

Oceanographic BSH data for ECDIS / ENCs

Meeting of TWCWG 2, Victoria, 8 - 12 May 2017

Stephan Dick,
Federal Maritime and Hydrographic Agency (BSH)



TWCWG 2 Meeting, Victoria, 8 - 12 May 2017

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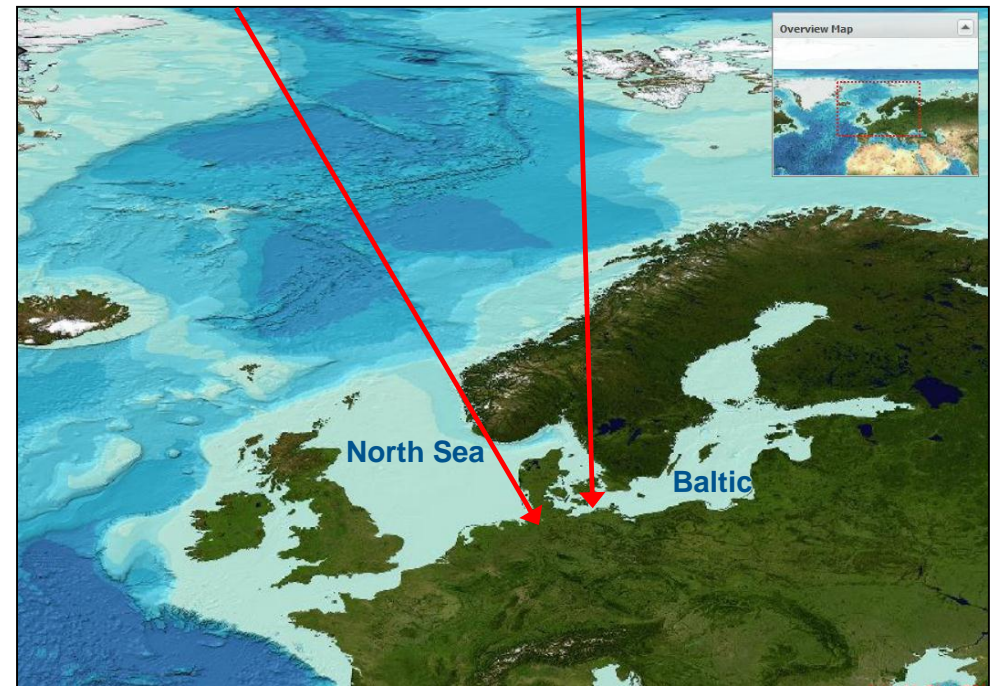
- Maritime authority of the Federal Republic of Germany
- Located in Hamburg in Rostock
- Maritime government research agency in the Federal Ministry of Transport and Digital Infrastructure
- Four departments:
 - Maritime security and general services to shipping
 - Nautical and hydrographic information services
 - Marine Science and Services
 - Central department



BSH Hamburg



BSH Rostock

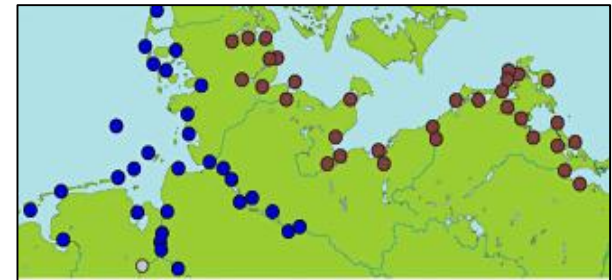


Oceanographic data at BSH (I)

Available observations (Real Time):

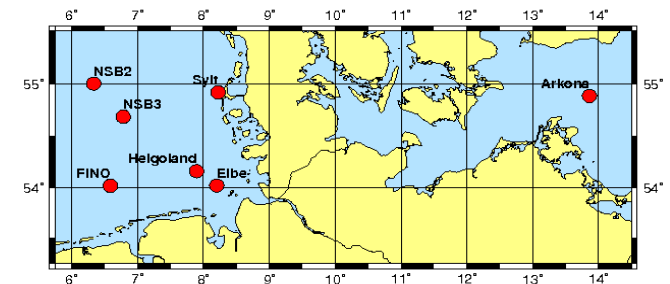
1. Water level

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

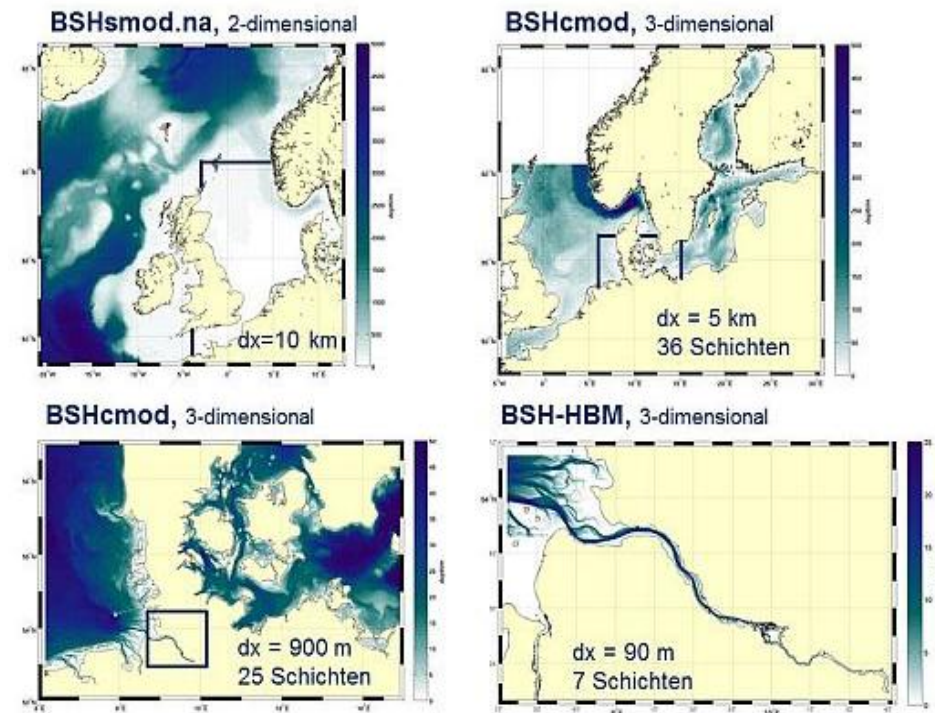
Forecasts of waterlevels and surges for North Sea, Baltic Sea and German coastal waters (up to 7 days)

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:

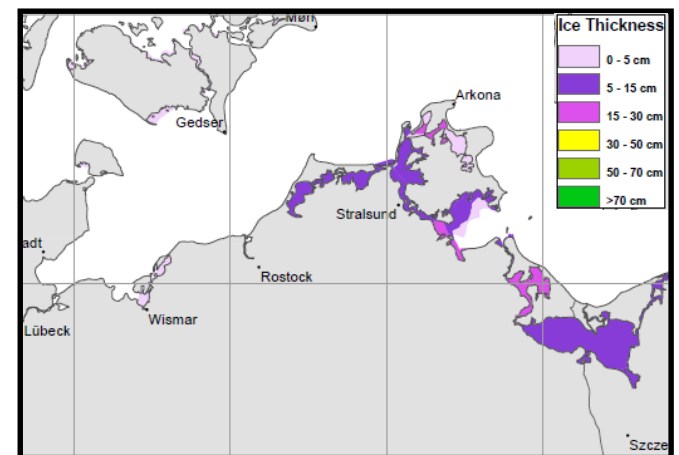
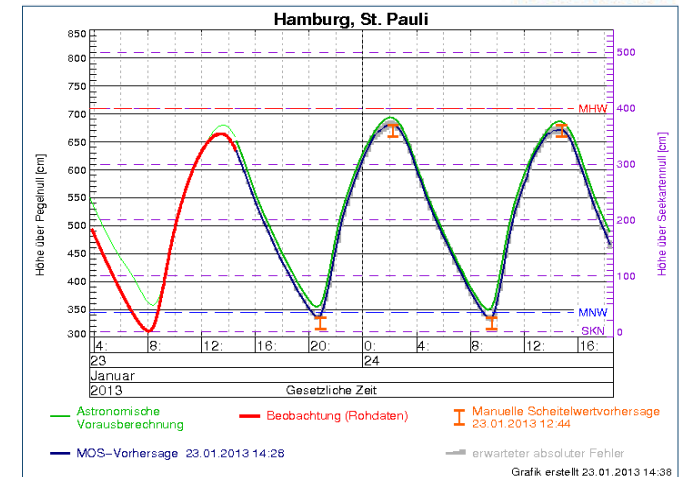
1. Water level predictions

