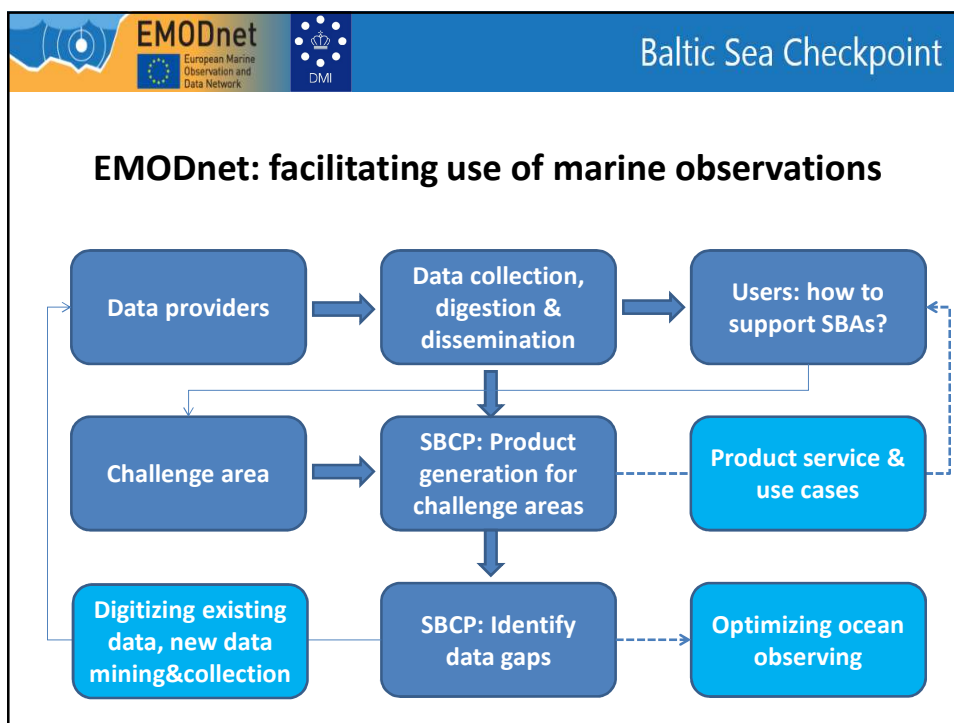EMODnet
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Baltic Sea Checkpoint

# Baltic Sea Basin Check Point (BSCP) project Progress report (M18-M33)

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## EMODnet: facilitating use of marine observations

Data providers → Data collection, digestion & dissemination → Users: how to support SBAs?

Challenge area → SBCP: Product generation for challenge areas

Product service & use cases

Digitizing existing data, new data mining&collection → SBCP: Identify data gaps

Optimizing ocean observing

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### Progress in summary

- Major update of **products** (329) in BSCP portal:
  - OWF siting,
  - Climate change,
  - Fishery Impact,
  - Fishery management,
  - Eutrophication
  - Bathymetry and Alien species.
- Sustainability report & DAR2 reports (12 reports)
  - Needs on data access
  - Needs on data quality, format and readiness for use
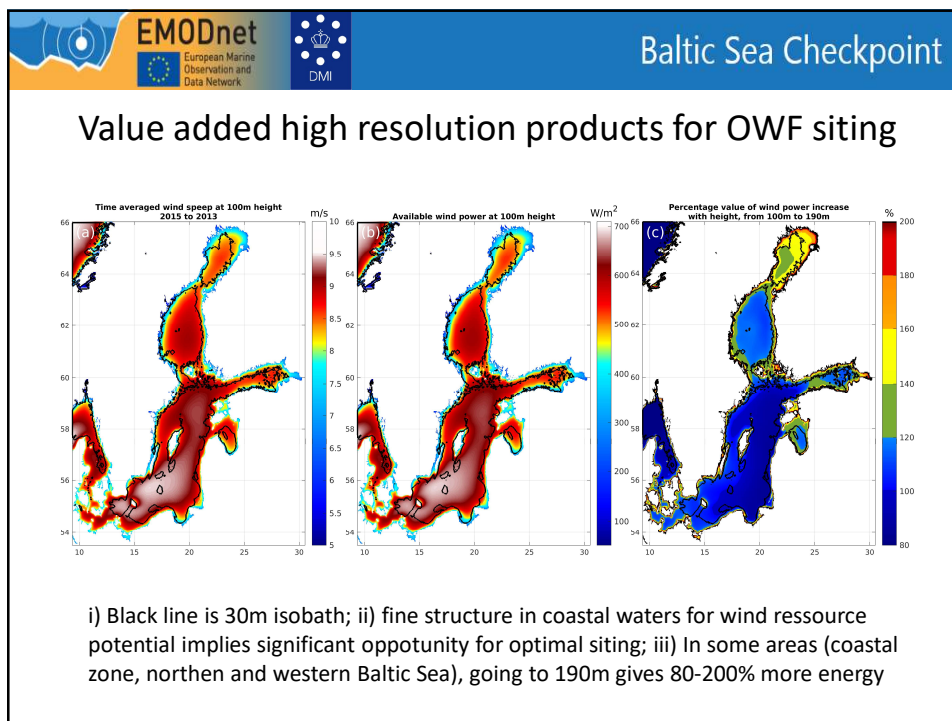  - Data gaps due to lack of observations
  - Future sustainability

