Danish Meteorological Institute

North & Baltic Sea modelling at DMI (HBM)

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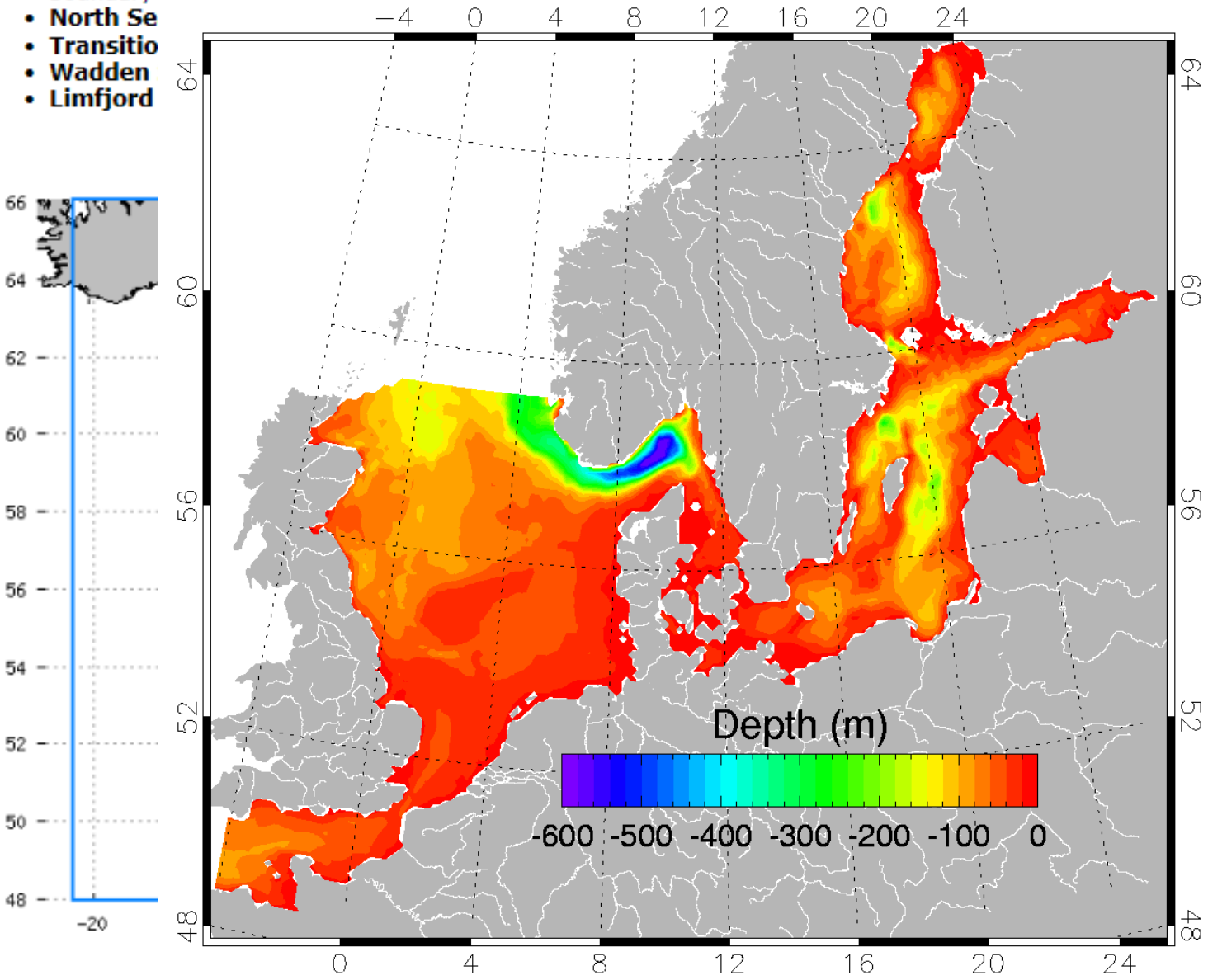
Operational Model - HBM

Model set-up

The HBM model set-up consists of 5 model domains:

- **NOAMOD** - 2-dimensional mesoscale model, that calculates sea levels as a function of windspeed and air pressure. Generates boundary
- **North Se**
- **Transitio**
- **Wadden**
- **Limfjord**



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Model setup continue..

Model	NOAMOD	HBM North Sea - Baltic Sea	HBM Transition Area	HBM Wadden Sea	HBM Limfjord
Spatial resolution	6' lat 10' lon (6 n.m.)	3' lat 5' lon (3 n.m.)	30" lat 50" lon (0.5 n.m.)	1' lat 1'24" lon (1 n.m.)	12" lat 20" lon (0.2 n.m.)
Vertical layers	1	50	52	24	9
Max. top layers thickness	900m	8m	2m	8m	2m
Atm. forcing	ECMWF GLM	DMI-Harmonie ECMWF GLM	DMI-Harmonie ECMWF GLM	DMI-Harmonie ECMWF GLM	DMI-Harmonie ECMWF GLM
Open boundaries	Radiation condition	•Surge- NOAMOD •17 tidal constituents •monthly climatology fields for T and S via a sponge layer	nested in regional model	nested in regional model	boundary data from regional and transition area model

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DKSS setup

Model	NOAMOD	HBM North Sea - Baltic Sea	HBM Transition Area	HBM Wadden Sea	HBM Limfjord
Spatial resolution	6' lat 10' lon (6 n.m.)	3' lat 5' lon (3 n.m.)	30" lat 50" lon (0.5 n.m.)	1' lat 1'24" lon (1 n.m.)	12" lat 20" lon (0.2 n.m.)
Vertical layers	1	50	52	24	9
Max. top layers thickness	900m	8m	2m	8m	2m
Atm. forcing	ECMWF GLM	DMI-Harmonie ECMWF GLM	DMI-Harmonie ECMWF GLM	DMI-Harmonie ECMWF GLM	DMI-Harmonie ECMWF GLM
Open boundaries	Radiation condition	•Surge- NOAMOD •17 tidal constituents •monthly climatology fields for T and S via a sponge layer	nested in regional model	nested in regional model	boundary data from regional and transition area model

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Copernicus setup

Model	HBM North Sea	HBM Baltic Sea	HBM Transition Area	HBM Wadden Sea	HBM Limfjord
Spatial resolution	3' lat 5' lon (3 n.m.)	1' lat 1‘40” lon (1 n.m.)	30" lat 50" lon (0.5 n.m.)	1' lat 1'24" lon (1 n.m.)	12" lat 20" lon (0.2 n.m.)
Vertical layers	50	122	52	24	9
Max. top layers thickness	8m	2m	2m	8m	2m
Atm. forcing	DMI-Harmonie ECMWF GLM	DMI-Harmonie ECMWF GLM	Harmonie ECMWF GLM	Harmonie ECMWF GLM	Harmonie ECMWF GLM
Open boundaries	•Surge-NOAMOD •17 tidal constituents •climatology T and S via a sponge layer	nested in regional model	nested in regional model	nested in regional model	boundary data from regional and transition area model

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Vision to BMIP

- In line with ‘Danish Climate Atlas’
- Long-term performance (deep Baltic circulation)
- Storm surge
- Major Baltic inflow
- Sea ice

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Thank you