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

2. Ice information

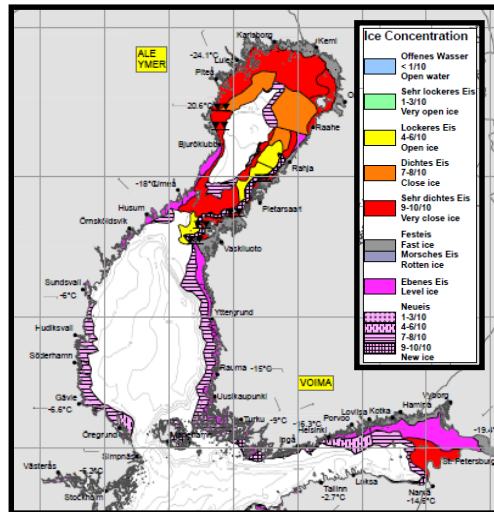
Ice charts of Baltic Sea, western Baltic and North
Sea

(also available: S-411 Ice Information Product)

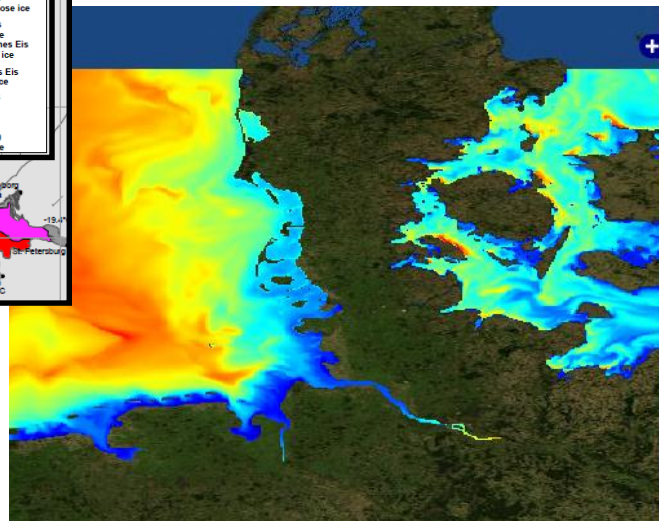


Examples:

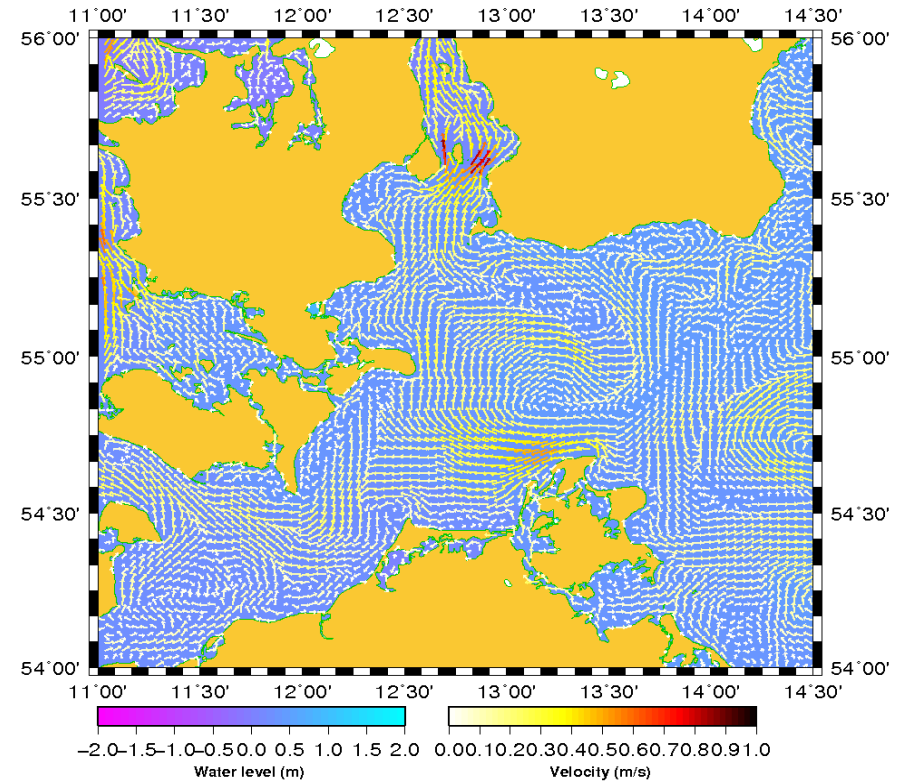
1. Sea ice concentration (Baltic)
2. Surface water temperatures in North Sea and Baltic
3. Currents (model forecasts)