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### BSCP value-added products:
### http://www.emodnet-baltic.eu/map

|  | OWF siting | Oil platform leak | Climate change | Sea level | MPA | Fishery management |
|---|---|---|---|---|---|---|
| **#of products** | 135 | 2 | 56 | 1 | 12 | 26 |
|  | Fishery impact | Eutro-phication | Rivers | Bathymetry | Alien Species | Total |
| **#of products** | 16 | 72 | 1 | 3 | 5 | 329 |

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## Value added high resolution products for OWF siting

i) Black line is 30m isobath; ii) fine structure in coastal waters for wind ressource potential implies significant oppotunity for optimal siting; iii) In some areas (coastal zone, northen and western Baltic Sea), going to 190m gives 80-200% more energy



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### Needs on data access (easiness, time line etc)

- *Easiness of access*: in general EMODnet provides a convenient data access service . further improvement for chemistry (fast access with automatic approval) and biological data (more aggregated features)

- *Timeline of access*: fast delivery of ship data

- *Inter-comparison of data access from different portals*: data coverage are different from different data portals, e.g., SeaDatNet, ICES, EMODnet and HELCOM, users should be aware of this. Is it possible to have a one stop.shop?

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### Needs on data access to existing national data

- Offshore wind profiles
- Currents data from research and commercial projects
- Coastal profiles, orthophoto maps and Lidar data on shore evolution
- Substrate data collected in national fishery survey
- Sediment grain sizes and corresponding accumulation rates
- Bathymetry data from Lithuania, Russia, Latvia and Poland
- river temperature, discharges, nutrient loads and salmon observations
- Fishery catches on both industrial and consumption species from national databases; coastal fishery

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### Needs on data quality, format and readiness for use

- Examples of use cases are analyzed which reveal needs for improving the data quality, format and readiness for use in existing data portals, e.g.,
  - Phytoplankton data in ICES and EMODnet for climate trend analysis,
  - Sea level data in EMODnet for extreme analysis
  - Bathymetry data for modelling
  - Historical SST, sea level and ice chart needs to be digitized.
  - Big limits in VMS data in terms of resolution and spatiotemporal coverage

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## Data gaps due to lack of observations

- Wind data in >150m
- 78% of MPA's is not readily available and scattered among sources for information for identification of IUCN categories .
- Information for assessment of the network coherence according to MSFD Article 13 is currently Inadequate.
- Oil spill detection: gaps found in Latvia, Lithuania and Russian waters
- The available datasets are still not long enough and the data density by sub-basins is not satisfactory to get statistically significant trends
- For eutrophication assessment, more than half of the sub-basins iare inadequate in chl-a, DIN, DIP and secchi depth
- Sediment transport, grain size of sediments
- Bycatch estimates
- River data are not complete (only available for certain years)
- Bathymetry raw data in shallow waters
- lack of centralised databases for compiling and analysing data on alien species impacts on ecosystem and economy

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## BSCP awareness

- Presentations in 2017
  - EGU 2017
  - BOOS Annual meeting
  - CMEMS Marine week
  - EuroGOOS conference
  - MEMC Workshop
  - Baltic Sea from Space Conf.
  - WCRP-CLIVAR Conference on Regional Sea Level Changes and Coastal Impacts, USA
  - Baltic Sea MSP and Blue Growth Workshop
  - EU-China Workshop
  - EU-China Blue Year Event

- Publications
  - Kudryavtseva, N. A. and T. Soomere, 2017: Satellite altimetry reveals spatial patterns of variations in the Baltic Sea wave climate, Earth Syst. Dynam., 8, 697-706,
  - She J. 2017. Assessment of Baltic Sea observations for operational oceanography. Proceedings of *The 8th EuroGOOS conference, 4-6 October 2017*, Bergen, Norway, p79-87.
  - *Jun She and Jens Murawski:* Integrated use of marine data to fit for the purpose of social benefit in Baltic Sea. *J. Opr. Ocean. (to be submitted)*

