Oceanographic BSH data for ECDIS / ENCs
Meeting of TWCWG 2, Victoria, 8 - 12 May 2017

Stephan Dick,
Federal Maritime and Hydrographic Agency (BSH)

Federal Maritime and Hydrographic Agency (BSH)

- Maritime authority of the Federal Republic of Germany

- Located in Hamburg in Rostock

- Maritime government research agency in the Federal Ministry of Transport and Digital Infrastructure

- Four departments:
  - Maritime security and general services to shipping
  - Nautical and hydrographic information services
  - Marine Science and Services
  - Central department
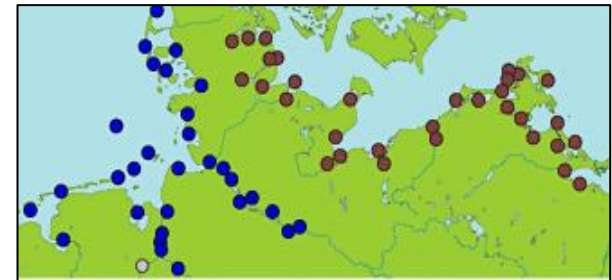

BSH Hamburg   BSH Rostock

North Sea   Baltic
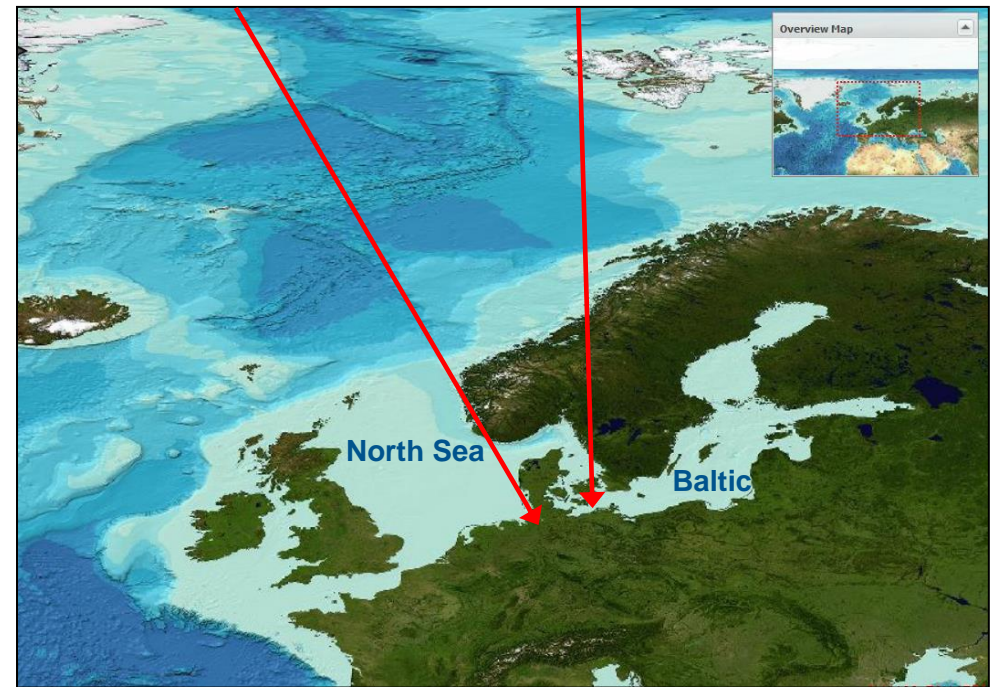
Oceanographic data at BSH (I)
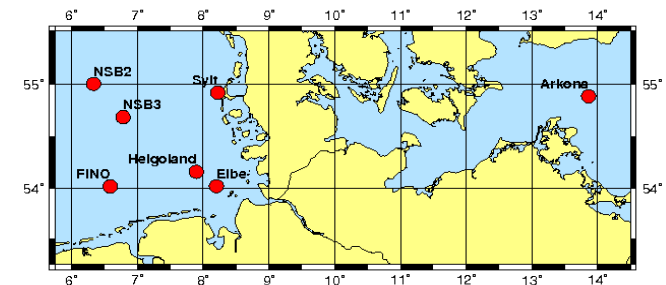
Available observations (Real Time):

1. **Water level**

   Measured water levels and tidal prediction for up to 64 positions in the German Bight and western Baltic (Federal Waterways and Shipping Administration)

2. **Wave data**

   Measurements of up to 7 stations in the German Bight and western Baltic

3. **Water temperature, salinity and currents**

   Measurements of the Marine Environmental Monitoring Network in the North Sea and Baltic Sea (MARNET)

Oceanographic data at BSH (II)
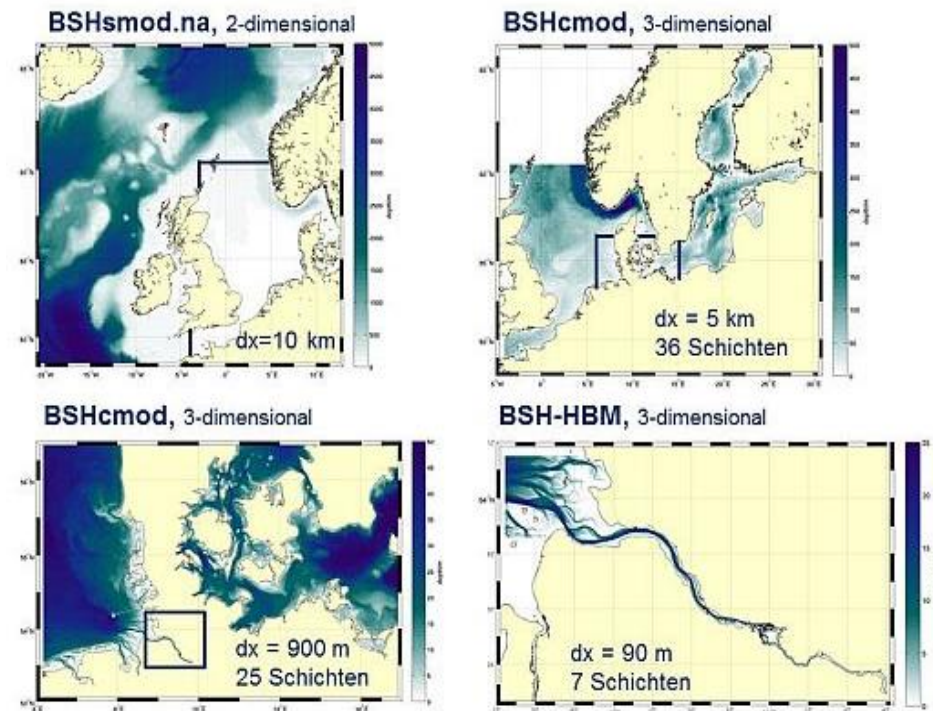
Available model forecasts:

1. **Water level**
   Forecasts of waterlevels and surges for North Sea, Baltic Sea and German coastal waters (up to 7 days)

2. **Wave data**
   Forecasts of German Weather Service for Global Ocean, North Sea and Baltic Sea

3. **Water temperature, salinity, currents and sea ice**
   Forecasts for North Sea, Baltic Sea and German coastal waters (up to 3 days)

BSH model grids and nesting

Oceanographic data at BSH (III)

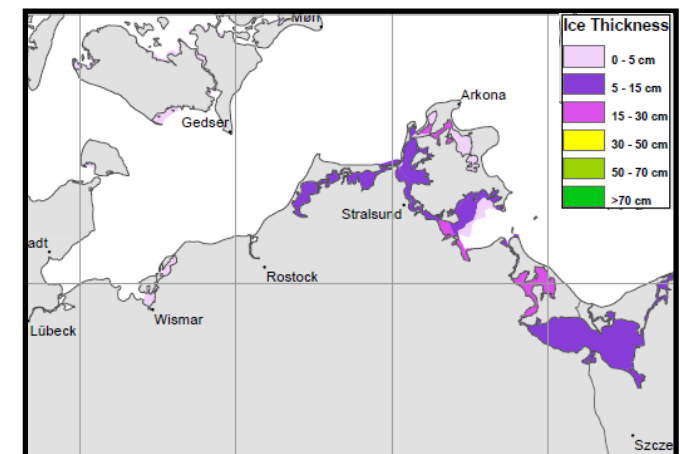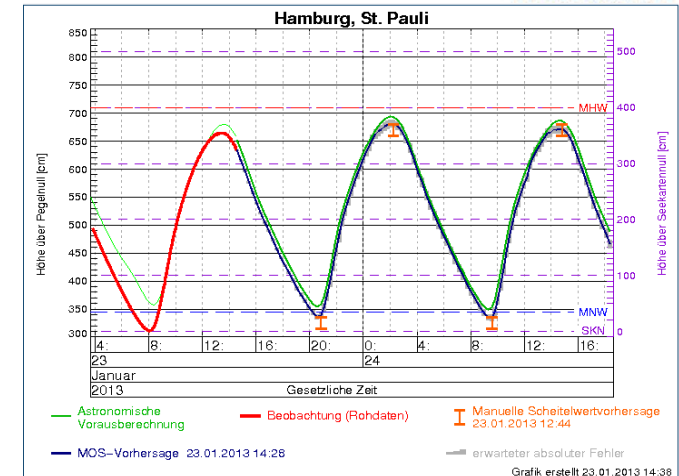## Additional predictions and services:

1. ## Water level predictions

   MOS prognoses (MOS: Model Output Statistics) for up to 64 positions in the German Bight and western Baltic (ASCII)
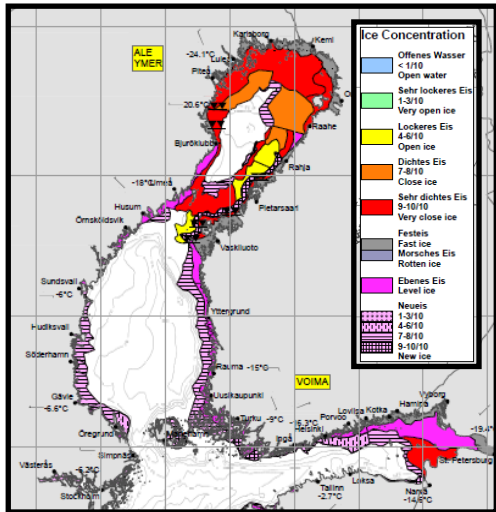
2. ## Ice information