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



BUNDESAMT FÜR
SEESCHIFFFAHRT
UND
HYDROGRAPHIE

REANALYSES
10 to 45 years



REAL-TIME
Daily, hourly



FORECAST
2 to 10 days

ESSENTIAL OCEAN VARIABLES



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

DISCOVER

VIEW

DOWNLOAD

Open & Free

CURRENTS

**TEMPERATURE
SALINITY**

**SEA LEVEL
WAVES**

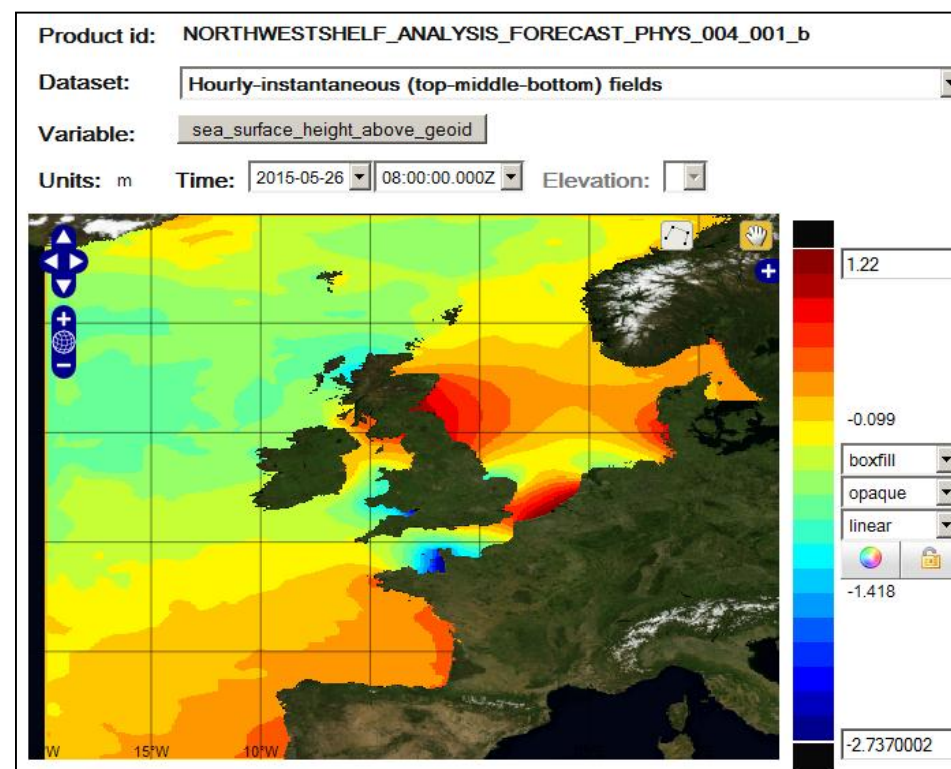
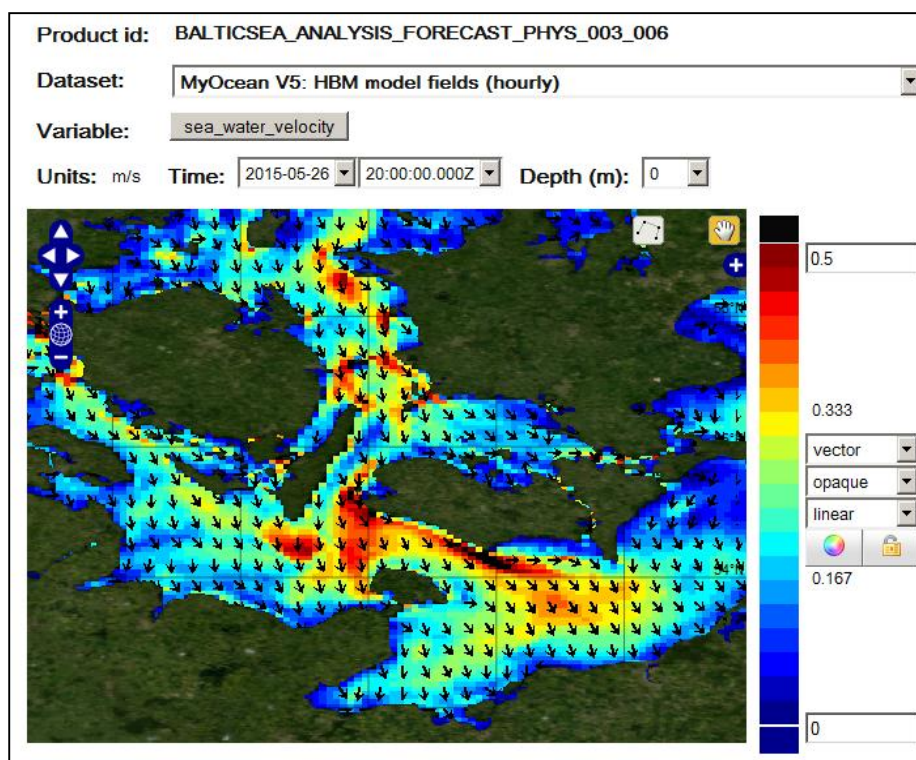
SEA ICE

SEA WIND

**BIOGEO
CHEMISTRY**

Examples of products:

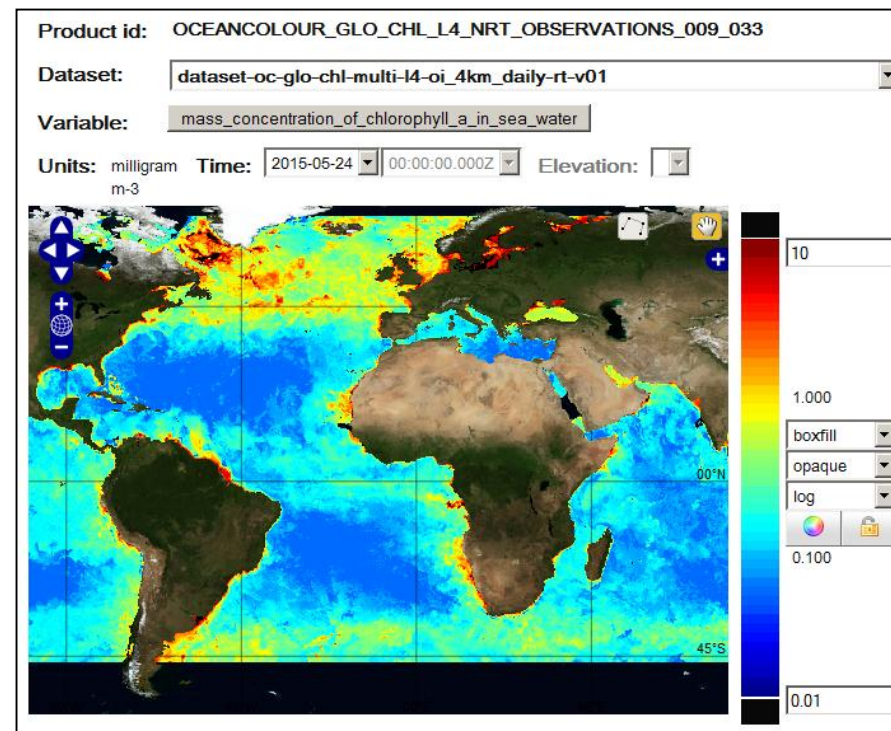
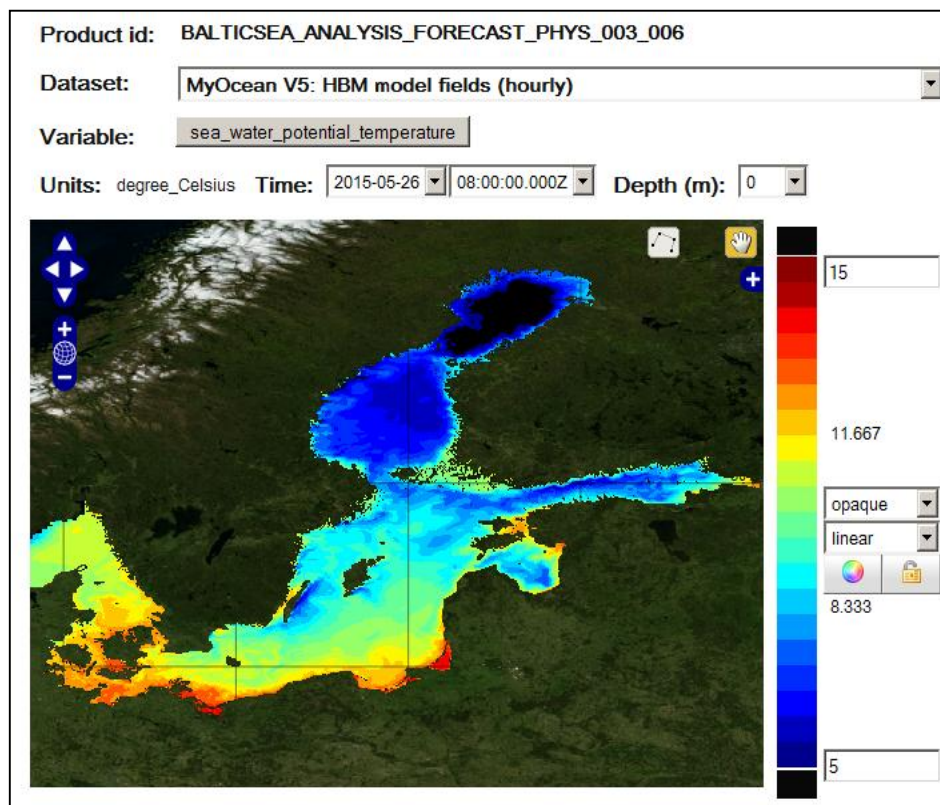
Baltic Sea: Predicted surface currents



NW Shelf Area: Predicted water levels

Examples of products:

Baltic Sea: Predicted water temperatures (SST)