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## Future

**New product needs in existing challenge areas**
**New potential challenge areas**
**New knowledge generator**
**EOOS and SBCP**

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## New product needs in BSCP challenge areas

- **Offshore wind farm siting**: more in-depth siting study with cost-benefit analysis
- **MPA**: potential impacts of novel pollution types on MPA's network
- **Oil platform leak**: data adequacy study for oil leaks due to shipping activities and oil spill in icing waters.
- **Climate change**: adequacy of biogeochemistry data in identifying long-term climate variability; 4D reconstruction of long-term database
- **Coastal protection**: adequacy of sediment grain size and evolution of substrate
- **Fishery management and fishery impact:** data adequacy for management of industrial fishery and consumption fishery; abrupt changes of the fishery in Baltic Sea and their causes;
- **Eutrophication**: data adequacy for assessing impacts of river loads on eutrophication status, reference state
- **River discharge**: data adequacy for estimating inputs of pollutants (plastics, heavy metals, toxic chemicals, radionuclides)
- **Bathymetry**: inter-comparison of different datasets on data quality; data adequacy in shallow waters (<20m) which may not be covered by large survey vessels.

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## New potential challenge areas

- Marine Spatial Planning,
- Operational oceanography,
- Ocean acidification,
- Hypoxia,
- Marine pollutant,
- Underwater noise
- Atmospheric deposition
- MSFD Reference state reconstruction

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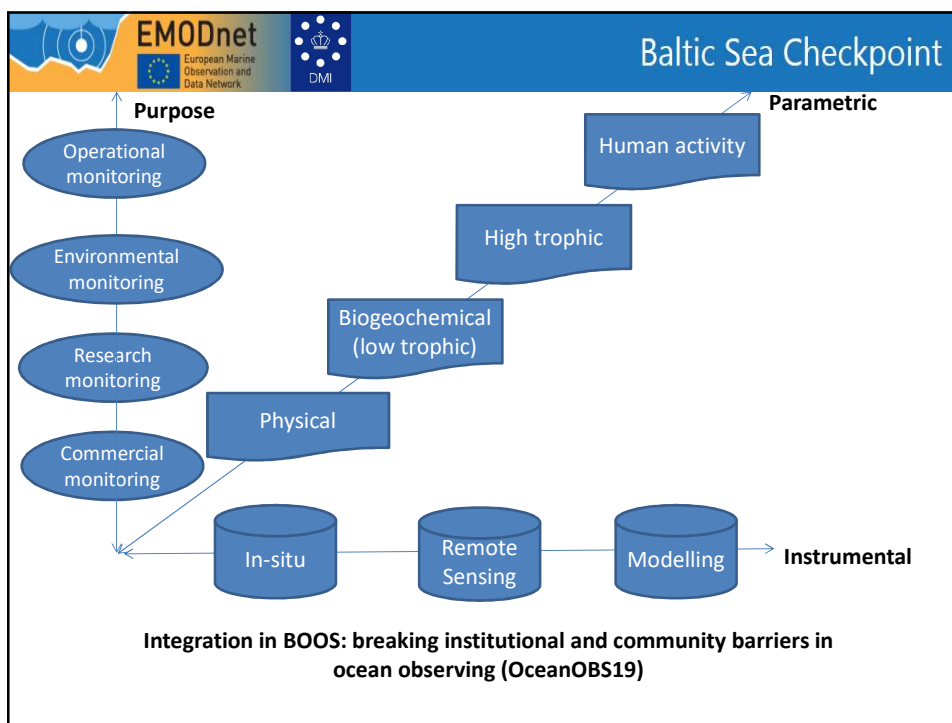
## New marine knowledge generator: responsive and indivisulized

- **Data -> knowledge**
  - Integrated knowledge generator
  - Citizen knowledge generator
  - Sectorial knowledge generator

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**EOOS and SBCP**

- **A EOOS barrier-breaker and gap filler**: breaking institutional, instrumental and community barriers in ocean observing to provide improved or new data and product service, filling the gaps through integration (ROOSs as important players)
- **EOOS data validator**: to check the quality and appropriateness of EOOS data to fit for the purpose of use
- **EOOS value demonstrator**: to demonstrate and quantify the value of EOOS data by developing use cases
- **EOOS gap identifier**: to identify the EOOS data gaps and monitoring priorities based both on science and user needs
- **EOOS sampling strategy optimizer**: to rationalize and design optimal sampling strategies (where, when and how to fill the gaps identified)



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Integration in BOOS: breaking institutional and community barriers in ocean observing (OceanOBS19)

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Thank you for your attention!