   Ice charts of Baltic Sea, western Baltic and North Sea

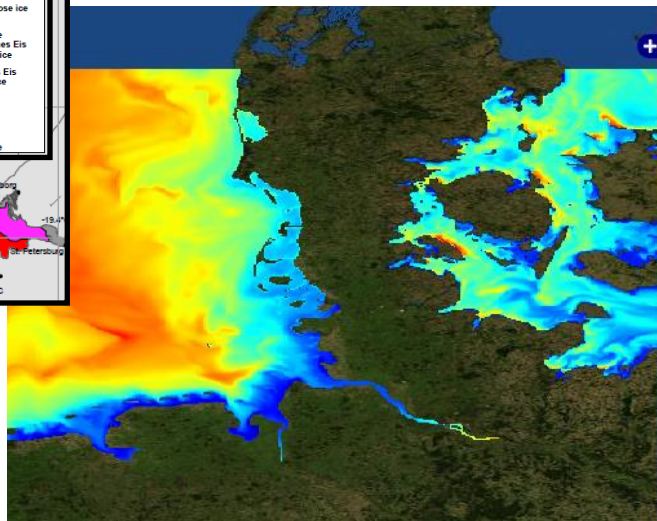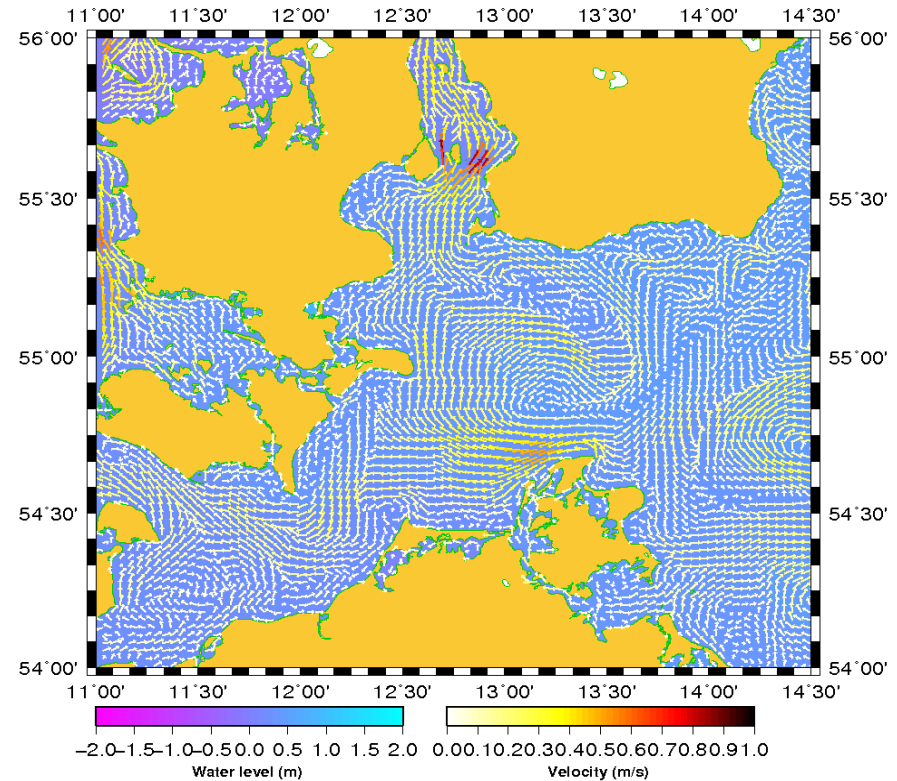   (also available: S-411 Ice Information Product)

Examples:

1. Sea ice concentration (Baltic)
2. Surface water temperatures in North Sea and Baltic
3. Currents (model forecasts)

1

2

3

Other sources for oceanographic data

BSH contributes to a European Marine Service:

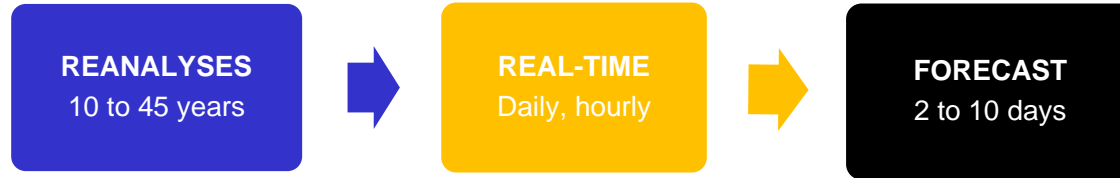## Copernicus Marine Environment Monitoring Service (CMEMS)

CMEMS provides continuous information on the state of the global ocean and regional European sea areas

Central service desk for all products and data:

http://marine.copernicus.eu/

Copernicus
Marine Environmental Monitoring Service

Copernicus — The European Earth Observation Programme

BSH — BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE

REANALYSES 10 to 45 years → **REAL-TIME** Daily, hourly → **FORECAST** 2 to 10 days

ESSENTIAL OCEAN VARIABLES

- CURRENTS
- TEMPERATURE SALINITY
- SEA LEVEL WAVES
- SEA ICE
- SEA WIND
- BIOGEO CHEMISTRY

1 Global
2 Arctic
3 Baltic
4 NWS
5 IBI
6 Med Sea
7 Black Sea

DISCOVER

VIEW

DOWNLOAD

Open & Free

Copernicus
Marine Environmental Monitoring Service
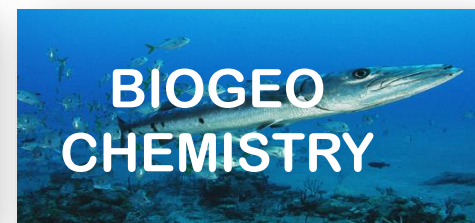
Examples of products:

Baltic Sea: Predicted surface currents
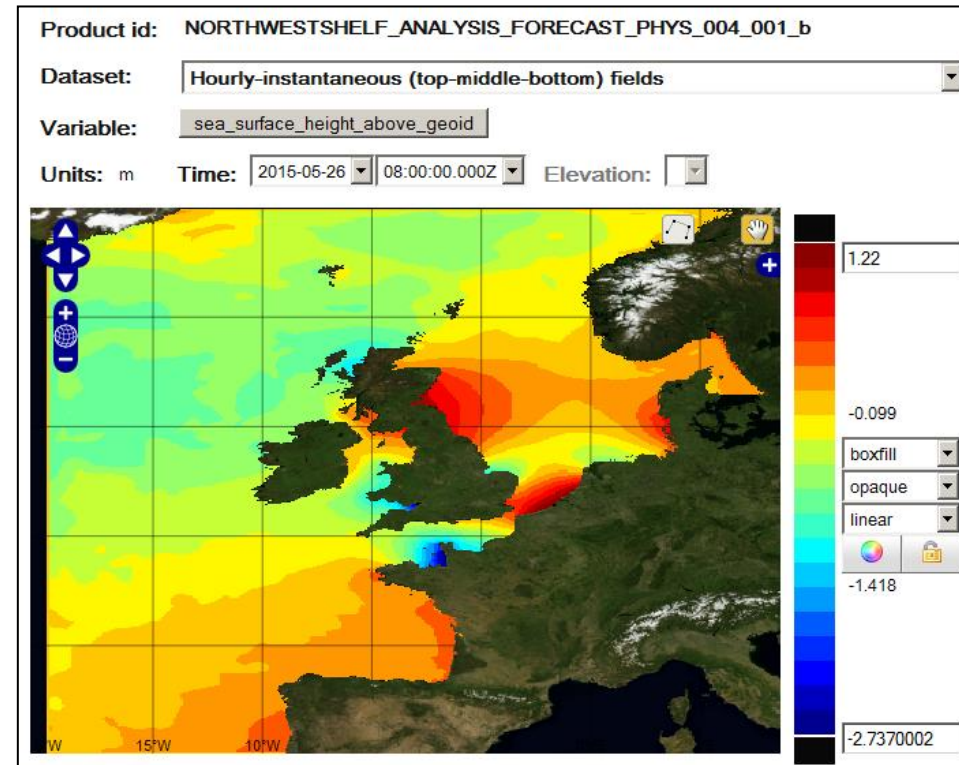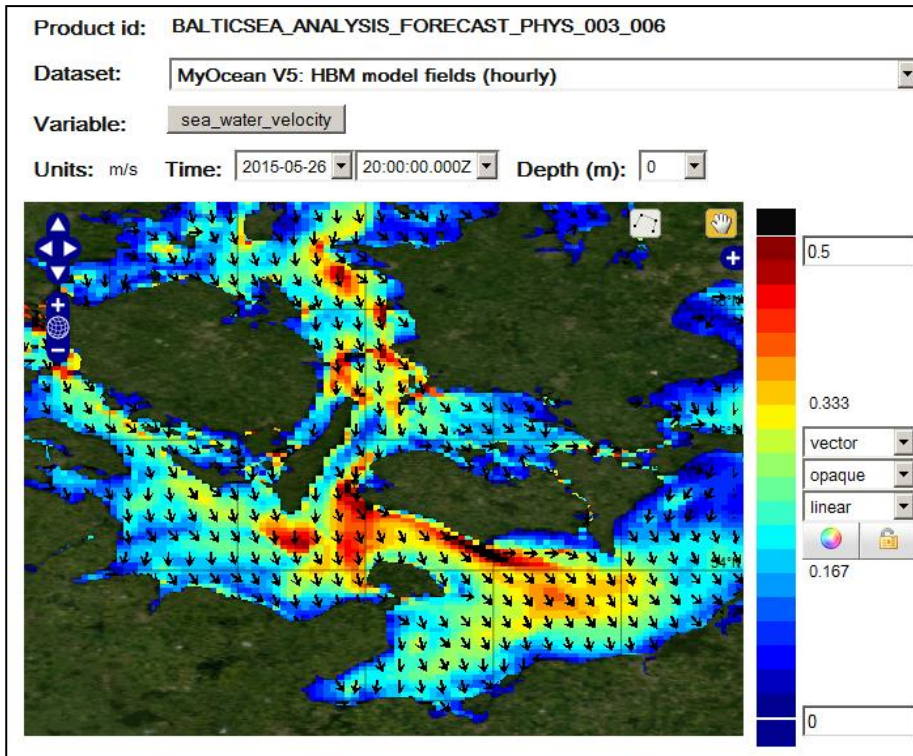
NW Shelf Area: Predicted water levels

Copernicus
Marine Environmental Monitoring Service

Examples of products:

Baltic Sea: Predicted water tempratures (SST)
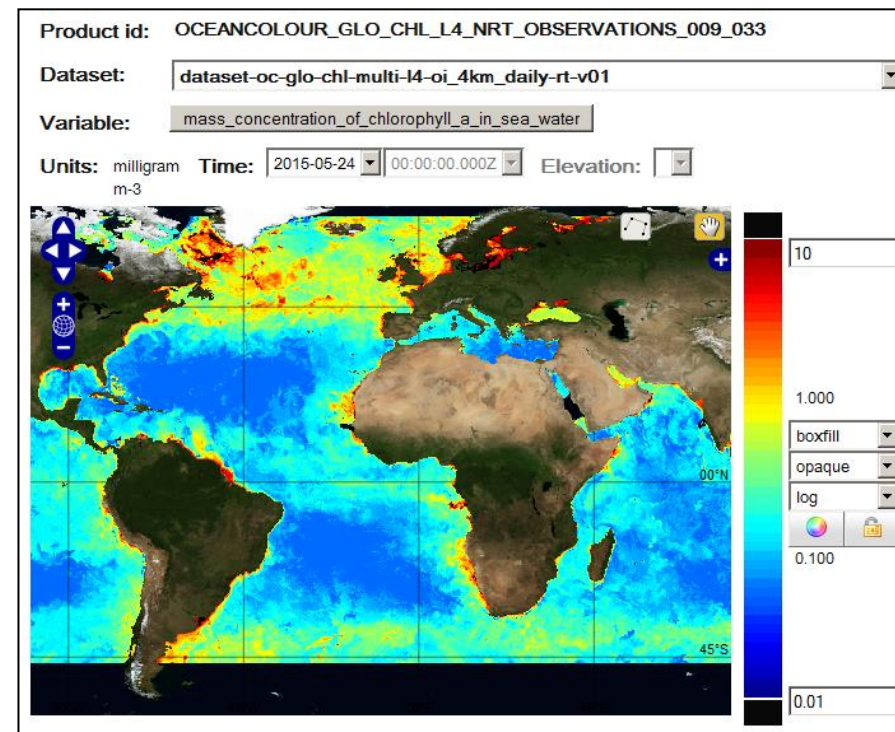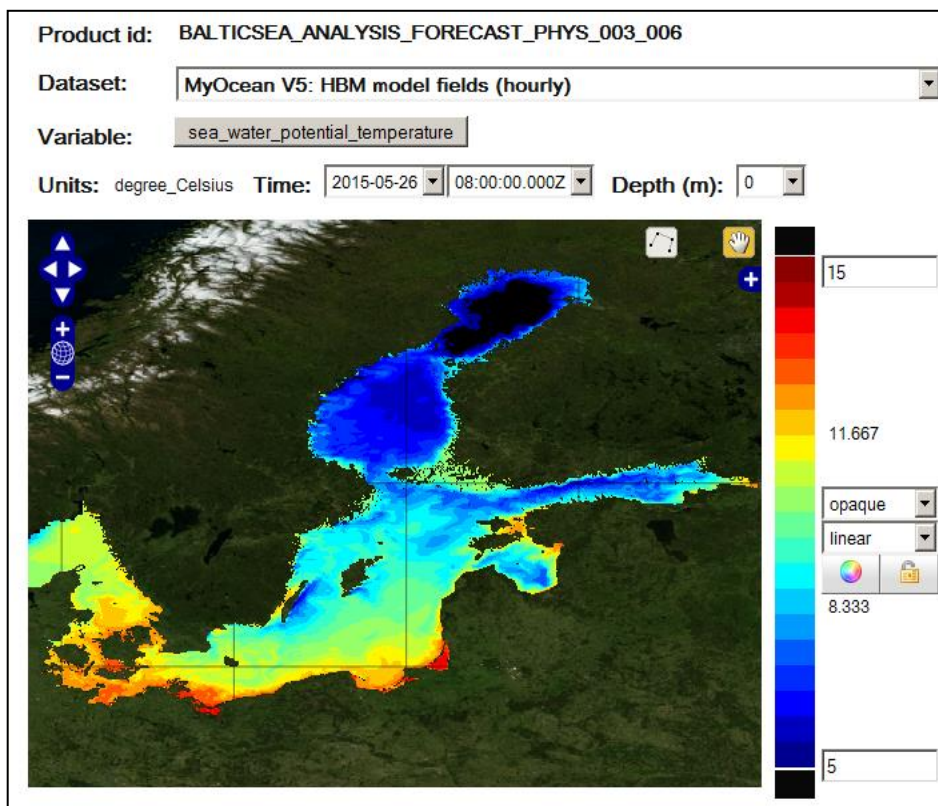
Measured chlorophyll concentration (satellite)

New project ImoNav

- ImoNav - Integration of high resolution marine geodata into electronic navigation systems
- National project to develop a new navigation service for (German) marine water ways
- Partner: BSH and two companies (smile consult and SevenCs)
- Coordinator: BSH
- Duration: 3 years
- Start: 01.06.2017

New project ImoNav

Project aims:

- Provision of oceanographic data (water levels, currents, temperature…) and high resolution bathymetries for navigation and ship traffic management

- Combination of bathymetry data with water level measurements and forecasts

- Presentation and demonstration of new pilot products in ECDIS/ENC systems

- Development of concepts for communication methods and transfer of data on board of ships
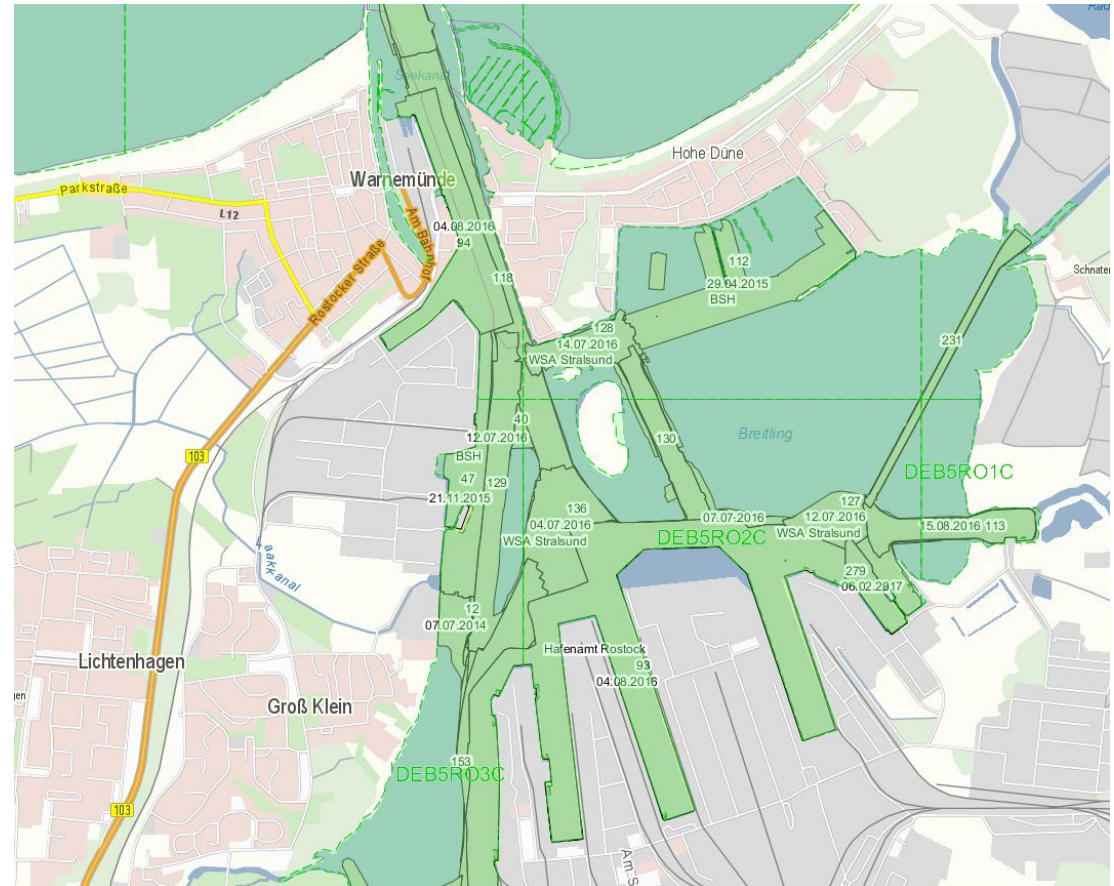
- Pre-operational service and test


Hamburg, St. Pauli
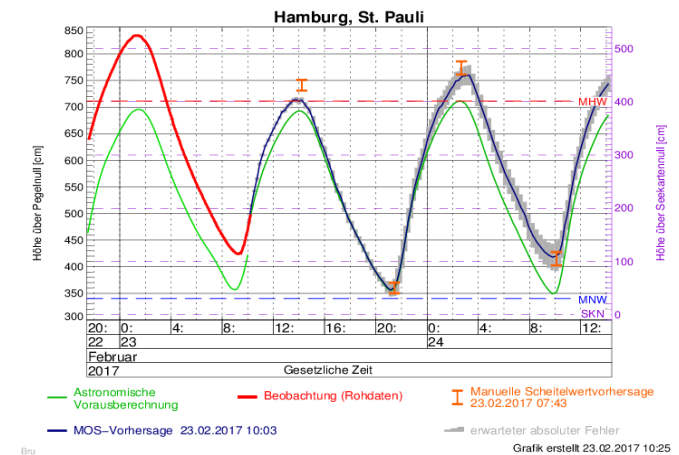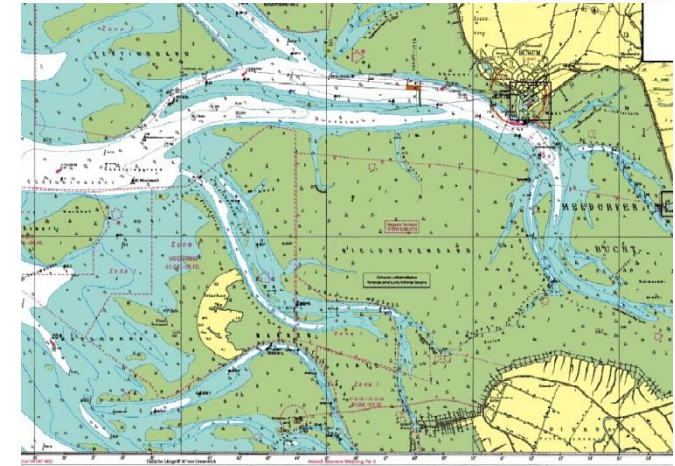
Tasks of BSH: Hydrographic data I