Measured chlorophyll concentration (satellite)

New project ImoNav

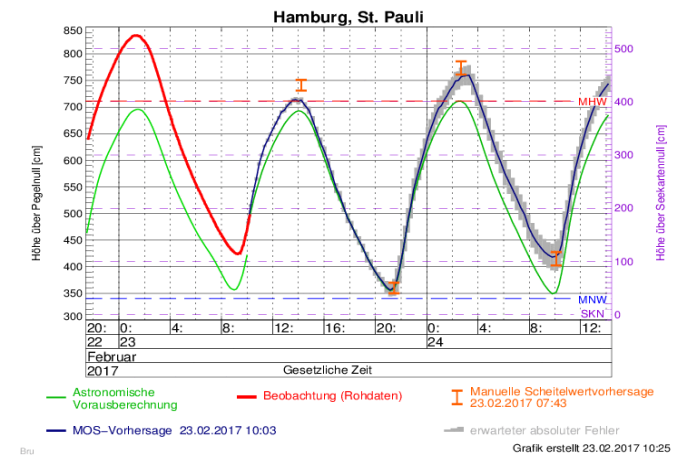
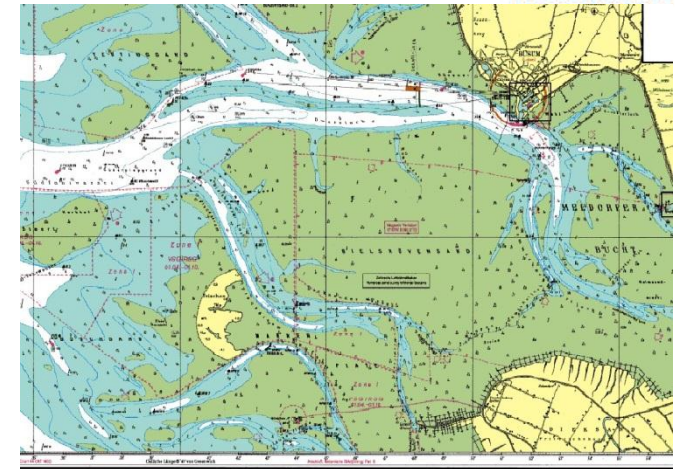
- ImoNav - Integration of high resolution marine geodata into electronic navigation systems
- National project to develop a new navigation service for (German) marine water ways
- Partner: BSH and two companies (smile consult and SevenCs)
- Coordinator: BSH
- Duration: 3 years
- Start: 01.06.2017



