NOOS annual report 2018

**Member report – Met Office**

Novembre 2018

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| **Country** | UK |
| **Institution** | Met Office |
| **Observations****Status and new initiatives**  | ***In situ Observations*** * MAWS (Marine Automated Weather Stations) – 8 offshore including 2 in Biscay and 2 in English Channel (E1 & L4). 5 Light Vessels on-shelf in English Channel. Spectral wave data now available from 6 buoys.
* Data from North-Sea rigs and platforms received and transmitted on GTS. Met-ocean including waves and some SST. Of the order 110 presently operating.
* Deployment of drifters (through E-SURFMAR) in the North Atlantic (~20/year). Number of drifters ~60 in N Atlantic and Med, a number of which enter the NOOS region.
* Voluntary Observing Fleet (VOF) of around 220 ships. Around 20% of UK Voluntary Observing Ships (VOS) observations are from the North Atlantic. 60 vessels with Automatic Weather Stations (AWS), the majority of ship-of which are in the NOOS region
* Ongoing partnership with NERC’s Sea Mammal Research Unit and BODC: The Metoffice has facilitated the addition of Argos transmitters to seal tags. Since 2017 we have been receiving temperature profiles in near-real time from May to December. 3,326 profiles received at MO between 27 April and 9 October 2018, with 16% of them assimilated in AMM7v9using 48 hour assimilation window. Data are provided to NOOS.
* Receiving real-time temperature and salinity profiles from 3 NERC research vessels CTD (James Clark Ross, Discovery, James Cook)

***Remote sensing observations*** * The OSTIA system produces analyses of foundation SST and sea ice based on a 3DVar, two length-scale analysis scheme on a 1/20° global grid.
* A diurnal analysis of SST skin temperature based on OSTIA is produced daily
* Met Office Space Programme have delegates on appropriate EUMETSAT, ESA and UK Space Agency meetings
* Radsat, Autosat and Eumetcast systems receive data from a large array of remote sensing instruments on the many satellites. Satellites we receive and use observations from include Jason-2, Jason-3, Sentinel-3, and the MetOp series for low-earth orbiting systems. We also receive data from geostationary satellites including Meteosat-9, Meteosat-8, Meteosat-7, GOES and MTSAT-1R.
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| **Modelling****Status and new initiatives** | ***Status:******Operational:*** * The NWS analysis and forecast system has been delivering to CMEMS
* baroclinic model (NEMO FOAM AMM7) nested into a regional open ocean model (FOAM NATL12) and CMEMS Baltic model, 6 day forecasts, 1 x daily, nested to ERSEM ecosystem model and including NEMOVAR SST, SLA and profile data assimilation. Real-time ingestion of E-Hype data has been removed due to high biases in southern-north sea.
* NEMO FOAM ORCA025 global model with altimetry, SST, T&S profile assimilation
* Global coupled ocean-atmosphere forecasts using 1/4 o NEMO
* barotropic model (POLCOMS on C-grid) using 3 nest (a 12km shelf model (CS3X), a 1.2km Bristol Channel model and a 1.2km South Coast model). 4 x daily, 6 day forecasts. Model surge is combined with tides predicted at tide gauge sites.
* WWW-III surface waves Global SMC grid (3-6-12-25 km) twice daily (hourly outputs) 5 day forecast) plus 4 x day update runs to get best possible forecast winds.
* AMM15 based configuration of WWW-III is now used to provide Northwest Shelf (daily) and UK Waters (4x daily) wave products for short range (up to 2 days ahead) forecasts.

***New Initiatives:*** * A 1.5 km version of the AMM has become operational in 2018, and delivered to CMEMS in November 2018
* NEMO-surge AMM7 data are available for NOOS partners via existing data exchange
* Transfer (or add) AMM15 wave data to NOOS exchange (at the moment data is from our Global model)

***Under development:*** * Global 1/12o resolution forced and coupled systems planned for 2020
* A 1.5 km ocean-wave-atm model for use in a coupled research system in the NOOS region
* A NEMO based surge model at 7 km to replace 12 km CS3X (winter 17/18 trial, winter 18/19 operational), to be followed by 1.5 km shortly afterwards
* Wave model on SMC grid (3-1.5 km NWS)
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| **Dissemination****Status and new initiatives** | ***Status:******Operational:**** FOAM AMM7 (including, physics biogeochemistry and daily forecasting wave model equivalent), GLO coupled and OSTIA data available from CMEMS (http://marine.copernicus.eu/ ).
* Since November 2018, high resolution North West shelf model AMM15 (physics and waves) available from CMEMS (http://marine.copernicus.eu/ ).
* Other model data are available from enquiries@metoffice.gov.uk
* MAWS data available and viewable from (http://research.metoffice.gov.uk/research/ocean/goos/maws\_pic.html )

***Additionally:*** * Marine physical data :

- measured water levels and wave data on ftp server (for NOOS members) - computed water levels and wave data on ftp server(for NOOS members) - computed transports in North Sea and North Sea/Baltic transition area on ftp server (for NOOS members) * NOOS homepage

- Computed transport forecasts for the North Sea on NOOS-homepage - Computed forecasts of currents in the North Sea on NOOS-homepage * Environment Agency flow and height data

***New Initiatives:**** NEMO-surge AMM7 data are available for NOOS partners via existing data exchange
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| **Relevant national projects** | Public Weather Service (PWS) Defence Oceanography Programme (DOP), including MASSMO5 glider Assimilation experimentalterECO glidersCAMPUS: assessment of fine resolution processes with autonomous vehicle data, including data assimilation. |
| **Relevant International projects** | Copernicus Marine Environment Monitoring Service EuroARGO: European contribution to a global ocean observatory IOC – IODE (Committee on International Oceanographic Data Exchange) JCOMM-OPS: provides coordination at the international level for oceanographic and marine observations from drifting buoys, moored buoys in the high seas, ships of opportunity, voluntary observing ships and sub-surface profiling floats. ETOOFS: Expert Team on Operational Ocean Forecast Systems GODAE-OceanView Coastal and Shelf Seas Task Team: Coordinates internationally work on global model inputs to coastal modelling CEASELESS: developing coastal services, Met Office participation is examing wave data assimilation in Northwest Shelf domainHiVE: CMEMS funded project looking at Verification of High-resolution ocean modelsAtlantOS: Atlantic observing system experimentsIMMERSE: high resolution ocean modelling in NEMO |
| **Additional information** |  |