- Automatic collection of hydrographic data from different institutions

- Merging and combining of different hydrographic data

- Creation of high resolution gridded bathymetry

- Automatic processing of new bathymetry data within 1-2 days

Hydrographic data II

Main task: Production of a smouth digital ground model
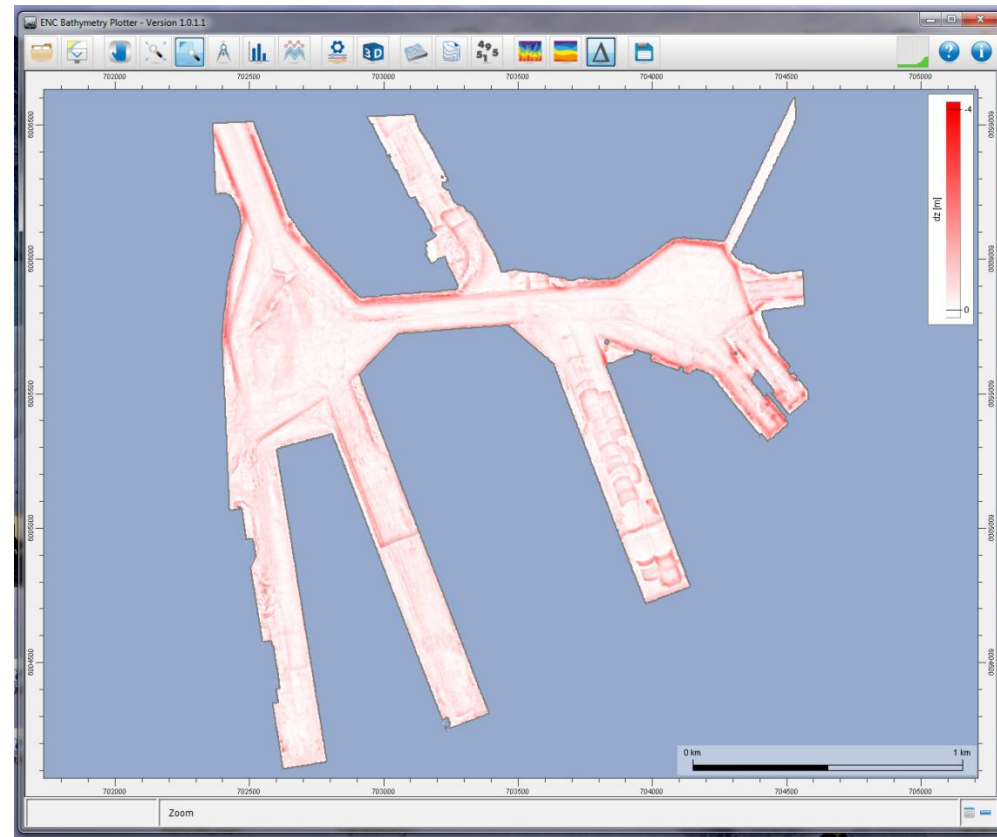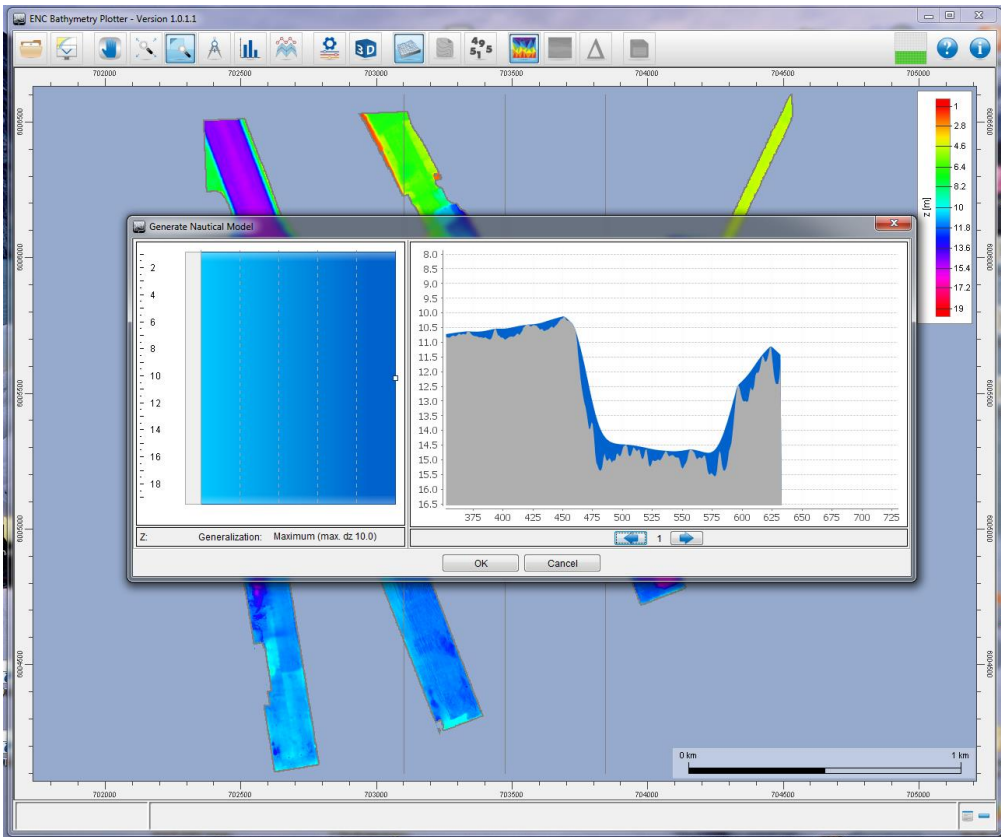
Tasks of BSH: Oceanographic data

1. Horizontal distribution of total water levels in German Bight (forecasts of operational BSH models)

2. Time series of measured water levels, astronomical tidal prediction and MOS forecasts at station Cuxhaven

3. Task: Combination of data sets

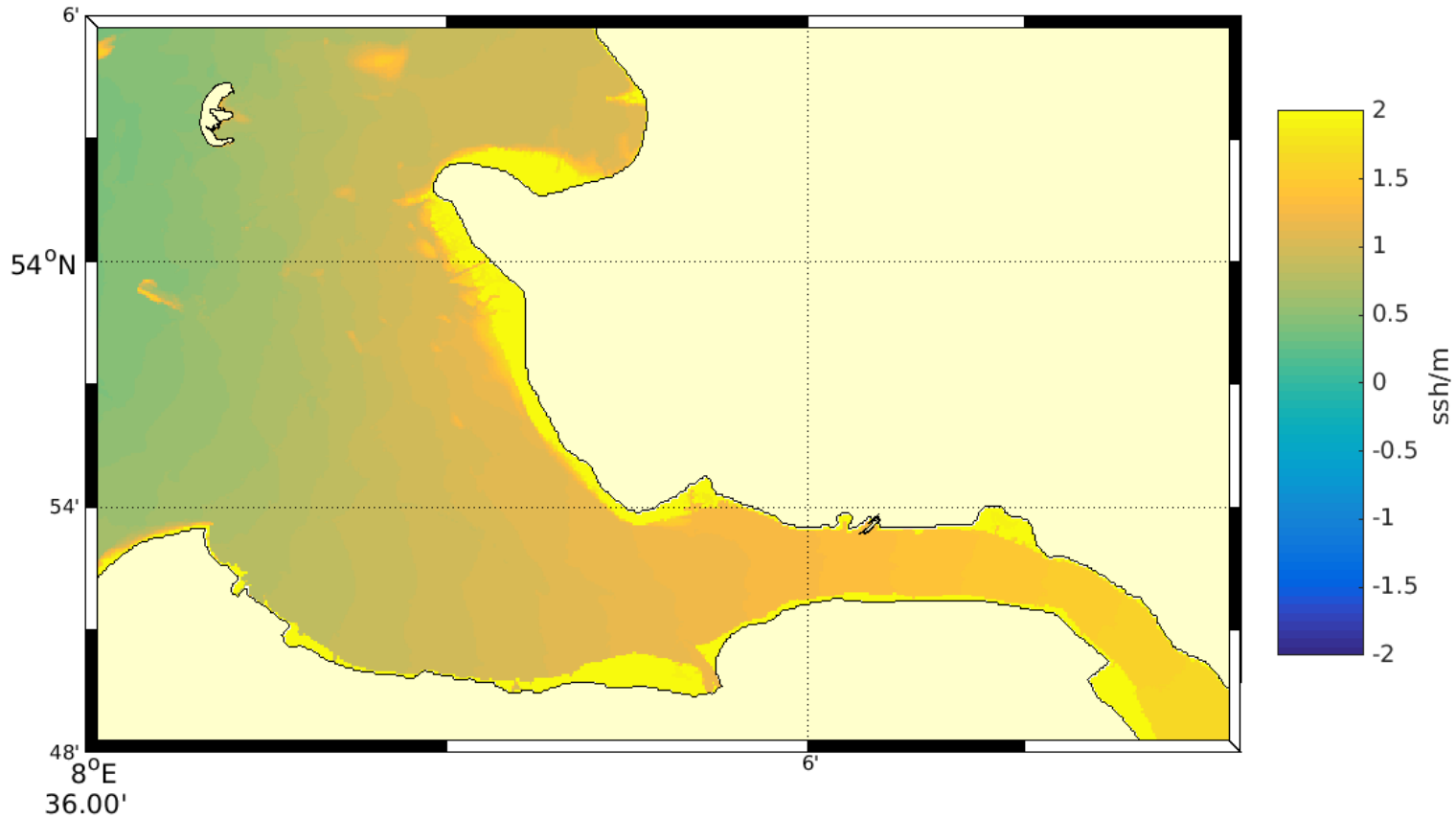4. Provision of other oceanographic data
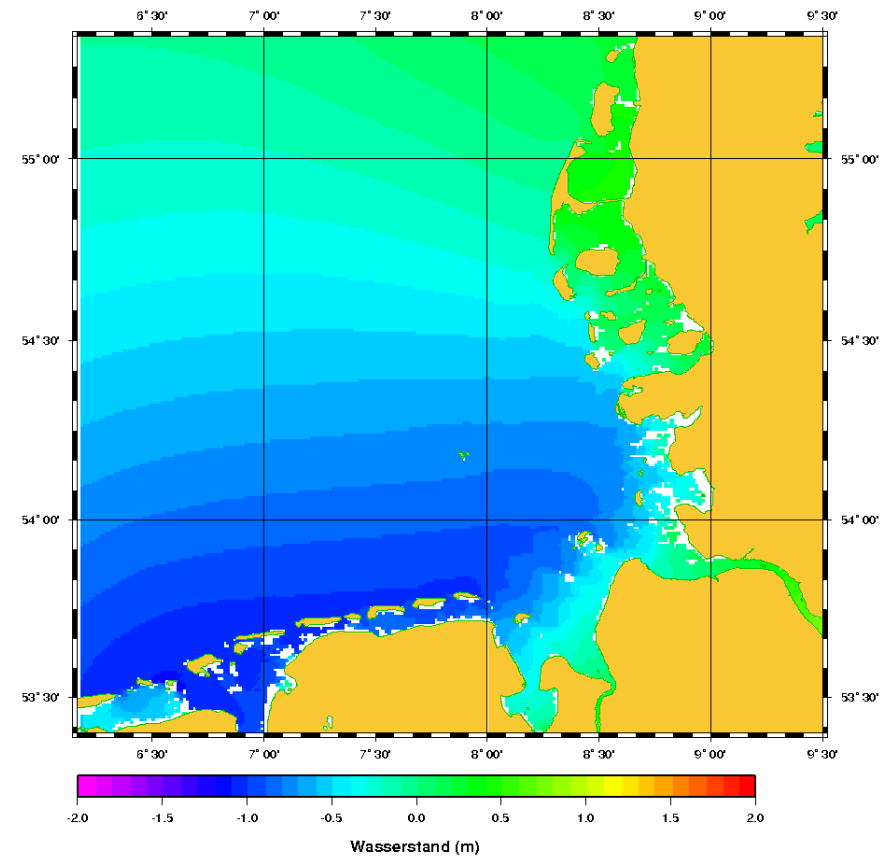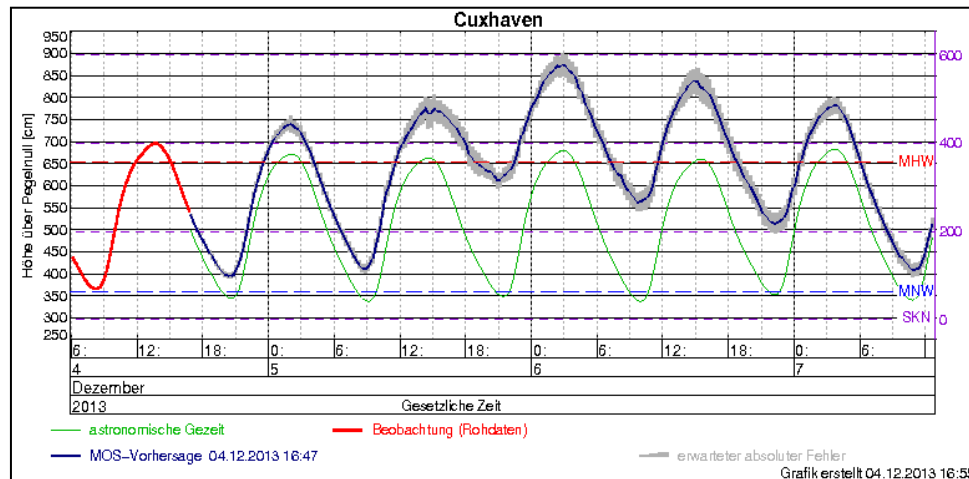
Water levels