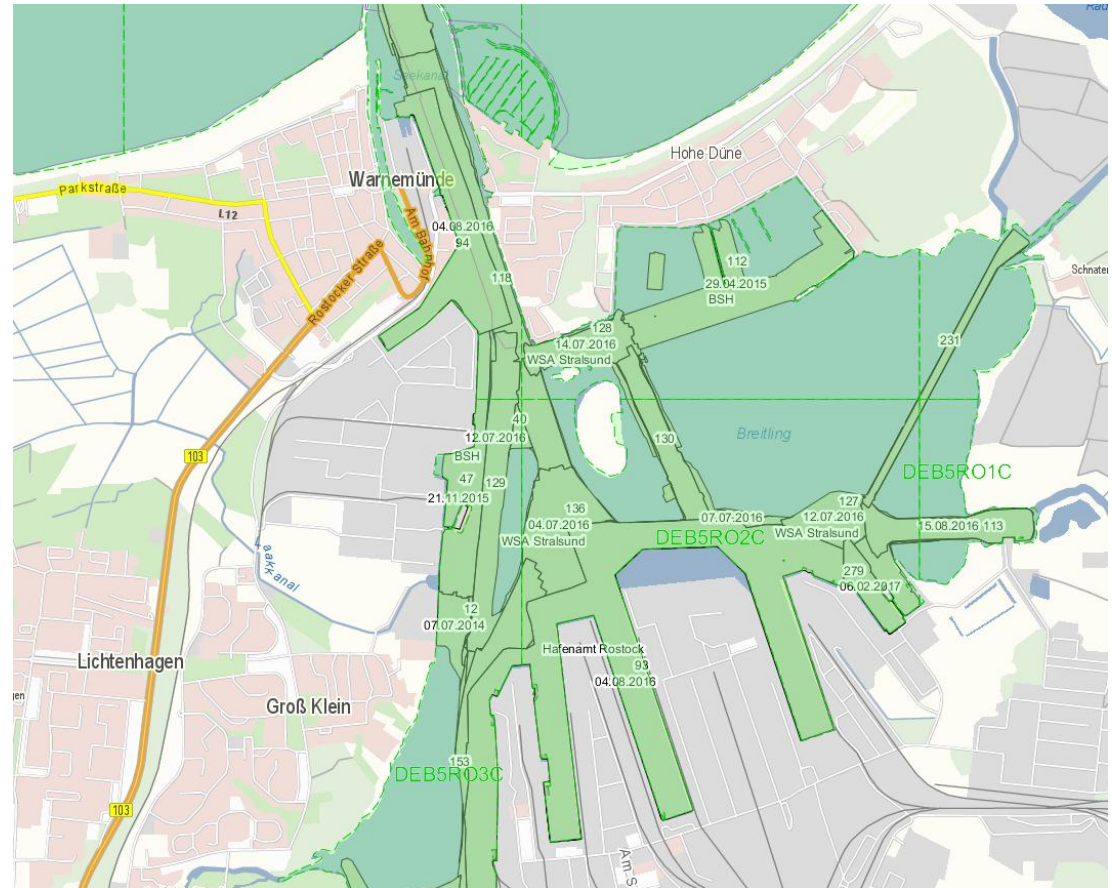
New project ImoNav

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

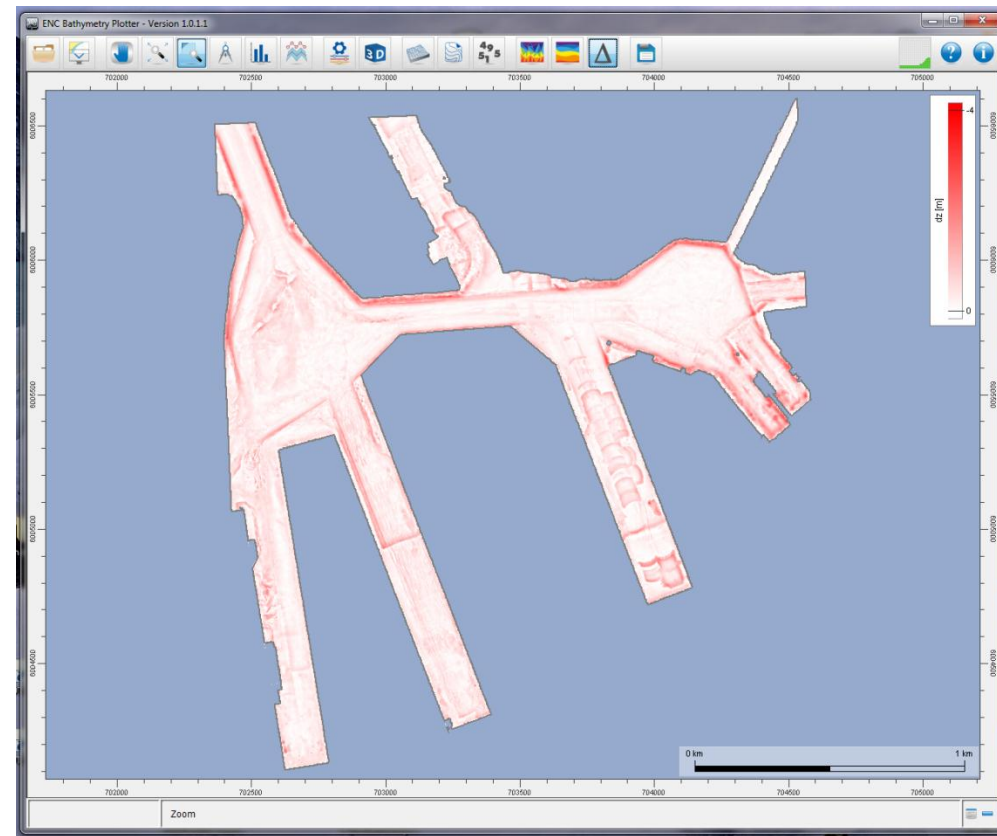
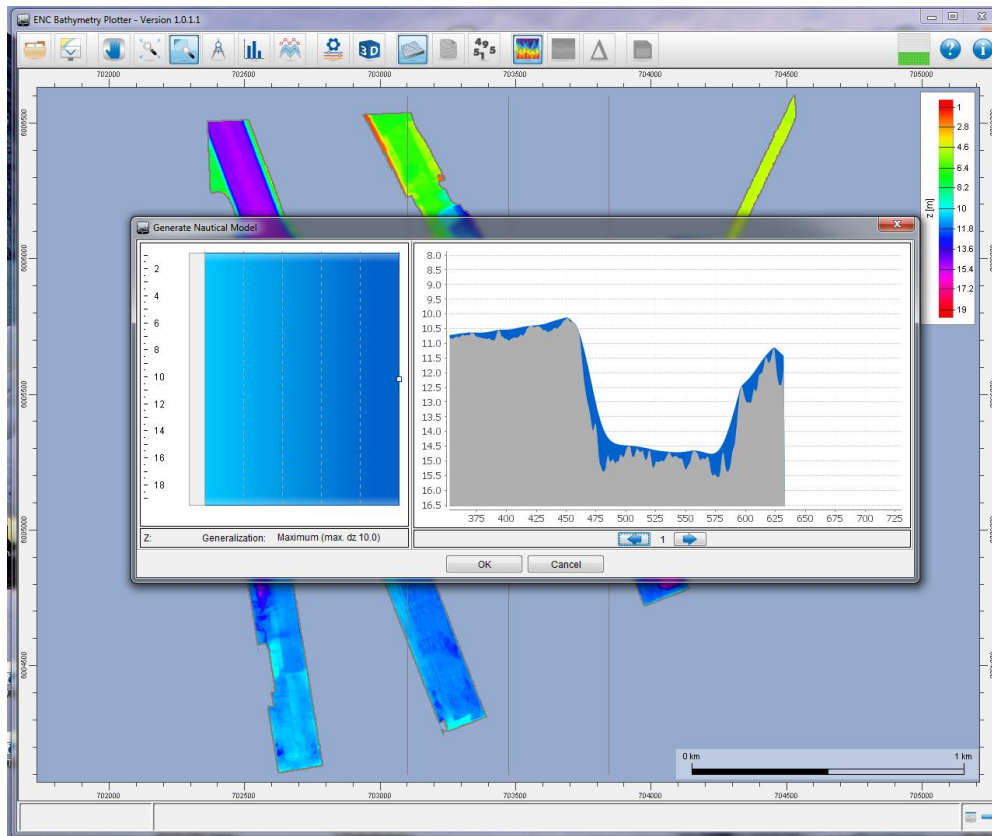


- Automatic collection of hydrographic data from different institutions
- Merging and combining of different hydrographic data
- Creation of high resolution gridded bathymetry
- Automatic processing of new bathymetry data within 1-2 days



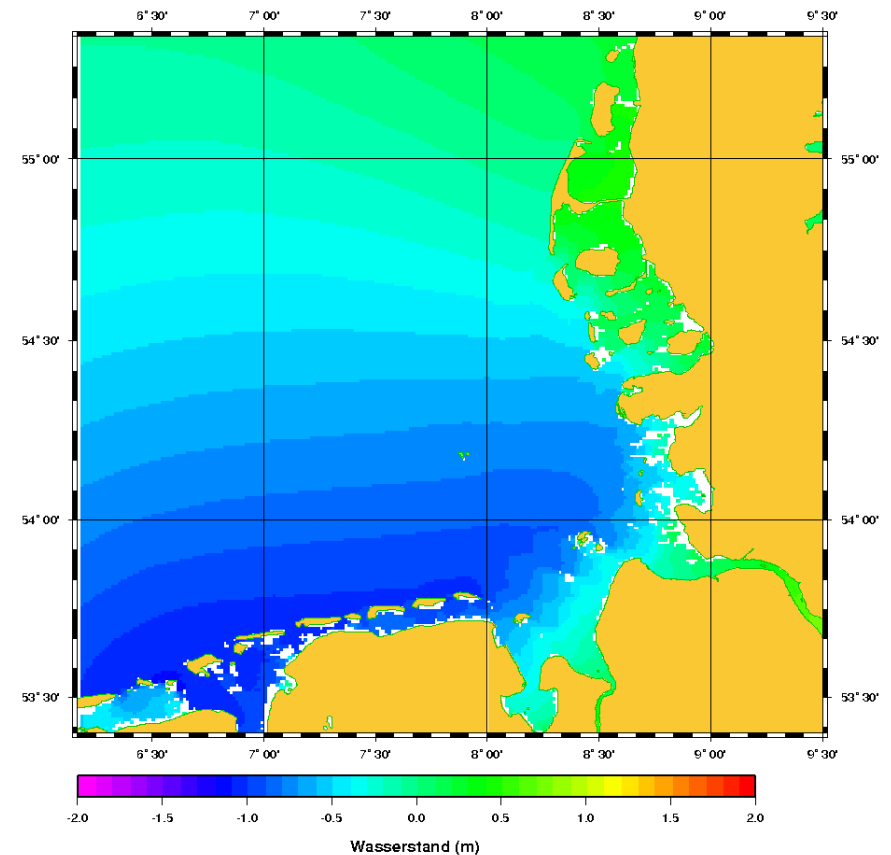
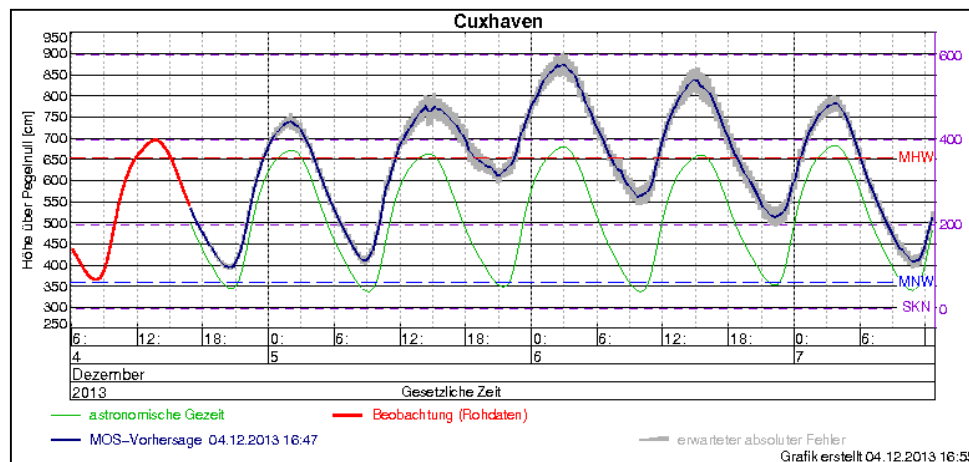
Hydrographic data II

