

# NOOS annual report 2019

## Member report - BSH

October 2019

<b>Country</b>	Germany
<b>Institution</b>	Bundesamt für Seeschifffahrt und Hydrographie (BSH)
<b>Observations Status and new initiatives</b>	<p><b>Status:</b></p> <ul style="list-style-type: none"> <li>• MARNET (<i>Marine Environmental Monitoring Network in the North Sea and Baltic Sea</i>) operates with 12 stations (thereof 6 in the North Sea including the FINO-platforms)</li> <li>• Real time measurements of prevailing marine environmental conditions; focused upon the identification of the parameters: temperature, salinity, current, water level, air temperature, wind, air pressure, radioactivity, oxygen, pH)</li> <li>• 10 stations for sea state measurements (thereof 6 in the North Sea)</li> <li>• several monitoring cruises per year to collect physical, chemical, and biological data remote sensing data (e.g. SST, ice, water colour)</li> <li>• North Sea Buoy-2 (NSB2) is currently under onshore maintenance repositioning is planned 2019/2020</li> </ul> <p><b>New Initiatives:</b></p> <ul style="list-style-type: none"> <li>• The development of two different monitoring buoy types is still in progress.</li> <li>• Stations for water level and sea state measurements (radar gauges) are installed on wind turbines/converter platforms at the offshore wind farms "Nordsee One" and "Butendiek" in the North Sea (extension of stations is planned). Data are available.</li> <li>• Several sea state (buoys) and current (ADCP) measurements conducted within wind farm areas</li> <li>• Acoustic measurement at selected stations (project based)</li> </ul>
<b>Modelling Status and new initiatives</b>	<p><b>Status:</b></p> <p>operational (version 4):</p> <ul style="list-style-type: none"> <li>• baroclinic 3dim. circulation model (BSHcmod) using 3 nested grids (6 nm, 3 nm, 0.5 nm), Northeast-Atlantic, North Sea and Baltic, 3 day forecasts, 2 x daily</li> <li>• baroclinic 3dim. circulation model (HBM), Elbe estuary, 90m resolution, 60h-forecast, 2 x daily</li> <li>• barotropic 2dim. storm surge model (BSHsmod) using 2 nested grids (6 nm, 3 nm), Northeast-Atlantic, North Sea and Baltic, 4 x daily, 7 day forecasts</li> <li>• multi- model-ensemble for forecast of temperature, salinity, transport, currents and sea level developed in CMEMS, data available from BSH ftp site</li> <li>• warning system for model forecasts based on the multi-model-ensemble and the deviation of single realisations from the multi-model-mean</li> <li>• Multi-model-ensemble for reanalysis products</li> </ul> <p>Eulerian and Lagrangian dispersion models (BSHdmod &amp; SeatrackWeb) for different substances</p> <p><b>New initiatives :</b></p> <p>pre-operational:</p> <ul style="list-style-type: none"> <li>• new version of baroclinic 3dim. circulation model HBM (HIROMB-BOOS-Model) using 3 nested grids (6 nm, 3 nm, 0.5 nm), Northeast-Atlantic, North Sea and Baltic, 3 day forecasts, 2 x daily</li> <li>• biogeochemical model ERGOM for North Sea and Baltic with 2 nested grids (twice a day)</li> <li>• data assimilation of SST in HBM using PDAF with 2 nested grids, (48h-forecast twice a day)</li> <li>• ERGOM output module for Marine Strategy Framework Directive products</li> <li>• Eulerian dispersion model based on HBM core</li> </ul>