30-Dec-2016 00:15:00 UTC
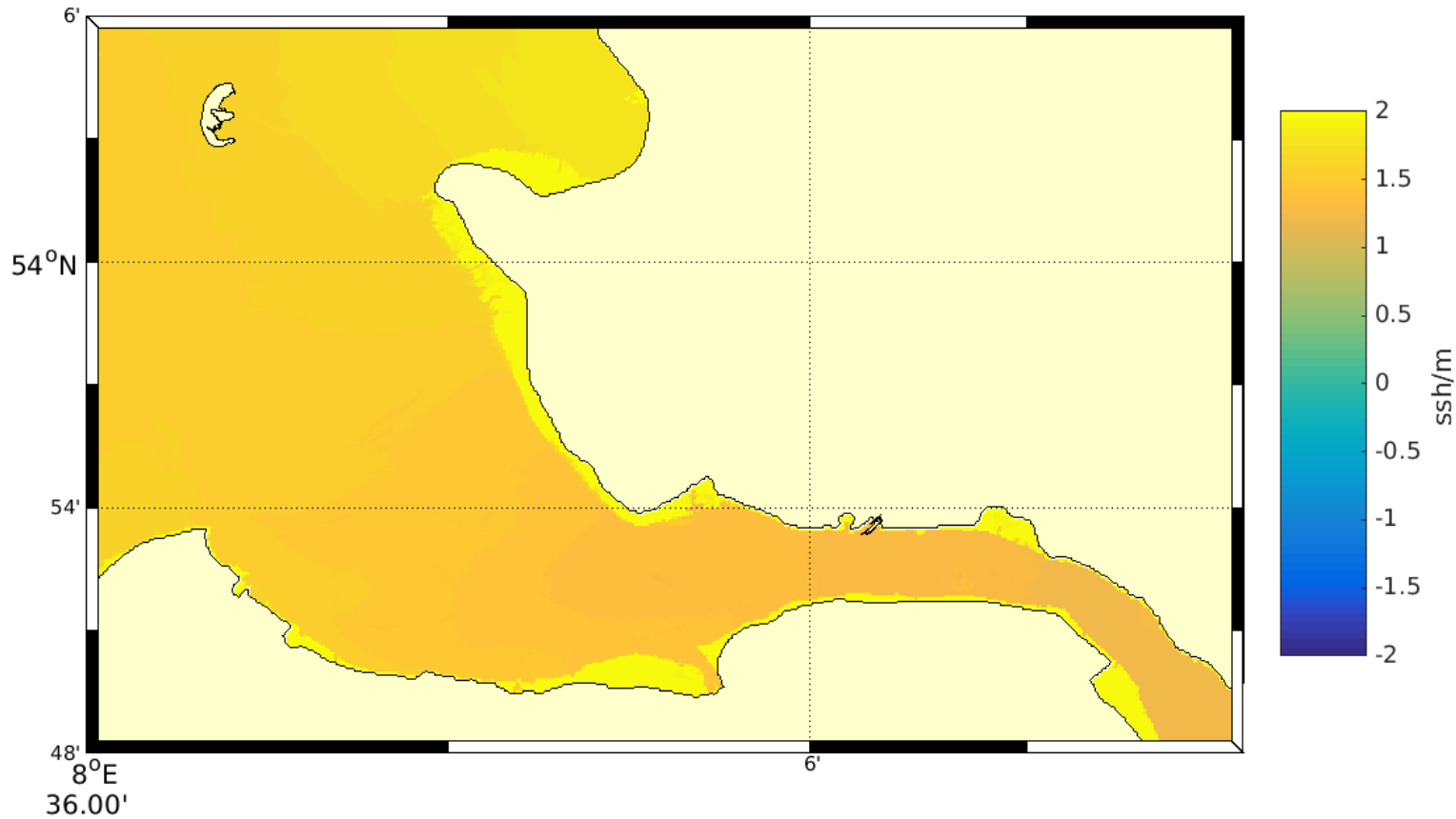
Water levels
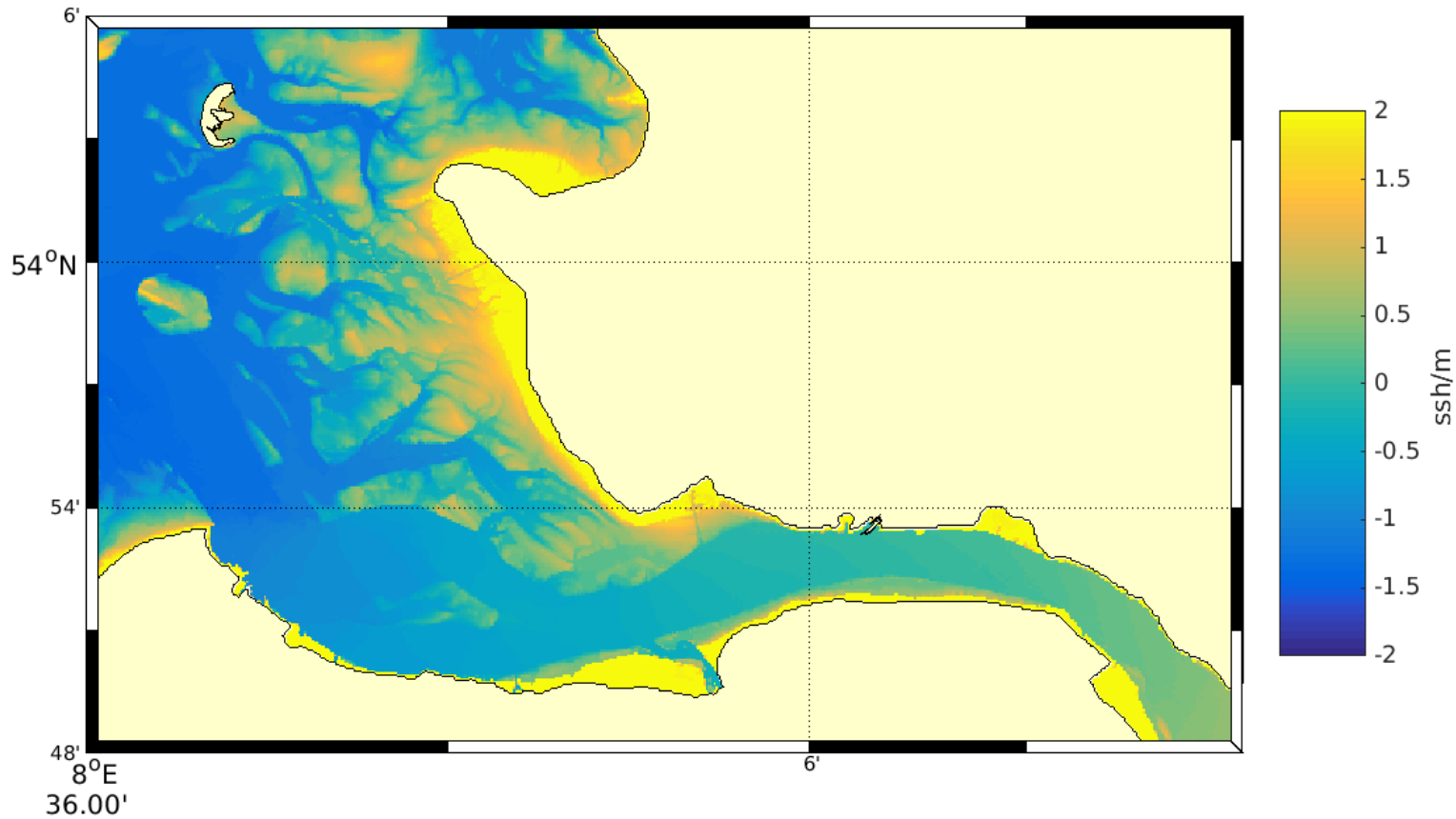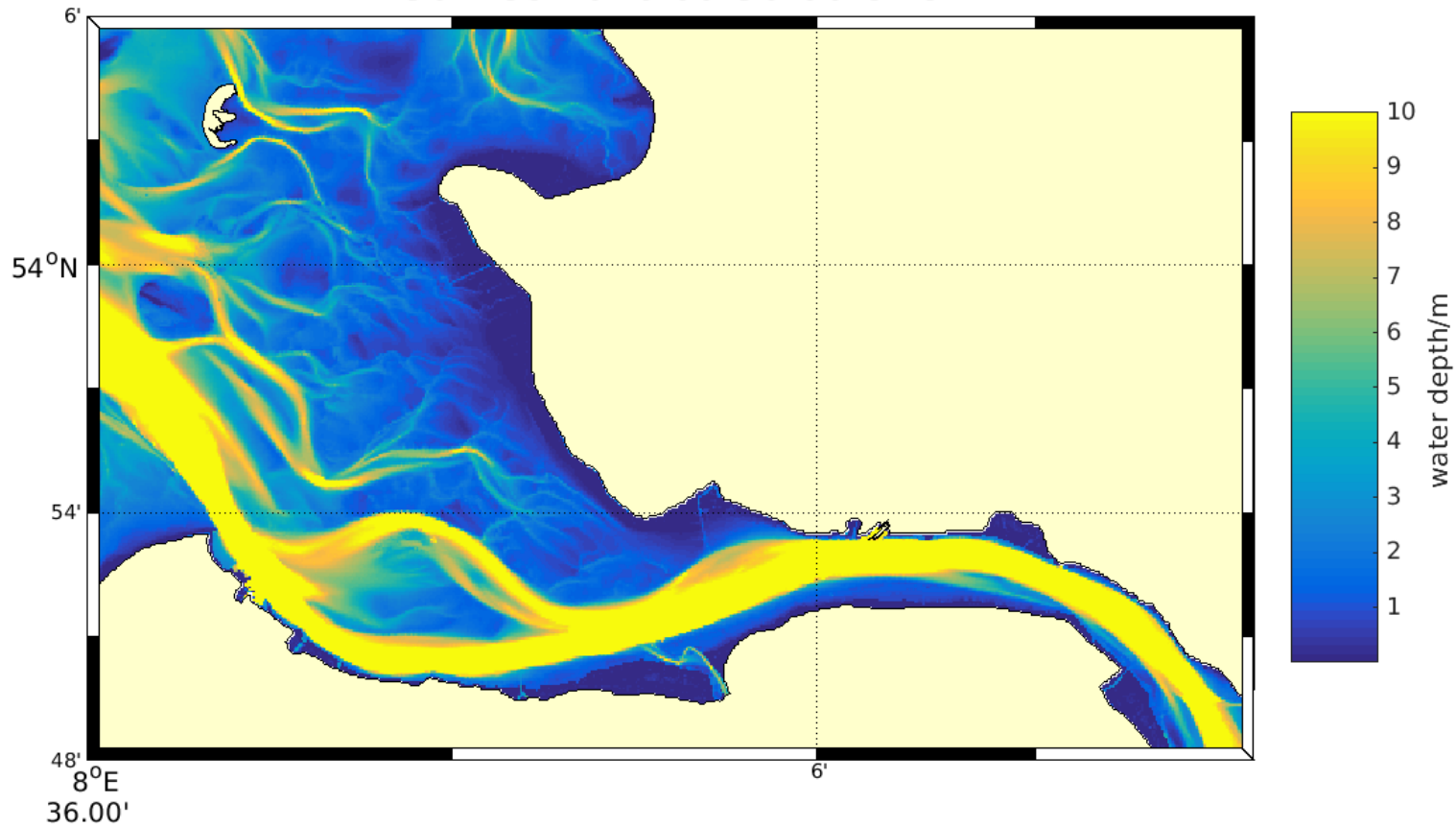