Main task: Production of a smooth digital ground model



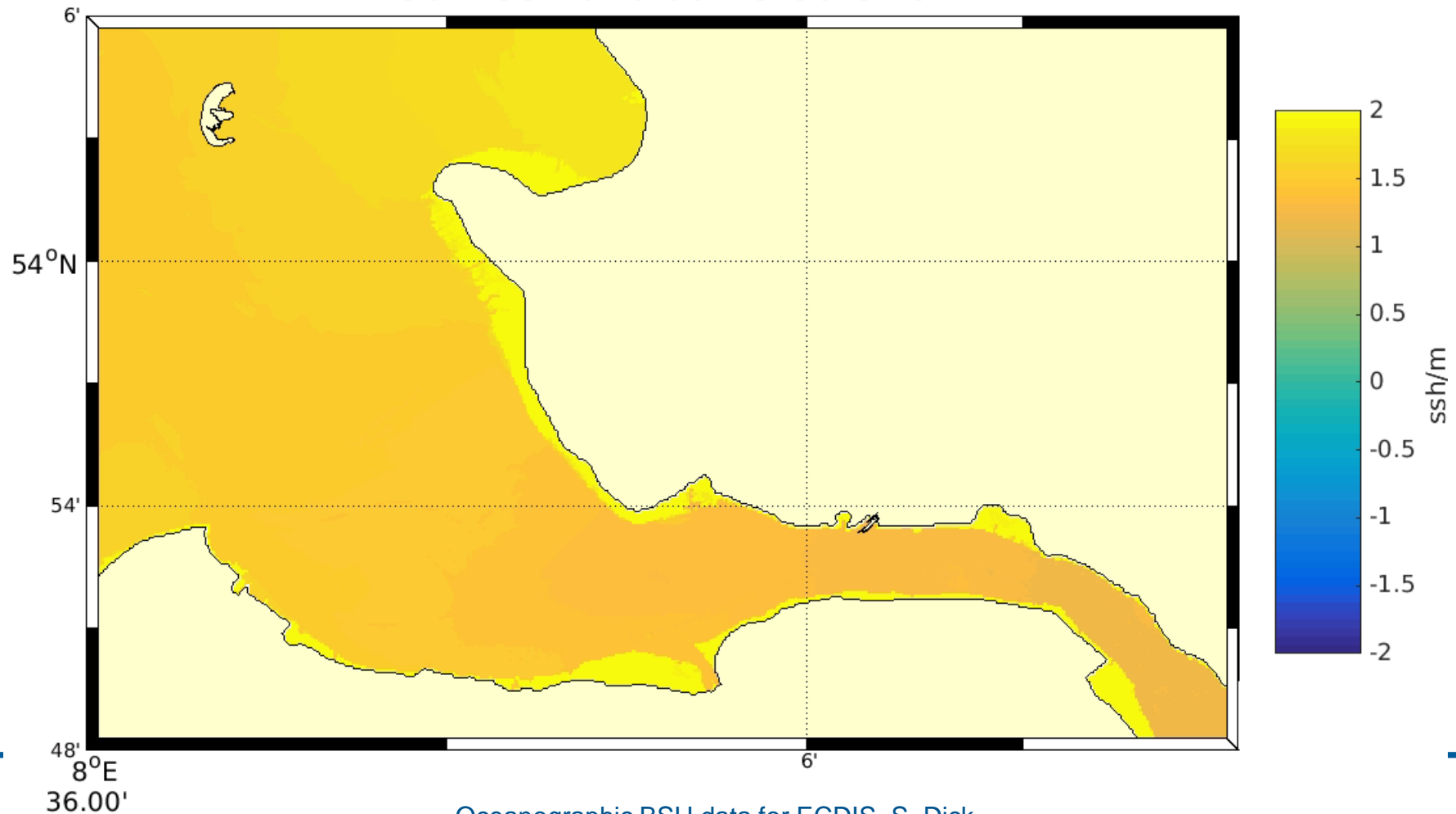
Tasks of BSH: Oceanographic data

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



