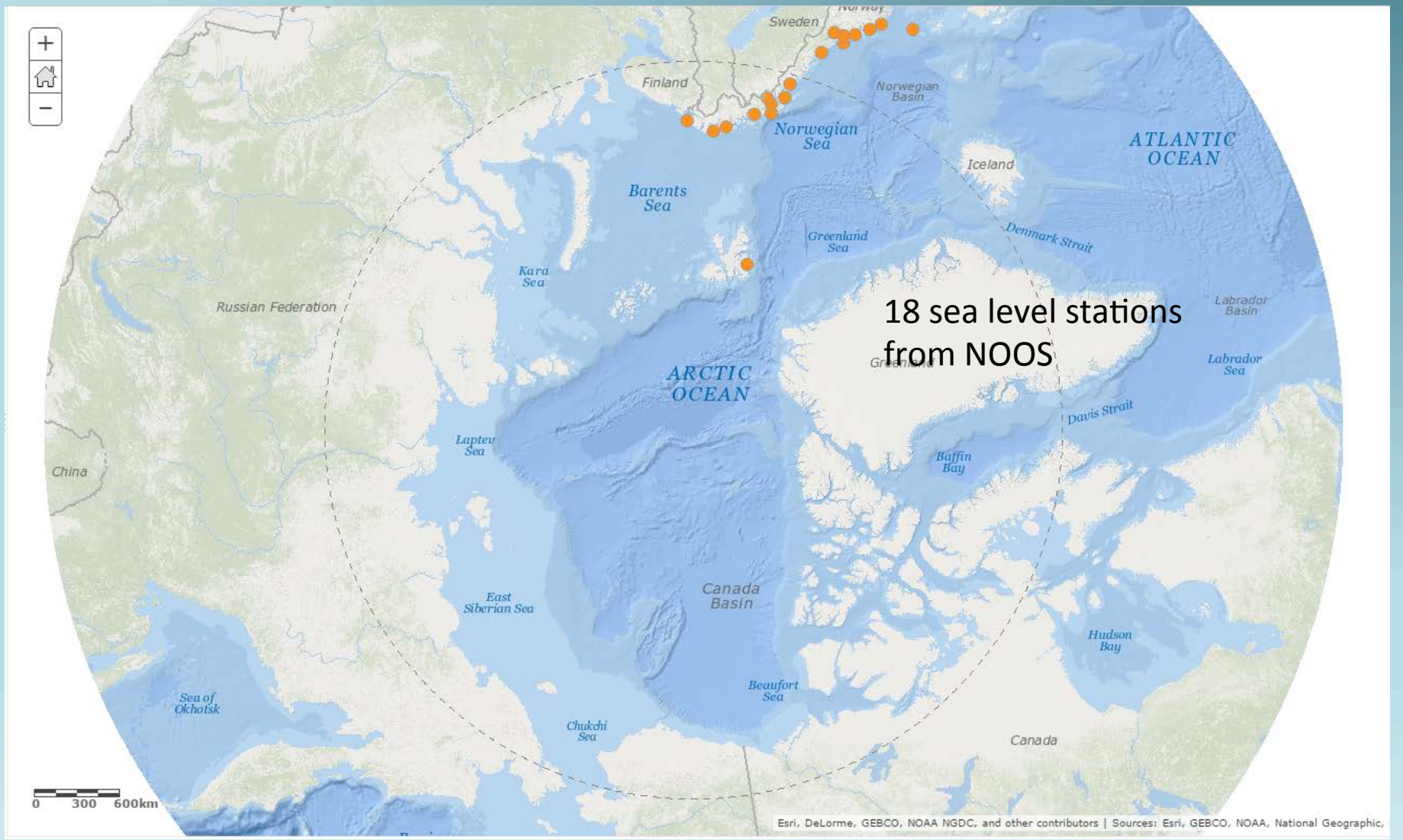
By Network:

INSTAC	233
IAPB	139
US-NDBC	11
GOSUD	2



OBSERVATIONAL GAP: sea level platform

sea level NRT (last 60 days) in EMODNET physics



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US and Canadian Data

- Canadian data, http://dmas.uvic.ca/home?TREETYPE=1&LOCATION=82&TIMECONFIG=0
- IOOS Alaska Ocean Observing system (AOOS), http://www.aoos.org/aoos-data-resources/,
- Could be added to the Arctic data portal and in turn to INSTAC and EMODnet Physics.