30-Dec-2016 02:30:00 UTC
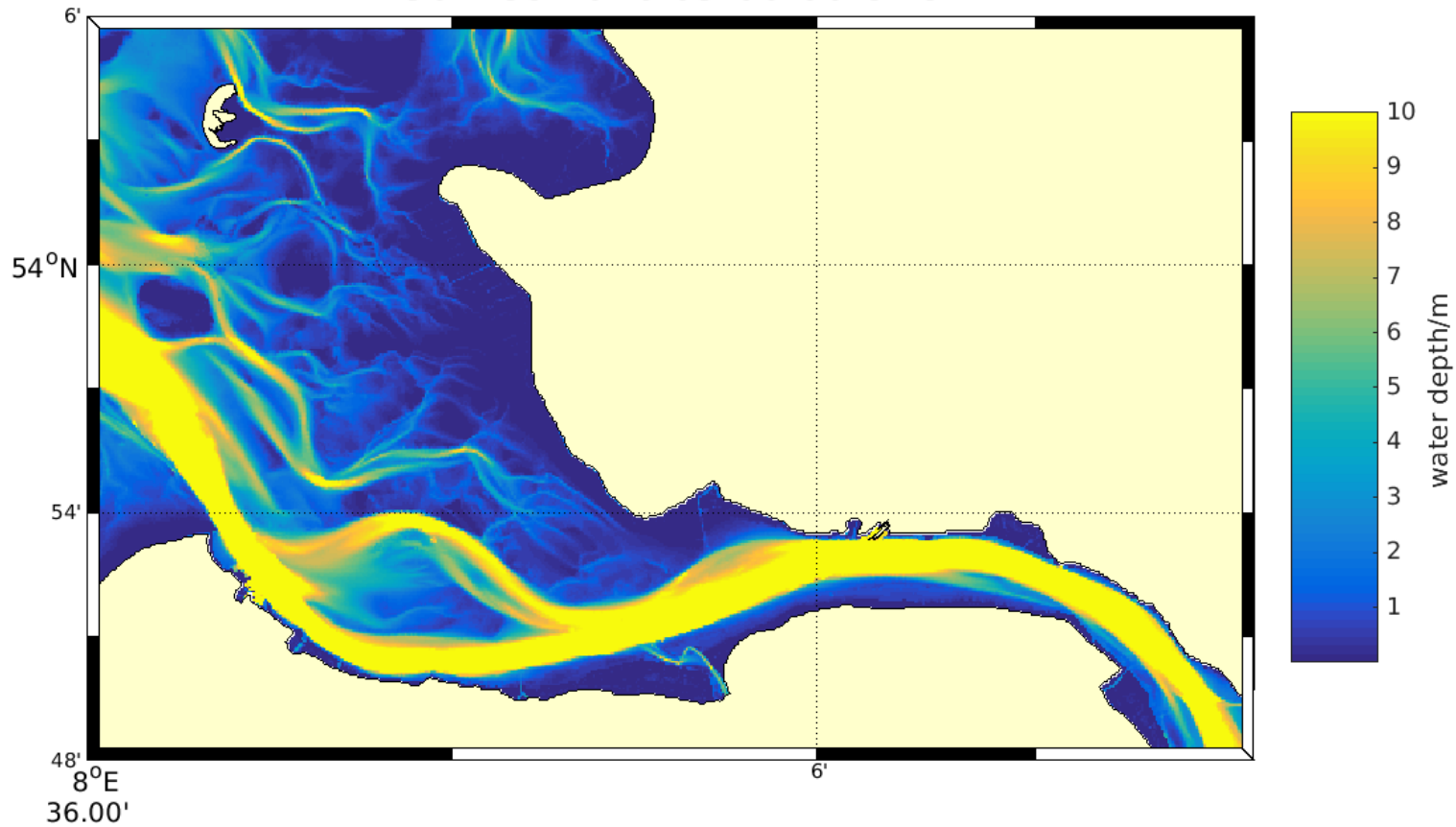
Water levels

30-Dec-2016 05:00:00 UTC

Water levels + depth = dynamic water depth

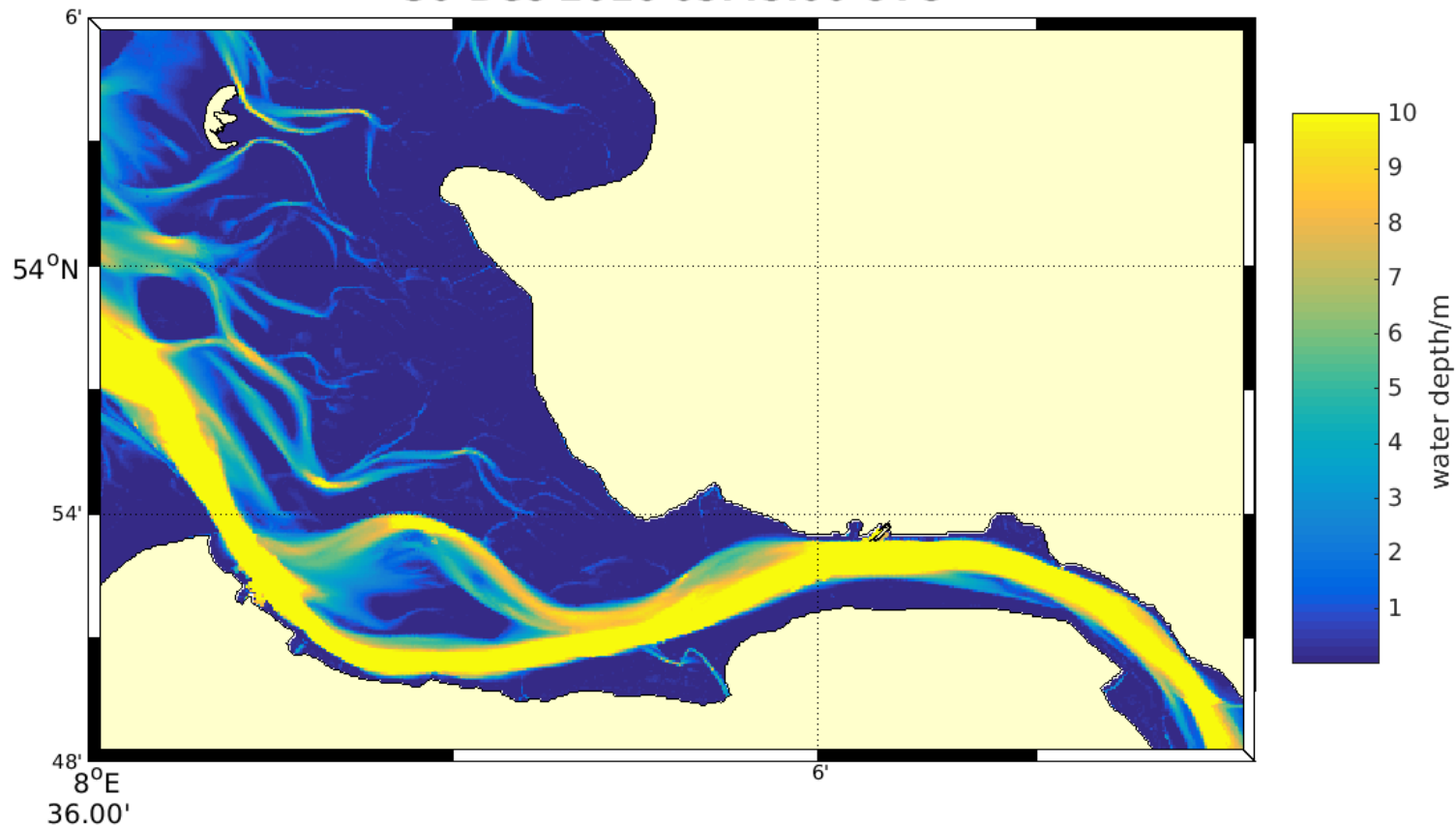30-Dec-2016 00:30:00 UTC

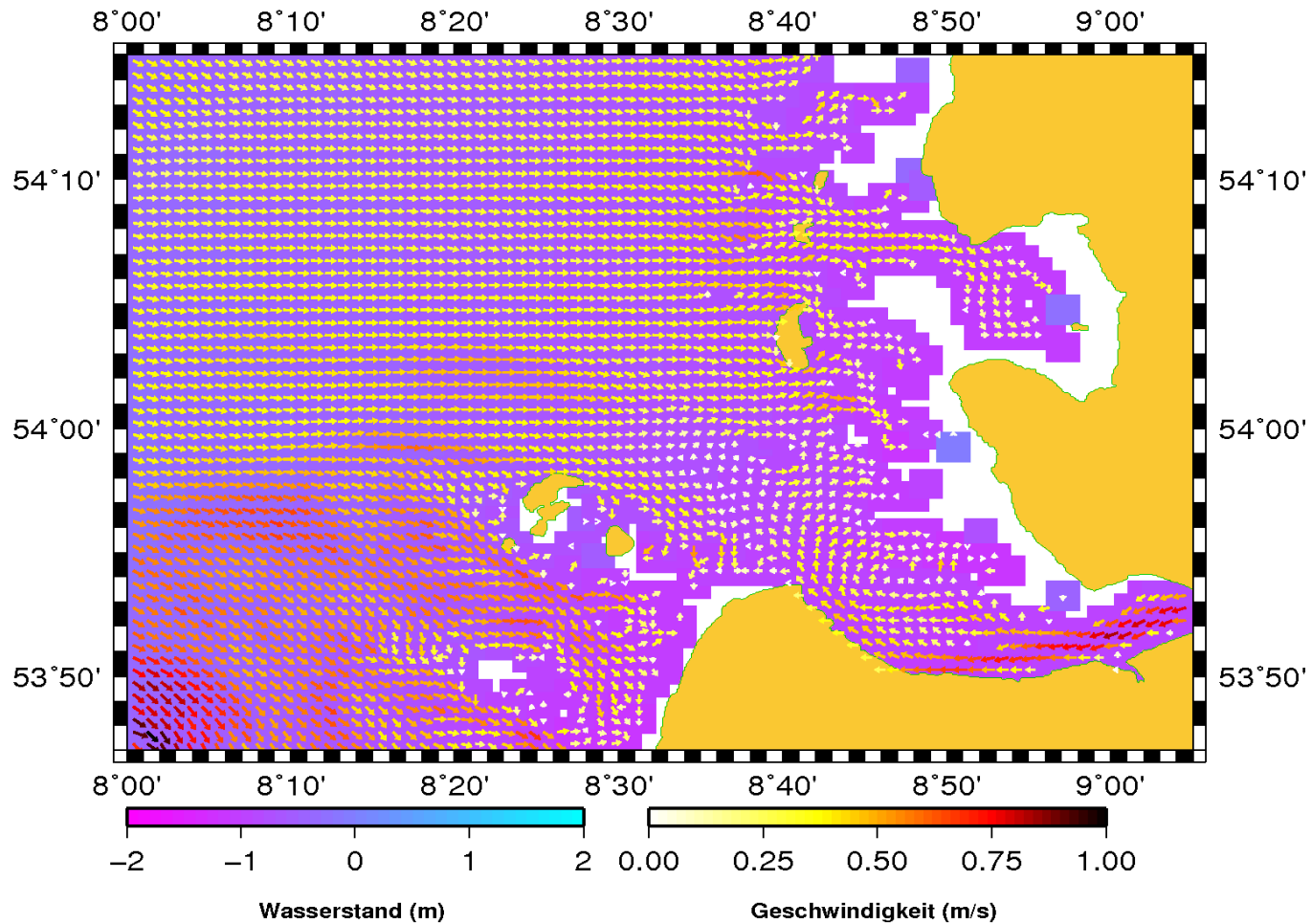# Water levels + depth = dynamic water depth