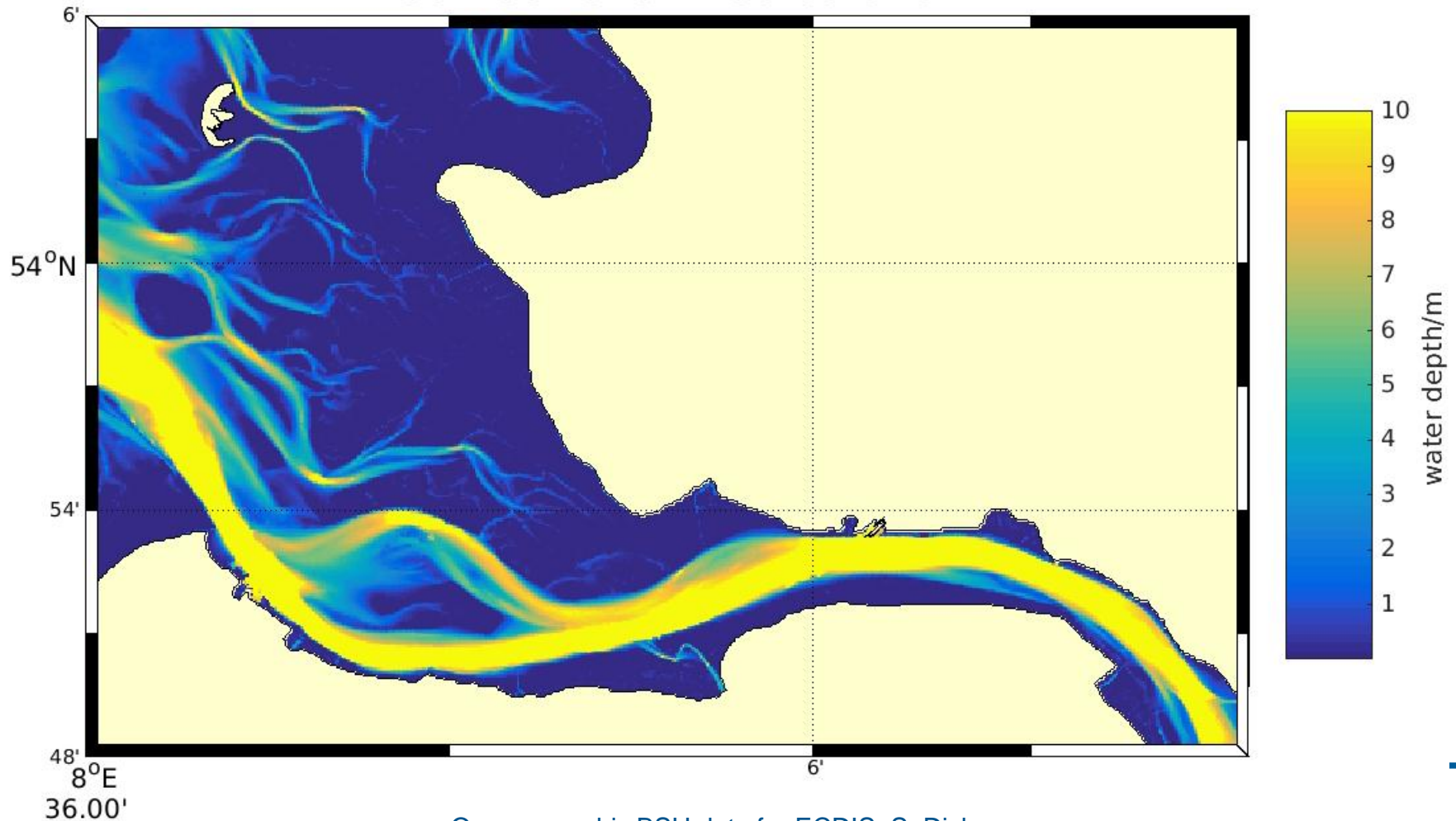
Water levels

30-Dec-2016 00:15:00 UTC

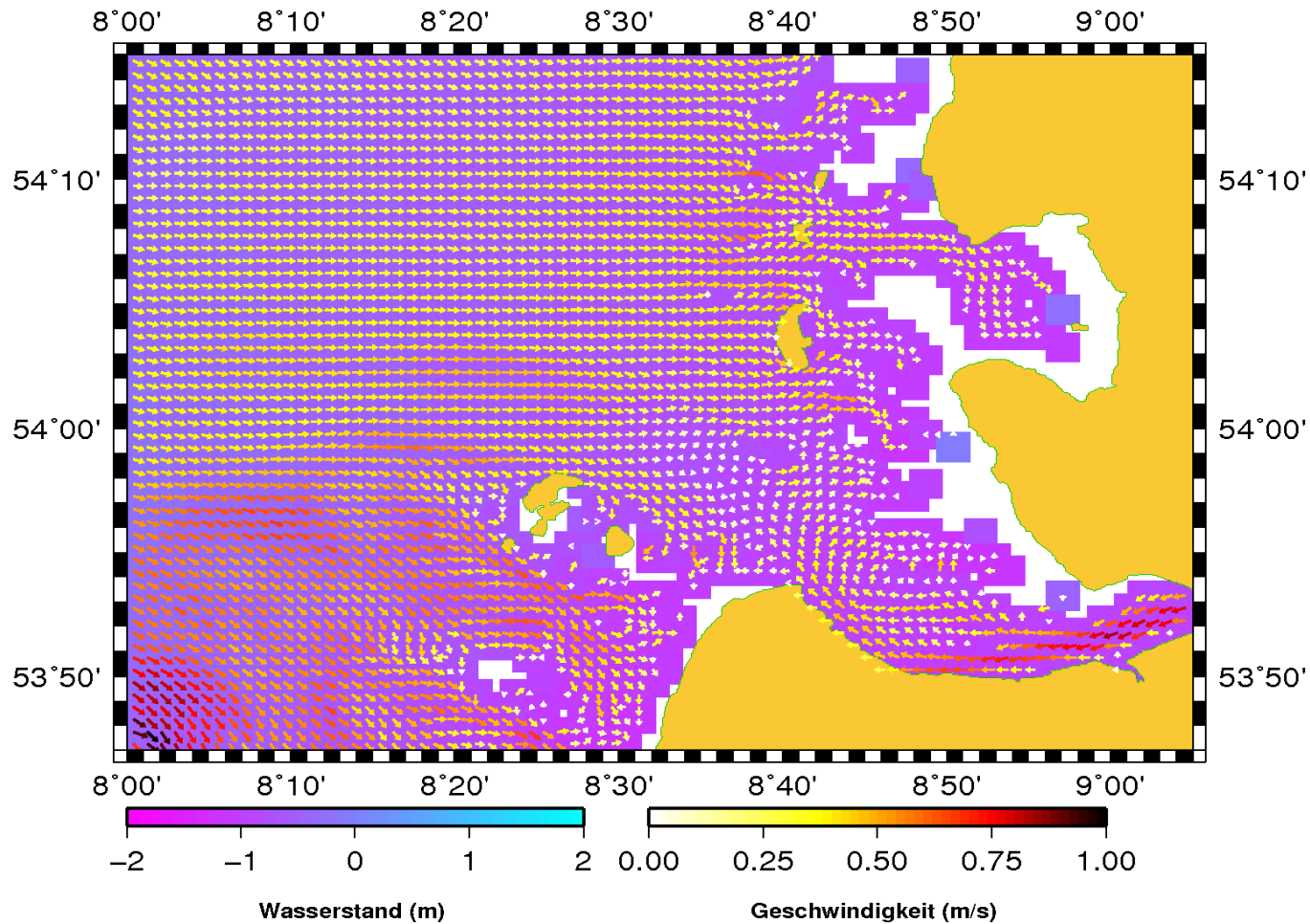


Water levels + depth = dynamic water depth

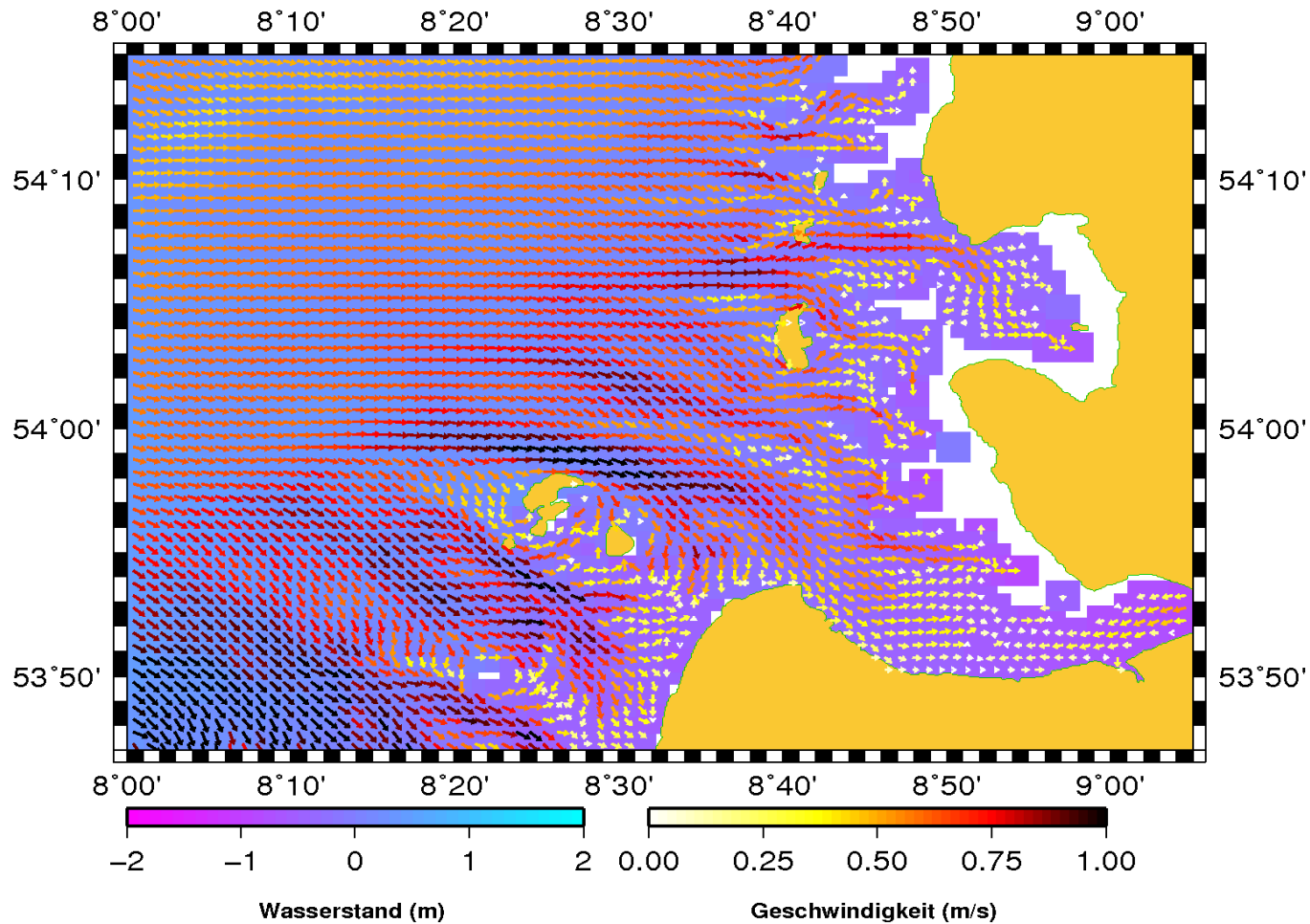
