

# NOOS annual report 2017

## Member report - BSH

November 2017

<b>Country</b>	Germany
<b>Institution</b>	Bundesamt für Seeschifffahrt und Hydrographie
<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>) running with 12 stations (thereof 6 in the North Sea including FINO-platforms) Real time measurements, e.g. temperature, salinity, current, water level, air temperature, wind, air pressure, radioactivity, oxygen, pH</li> <li>• 10 stations for waves (thereof 5 in the North Sea)</li> <li>• several monitoring cruises per year to collect physical, chemical, and biological data</li> <li>• remote sensing data (e.g. SST, ice, water colour)</li> <li>• Fehmarn-Belt-buoy is back on its position.</li> <li>• Northseabuoy-3 (NSB3) will restart its operational service in Mai 2018.</li> </ul> <p><b>New Initiatives:</b></p> <ul style="list-style-type: none"> <li>• The development of two monitoring buoy types is in progress.</li> <li>• Two new stations for water level and waves are installed on wind turbines at the offshore wind farms "Nordsee One" and "Butendiek". Operation will start soon.</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>• baroclinic 3dim. Circulation model (HBM) Version CMEMS V3 including biogeochemical model ERGOM, Baltic Sea, 1nm resolution, 60 h-forecast, 2 x daily</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 mult-model-mean</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, but assimilating only in the 3nm grid (48h-forecast twice a day)</li> </ul> <p>under development:</p> <ul style="list-style-type: none"> <li>• new model for simplified ice dynamics and fast ice (part of HBM version CMEMS V2)</li> <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> <li>• ERGOM output module for Marine Strategy Framework Directive products</li> </ul>

	<ul style="list-style-type: none"> <li>• New Eulerian dispersion model using HBM core instead of BSHcmod</li> <li>• Multi-model-ensemble for reanalysis products,</li> </ul>
<p><b>Dissemination 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>• 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>):  <ul style="list-style-type: none"> <li>• 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> </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>• SOOP: Sections AX3 and AX11 (Atlantic Ocean) now published in Internet  <a href="http://www.bsh.de/en/Marine_data/Observations/Observation_systems_and_programmes/SOOP/index.jsp">http://www.bsh.de/en/Marine_data/Observations/Observation_systems_and_programmes/SOOP/index.jsp</a></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)  new: some historical data; composite north sea cruises (1998-2012)</p>
<p><b>Relevant national projects</b></p>	<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>• NKS MCS: National project in order to support Copernicus Services</li> <li>• PROWAS: Pilot project on climate, waterways and shipping (hindcasts and climate projections for North Sea and Baltic)</li> </ul>

	<ul style="list-style-type: none"> <li>• ImoNav: Integration of marine geodata in electronic navigational systems.</li> <li>• RAVE: Research Activities at “Alpha-Ventus” (accompanying/secondary research for off-shore wind park “Alpha Ventus”)</li> <li>• MeRaMo: National project in frame of Copernicus to support the Marine Strategy Framework Directive by ecosystem modelling and remote sensing data</li> <li>• SWS: National project to investigate the impact of scrubber technologies in ship exhaust gas treatment to the marine environment. Dispersion modelling will simulate scenarios in the German Bight</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 (Back-up) Production/Validation/Quality Assurance, biogeochemical model development, data assimilation 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>the BSH-Spatial Data Infrastructure; incl. oceanographic, naut. hydrographic, shipping, environmental data.</i></p> <p>New version of portal: see: <a href="http://www.geoseaportal.de">http://www.geoseaportal.de</a></p>