30-Dec-2016 03:00:00 UTC

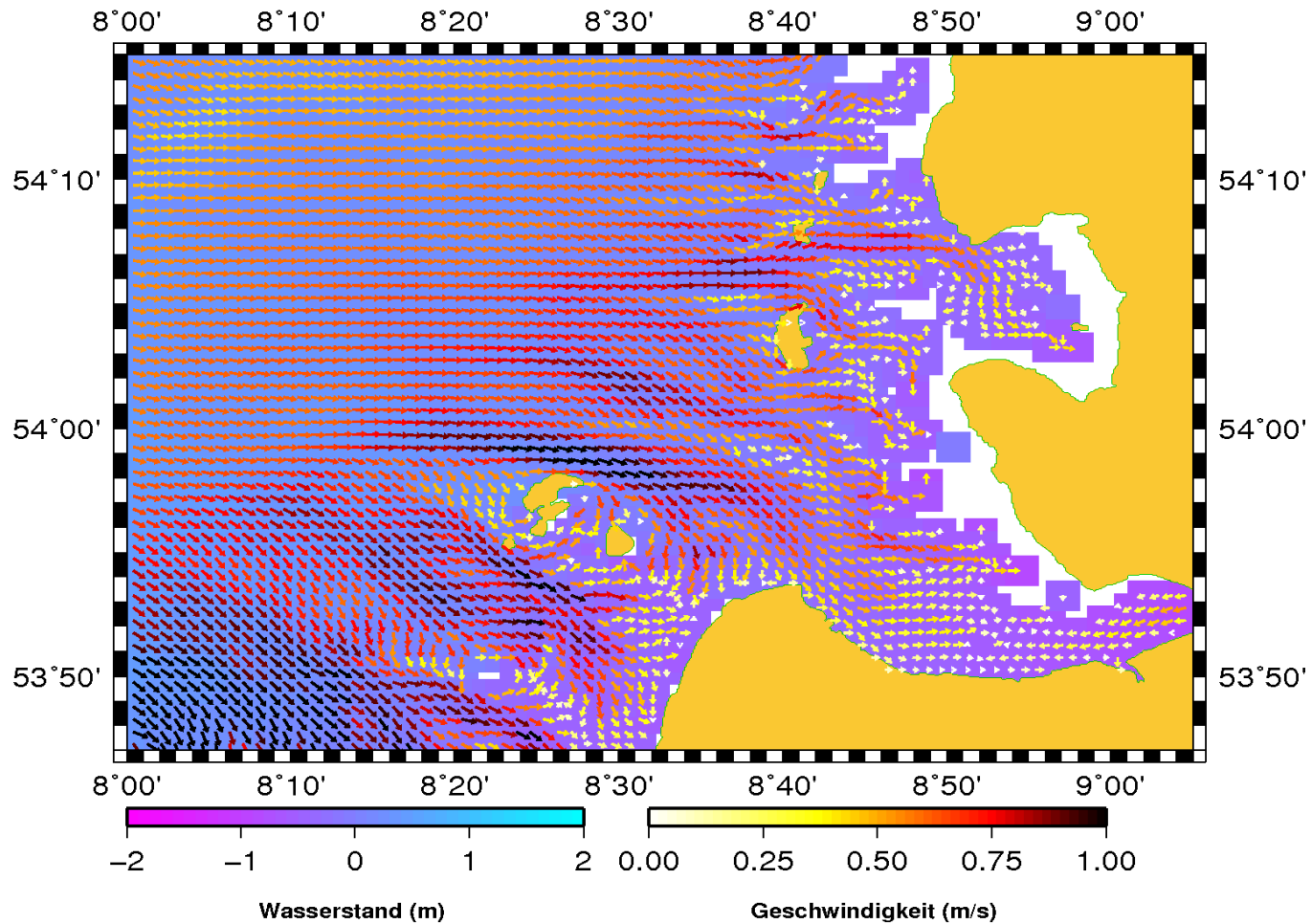# Water levels + depth = dynamic water depth

30-Dec-2016 05:45:00 UTC

Oceanographic data - currents

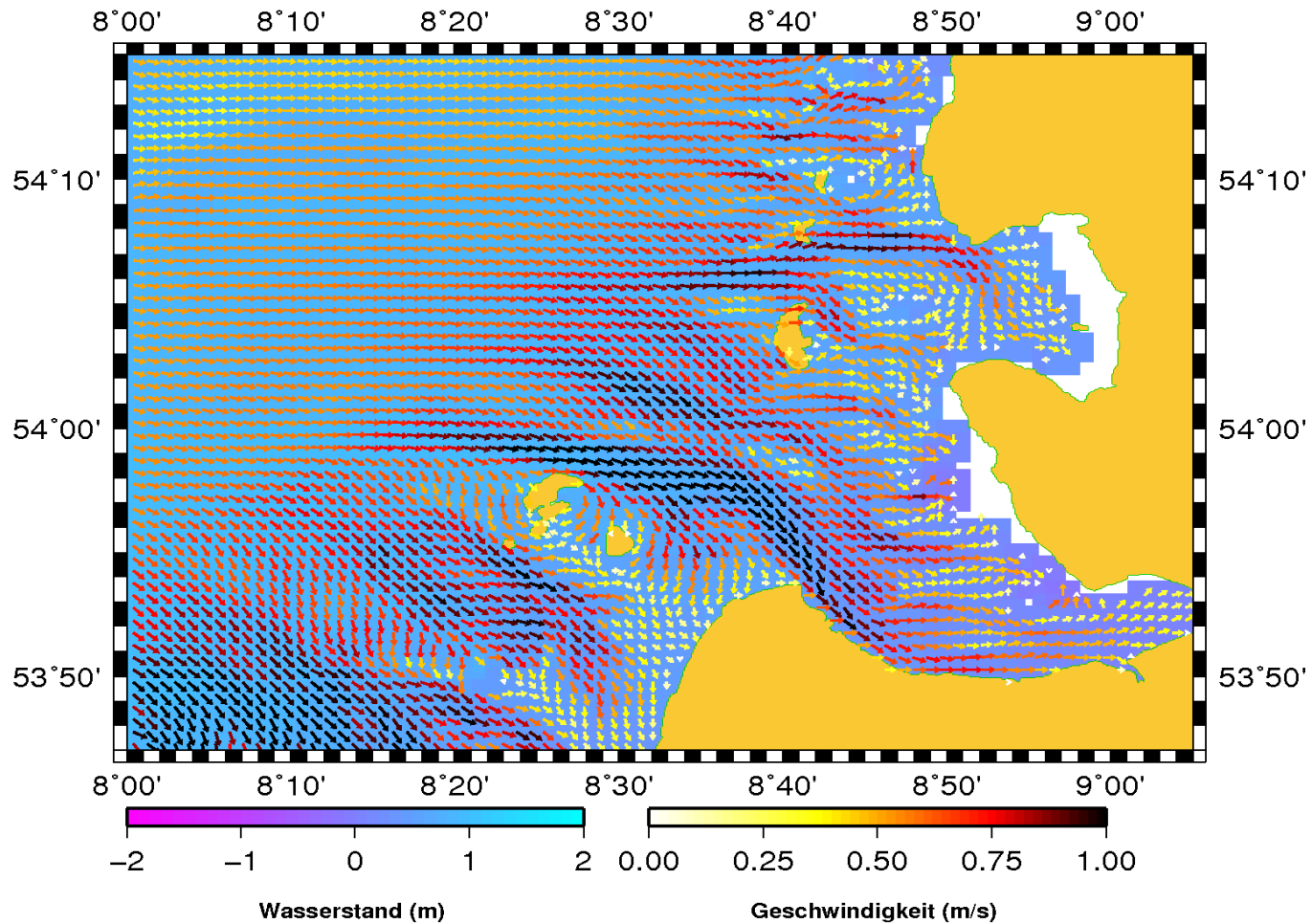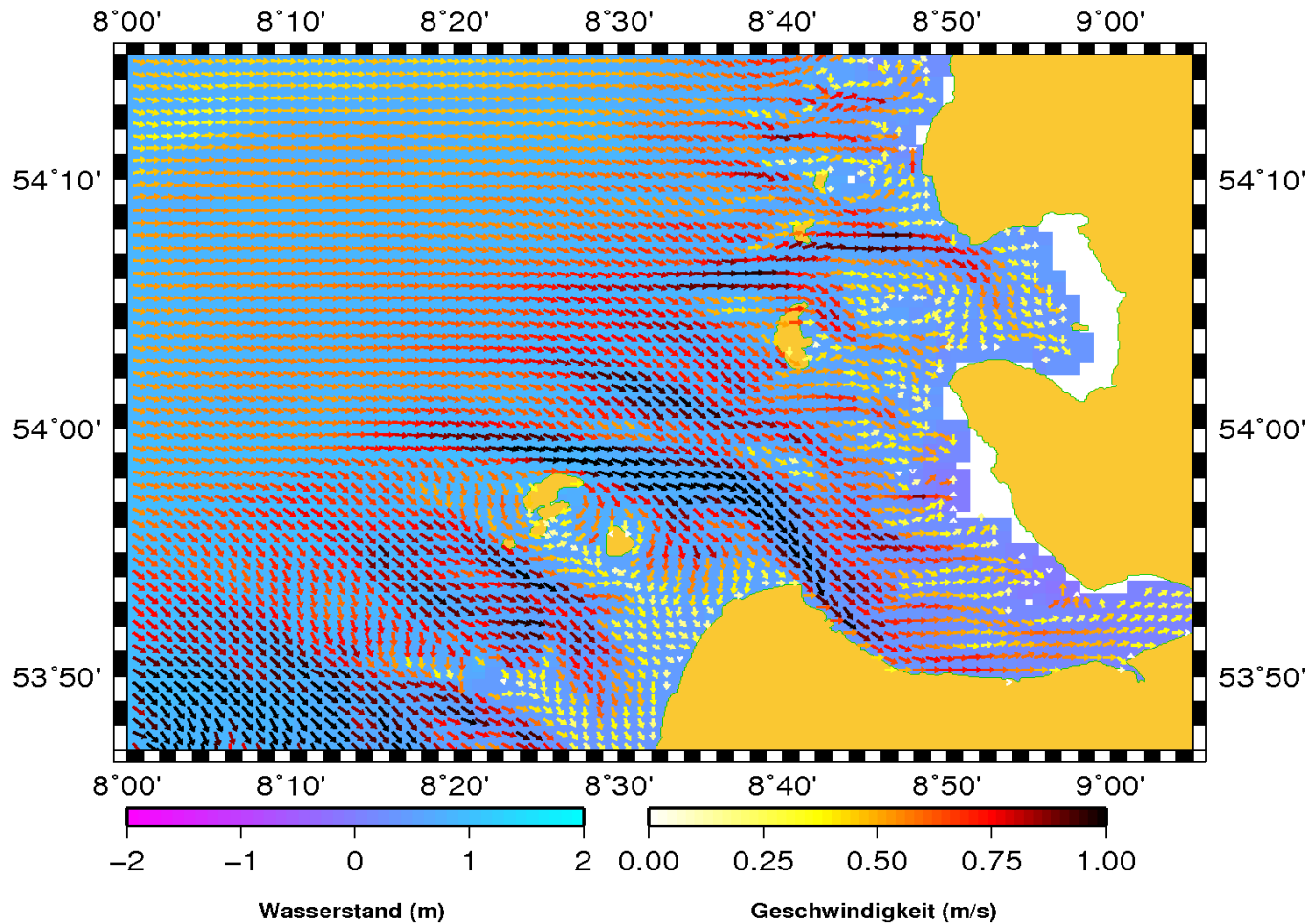Oceanographic BSH data for ECDIS, S. Dick