	<p>under development:</p> <ul style="list-style-type: none"> <li>• data assimilation of both satellite SST and Chl-a data and profile T and S data</li> <li>• coupled regional ocean atmosphere model (ROAM) for simulation of long hindcasts and climate projections in cooperation with German Weather Service (DWD). The ocean model in ROAM is NEMO Nordic (provided by SMHI).</li> </ul>
<p><b>Dissemination</b>  <b>Status and new initiatives</b></p>	<p><b>Status:</b>  available at internet (<a href="http://www.bsh.de">www.bsh.de</a>)  Real Time Observations and forecasts:</p> <ul style="list-style-type: none"> <li>• Tides</li> <li>• Water levels, storm surges</li> <li>• Currents</li> <li>• Sea state</li> <li>• Water temperatures (weekly SST), heat content</li> <li>• Salinity</li> <li>• Oxygen</li> <li>• pH</li> <li>• Ice</li> <li>• Remote sensing</li> <li>• Prediction models (Drift forecasts)</li> <li>• Radioactivity</li> <li>• Climate</li> </ul> <p>Additionally:</p> <ul style="list-style-type: none"> <li>• Marine physical data <ul style="list-style-type: none"> <li>• measured water levels and wave data on ftp server (<i>for NOOS members</i>)</li> <li>• computed water levels and wave data on ftp server(<i>for NOOS members</i>)</li> <li>• computed transports in North Sea and North Sea/Baltic transition area on ftp server</li> <li>• results of the BOOS/NOOS-RC-data centre (<i>still pw-protected</i>):  compilation of all available S and T data  <a href="ftp://ftp.bsh.de/outgoing/rcbono/">ftp://ftp.bsh.de/outgoing/rcbono/</a>  <a href="ftp://ftp.bsh.de/outgoing/rcnws/">ftp://ftp.bsh.de/outgoing/rcnws/</a></li> </ul> </li> <li>• Marine chemical data</li> <li>• DOD (German Oceanographic Data Centre)</li> <li>• MARNET monitoring network <ul style="list-style-type: none"> <li>• Data base for RT- and NRT-oceanographic data (national and international)</li> <li>• data on ftp server (<i>for NOOS members, and EU-wide</i>)</li> </ul> </li> <li>• Multi-model-ensemble for sea surface temperature, salinity and currents and sea bottom temperature and salinity: <a href="ftp://ftp.bsh.de/outgoing/opmodel/my_ocean/MME/">ftp://ftp.bsh.de/outgoing/opmodel/my_ocean/MME/</a></li> <li>• MURSYS reporting system</li> <li>• NOOS homepage (hosted by BSH using the WordPress content management system) <ul style="list-style-type: none"> <li>• Computed transport forecasts for the North Sea on NOOS-homepage (results of Version 4 of the BSH-circulation model)</li> <li>• Computed forecasts of currents in the North Sea on NOOS-homepage</li> <li>• Multi-Model-ensemble results for temperature, salinity (including a monthly validation), transport and currents on NOOS and BOOS homepage</li> </ul> </li> </ul> <p>NWS-Data Portal including RT- and NRT-data from the NWS  <a href="http://nwsportal.bsh.de/nwsportal">http://nwsportal.bsh.de/nwsportal</a> (graphics and figures free, download pw-protected)</p> <p>new initiatives:</p> <ul style="list-style-type: none"> <li>• include historical data; e.g. composite north sea cruises (1998-2012)</li> <li>• inventory of available stations in NWS area</li> </ul>

<b>Relevant national projects</b>	<ul style="list-style-type: none"> <li>• FINO: Research platforms North Sea and Baltic Sea (research to determining the effects of wind farms on the marine flora and fauna). Data base access for Meteorology and Oceanography via: <a href="http://fino.bsh.de">fino.bsh.de</a></li> <li>• PROWAS: Pilot project on climate, waterways and shipping (hindcasts and climate projections for North Sea and Baltic)</li> <li>• ImoNav: Integration of marine geodata in electronic navigation systems.</li> <li>• RAVE: Research Activities at “Alpha-Ventus” (accompanying/secondary research for off-shore wind park “Alpha Ventus”). One focus is on an national database for sea state data</li> <li>• MDI-DE(Marine data infrastructure) National marine data infrastructure to combine all national environmental data as a basis for the MSD</li> </ul>
<b>Relevant International projects</b>	<p>CMEMS (Copernicus Marine Environment Monitoring Service – NOT a project but an operational service ), Involvement in</p> <ul style="list-style-type: none"> <li>• Insitu TAC: Production and distribution unit for in-situ data of the North-West Shelf</li> <li>• NWS MFC (NOWMAPS) mainly Validation and Quality Assurance for North West Shelf MFC, multi-model-ensemble production</li> <li>• Baltic MFC Validation and Quality Assurance for Baltic MFC, biogeochemical model development, data assimilation and multi-model-ensemble for Baltic Sea MFC</li> </ul> <p>EuroARGO: European contribution to a global ocean observatory Working groups in IOC – IODE (Committee on International Oceanographic Data Exchange)</p> <p>SeaDataCloud: advance SeaDataNet Services and increase their usage, adopting cloud and High Performance Computing technology for better performance. (main BSH topic: Cruise summary reports)</p> <p>Involvement in EMODNET(European Marine Observation and Data Network):</p> <ul style="list-style-type: none"> <li>• EMODNET-chemistry</li> <li>• EMODNET-hydrography</li> <li>• EMODNET-physical</li> <li>• EMODNET-geology</li> </ul>
<b>Additional information</b>	<p><i>BSH-Spatial Data Infrastructure</i>; incl. oceanographic, naut. hydrographic, shipping, environmental data.</p> <p>New version of portal: see: <a href="http://www.geoseaportal.de">http://www.geoseaportal.de</a></p>