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Report on FMI BOOS and HIROMB related work in 2014

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Observations

- Routine observations
 - Mareographs, wave buoys
 - Aranda monitoring, fixed stations
 - Ice service
- New developments
 - Utö Marine Research Station
 - Gliders
 - Argo floats
 - Coastal radars
 - Aranda model validation cruises



Photo: Petra Roiha, FMI



Modelling

- Operational modelling
 - WAM wave model
 - HBM circulation model
 - Wetehinen and OAAS sea level models
 - HELMI ice dynamics model
 - HIGHTSI thermodynamic snow ice model
- Model development
 - HBM data assimilation development with partners
 - NEMO model validation and development, preoperational comparisons
 - STW (as a new partner in the group)



Dissemination

- **FMI opened an Inspire compliant open data service in June 2013 (www.fmi.fi)**
 - notable amount of marine observations and model data
 - several services in the private sector have already taken advantage of this data and this is expected to continue
 - machine to machine





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Projects

- **SeaDataNet2: ship data and permanent station data**
- **MyOcean2**
 - Data assimilation to HBM in the BALMFC
 - Testing NEMO/LIM3 for operational use
 - Ice products
- **EMODNet Chemistry2**
- **GROOM (gliders for Research, Ocean Observation and Management)**
 - EU project for building European glider infrastructure
- **ANISTIAMO (Addressing New challenges in Satellite Based Maritime Surveillance and Arctic Monitoring)**





Further information

- New Operational Oceanography group has been established at FMI
- FMI has joined the Euro-Argo consortium
- FMI has joined the SeaTrackWeb consortium
- FMI has joined the HBM consortium

BOOS Annual Meeting 2014

Member report

Country	Finland
Institution(s)	Finnish Meteorological Institute (FMI)
Observations Status and new initiatives	<ul style="list-style-type: none"> - Sea level at 13 mareographs working continuously and sending data with 1 minute intervals. One hour data is publicly available. - FMI has four wave buoys in the Baltic Sea that measure waves in the open sea season. These wave buoys are located in the Northern Baltic Proper, off Helsinki, in the Bothnian Sea and in the Bay of Bothnia. - Routine monitoring with Aranda done about three times per year - FMI has four permanent stations with T and S profiles measured in principle every 10 days during the open sea season - Some of the coastal meteorological station measure also SST - Ice data is collected with several methods in FMI ice service - Utö Marine Research Station (ICOS, Integrated Carbon Observation System) actively developed, several new instruments are and will be installed. A mooring with real time T and S from 7 depths was in use in 2013, but it suffered technical problems - Argo floats have been tested in the Bothnian Sea and Baltic Proper since 2012. One mission ongoing (as of May 2014) since 2013 in the Baltic Proper, two will be deployed again in late May 2014. - A glider experiment was conducted in the Bothnian Sea in September 2013. It showed that gliders are useful instruments in the Baltic Sea, too. - Cruises aboard R/V Aranda in Gulf of Finland to obtain model validation data, one has been conducted in 2013, two will be conducted in 2014 - Daily ice concentration and thickness grid (MyOcean2 product) - Ice thickness charts based on SAR-satellite images (MyOcean2 product) - Ice movement charts based on consecutive SAR images (MyOcean2) - Coastal radars are used to measure ice movement - FMI has joined the Euro-Argo consortium
Modelling Status and new initiatives	<ul style="list-style-type: none"> - FMI marine models use FMI HIRLAM as forcing for 54 h forecasts and ECMWF forcing for longer forecasts. - Surface wave model WAM is running operationally.

	<ul style="list-style-type: none"> - HBM circulation model has been run operationally since 2012. Operational version upgrade is planned for 2014. - OAAS 3D model is used as an additional SST model - Sea level is forecasted operationally with several models (Wetehinen, OAAS, HBM) for making ensemble forecasts (also other BOOS members' model results are used) - HELMI dynamic ice model in operational use - HIGHTSI 1D thermodynamic snow ice model in operative use - NEMO model is under development. Climatic runs have been done for period 1966-2007. Several other runs (e.g. 2007, 2008, 2013) have been performed for validation and process studies. An alpha version of a preoperational NEMO forecast has been running since late 2013. - Validation of HBM model results continuously under way - Validation of NEMO results continuously under way - FMI has joined STW consortium in 2013 and STW development work is starting - FMI has joined the HBM consortium
<p>Dissemination Status and new initiatives</p>	<ul style="list-style-type: none"> - Data are operationally on FMI ftp-server available for BOOS community. - Data is shown on BOOS Internet-pages - Data and products are shown of FMI Internet pages (http://en.ilmatieteenlaitos.fi/ and http://www.fmi.fi) - FMI opened an open data service in June 2013 that also included notable amount of marine observations and model data. Several services in the private sector have already taken advantage of this data and this is expected to continue. - Monitoring cruise data is available via SeaDataNet and Baltic Nest Institute - Ice service produces daily ice charts and regular charts are published in FMI pages - FMI produces several ice related products that are available via PolarView pages (http://www.polarview.org/services/rsif.htm and http://www.polarview.org/services/sitc.htm), these include charts of ice motion, concentration, thickness, ridged ice thickness etc. - HBM data provided for BSH multi model ensemble initiative
<p>Relevant national projects</p>	<ul style="list-style-type: none"> - several FMI internal projects
<p>Relevant International</p>	<ul style="list-style-type: none"> - SeaDataNet2 <ul style="list-style-type: none"> o Ship data and permanent station data (to be included)

projects	<ul style="list-style-type: none"> - MyOcean2 <ul style="list-style-type: none"> o Data assimilation to HBM in the Baltic Sea forecasting centre o Testing the suitability of NEMO/LIM3 for operational use o Ice related products (see data section of this table) - EMODNet Chemistry2 - GROOM (gliders for Research, Ocean Observation and Management) <ul style="list-style-type: none"> o EU project for building European glider infrastructure - ANISTIAMO (Addressing New challenges in Satellite Based Maritime Surveillance and Arctic Monitoring)
Additional information	<ul style="list-style-type: none"> - New Operational Oceanography group has been established at FMI, which has further enhanced FMI involvement in operational oceanographic activities.