Oceanographic data - currents

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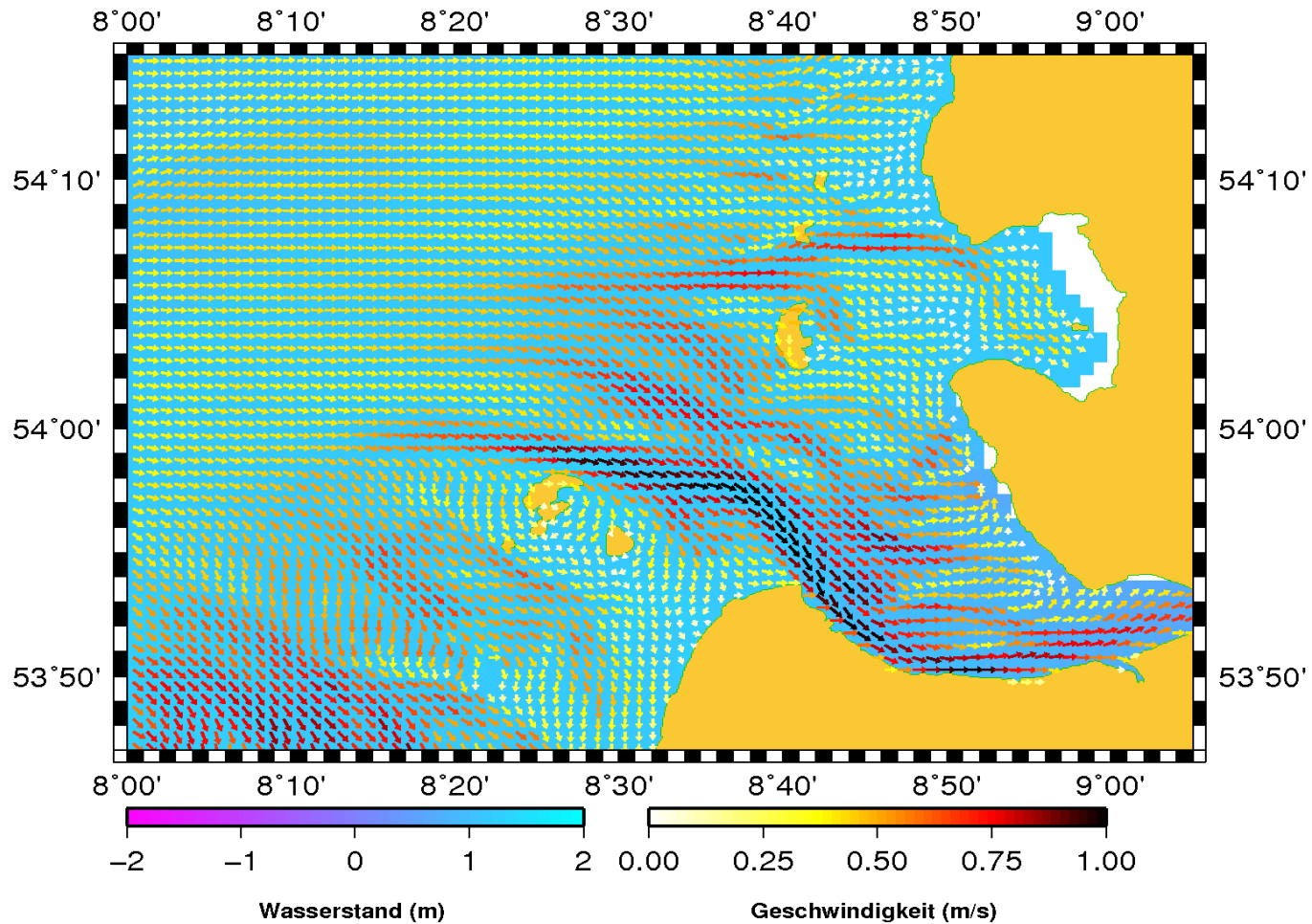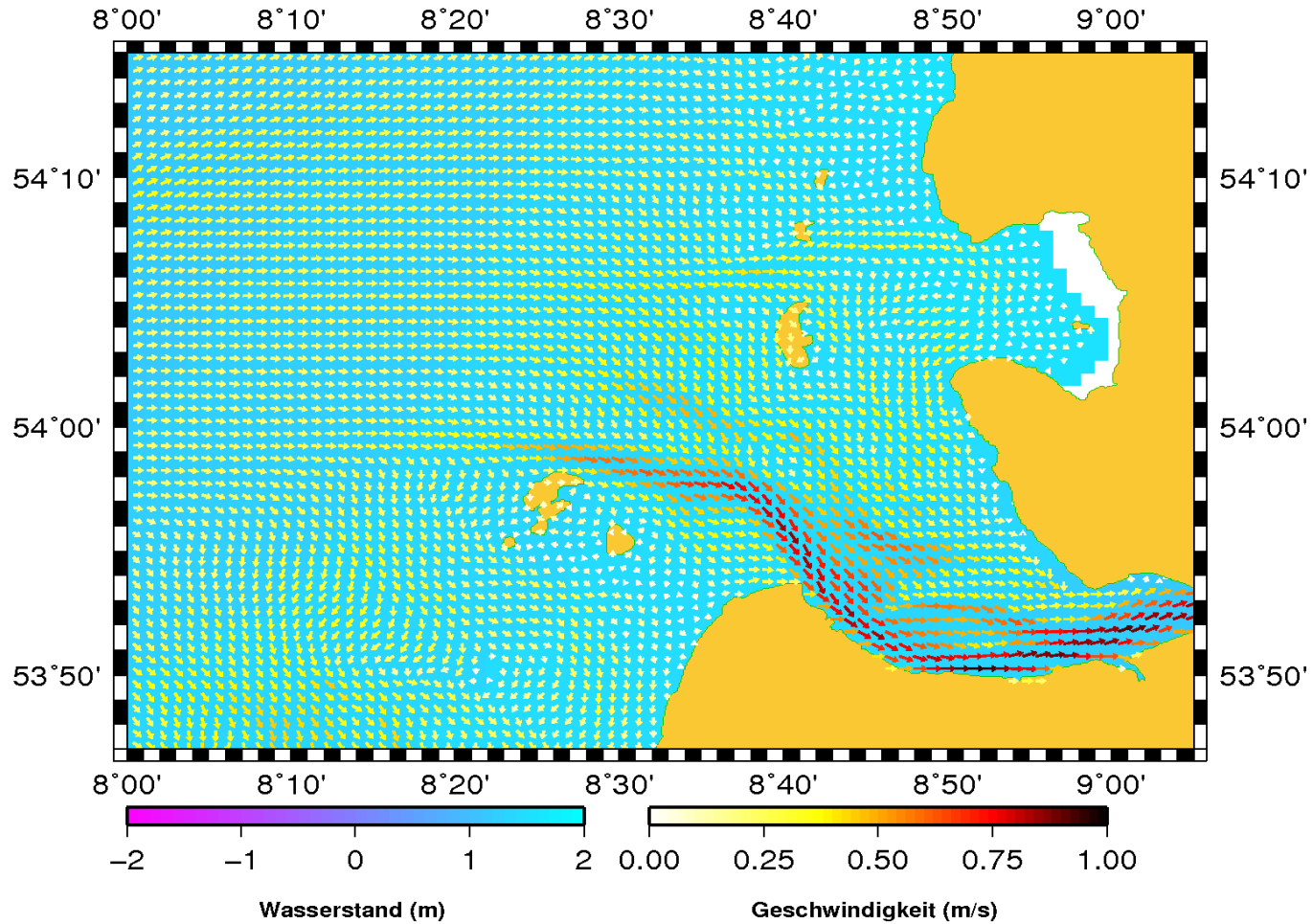
Oceanographic BSH data for ECDIS, S. Dick

Oceanographic data - currents

Oceanographic BSH data for ECDIS, S. Dick

Oceanographic data - currents

Conclusions

- At BSH, many oceanographic data (observations and model forecasts) are available

- The European Marine Copernicus Service (CMEMS) provides information for the global ocean and European sea areas

- In the German project ImoNav a new service for navigation and ship traffic management will be developed

  o Combination of high resolution bathymetry with water level measurements and forecasts

  o Presentation and demonstration of new pilot products (water levels, depths, currents…) in ENC systems

  o ImoNav shall support work of TWCWG and provide S-104 and S-111 test datasets

Thank you!