30-Dec-2016 17:30:00 UTC



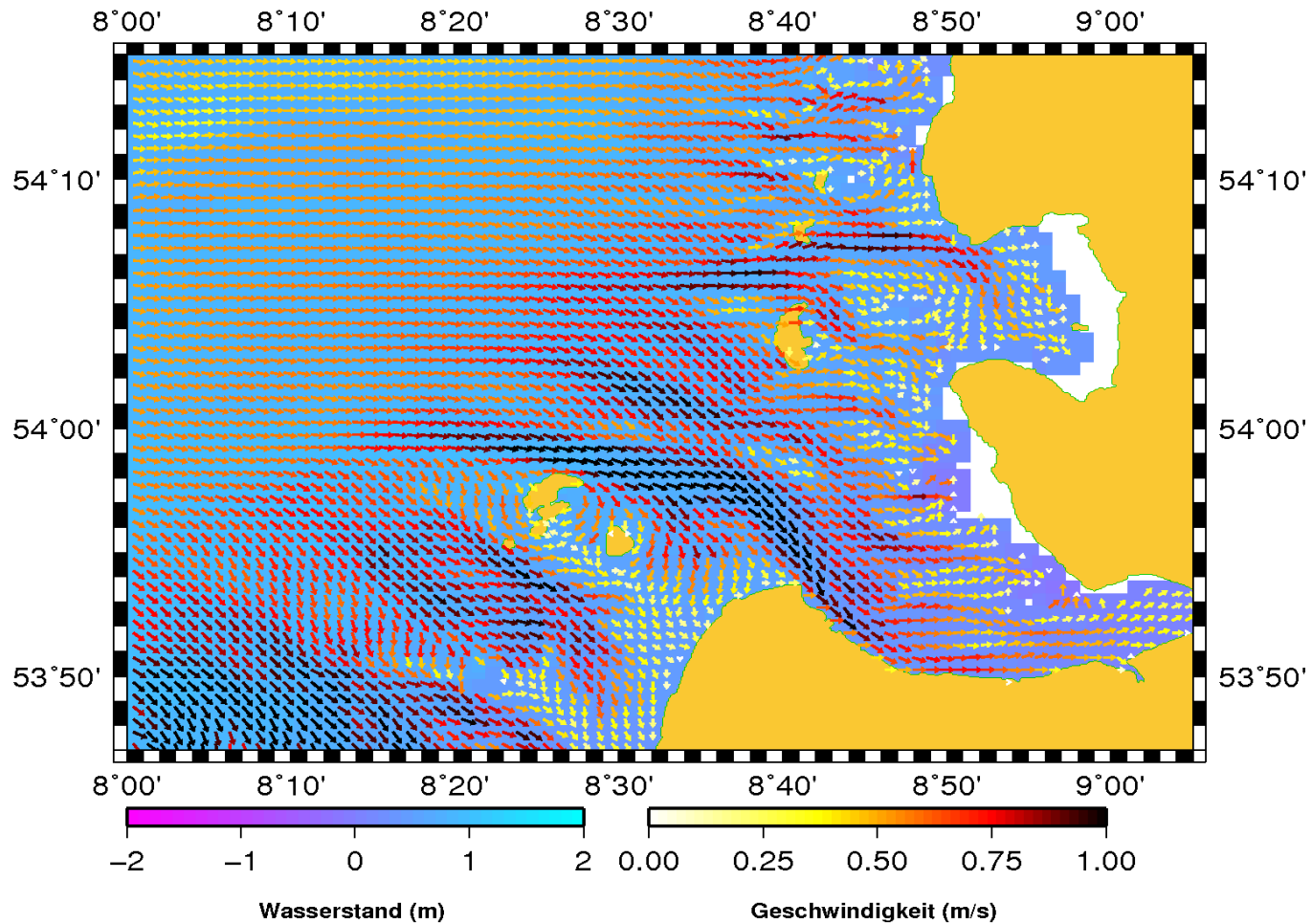
Oceanographic data - currents



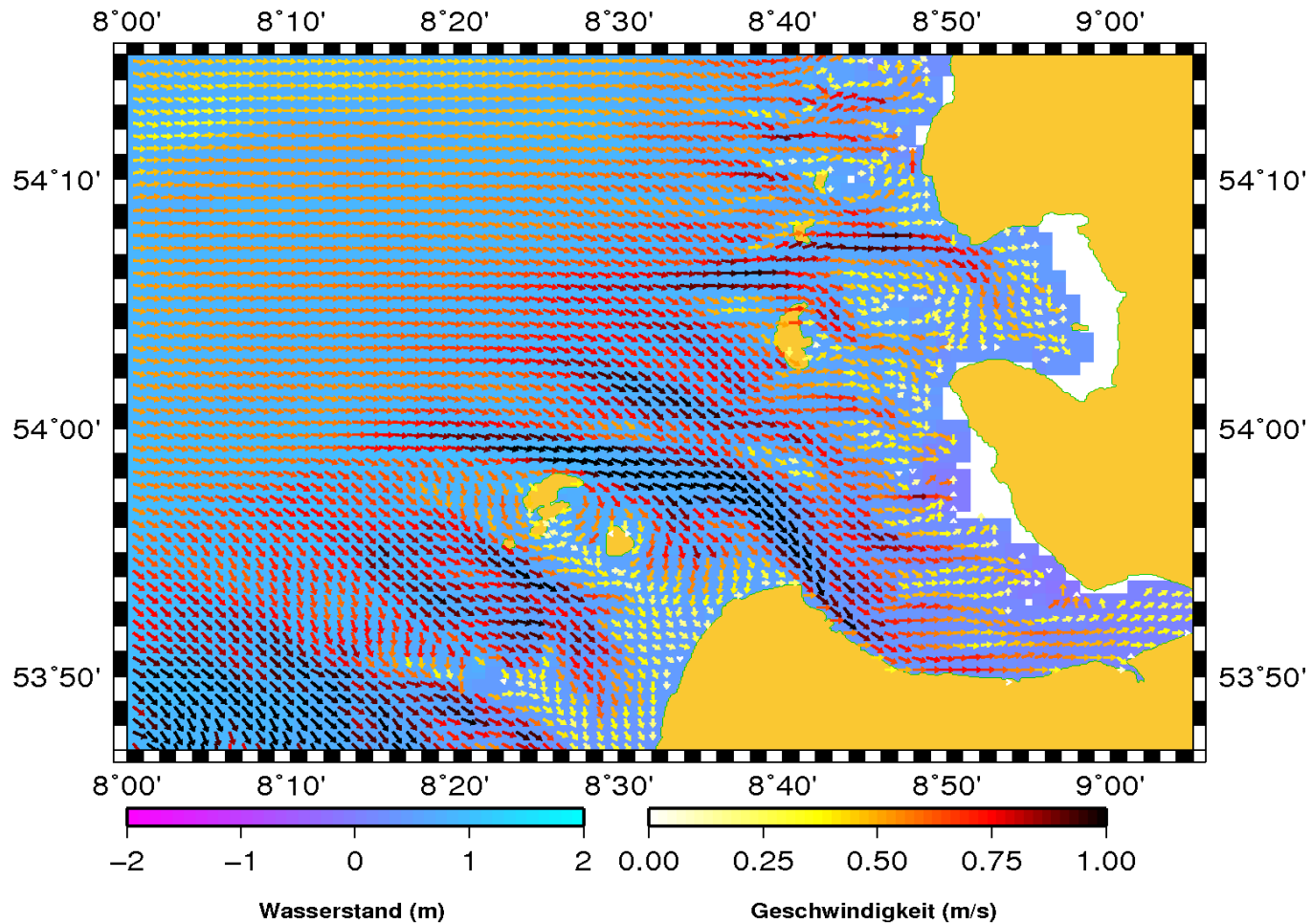
Oceanographic data - currents



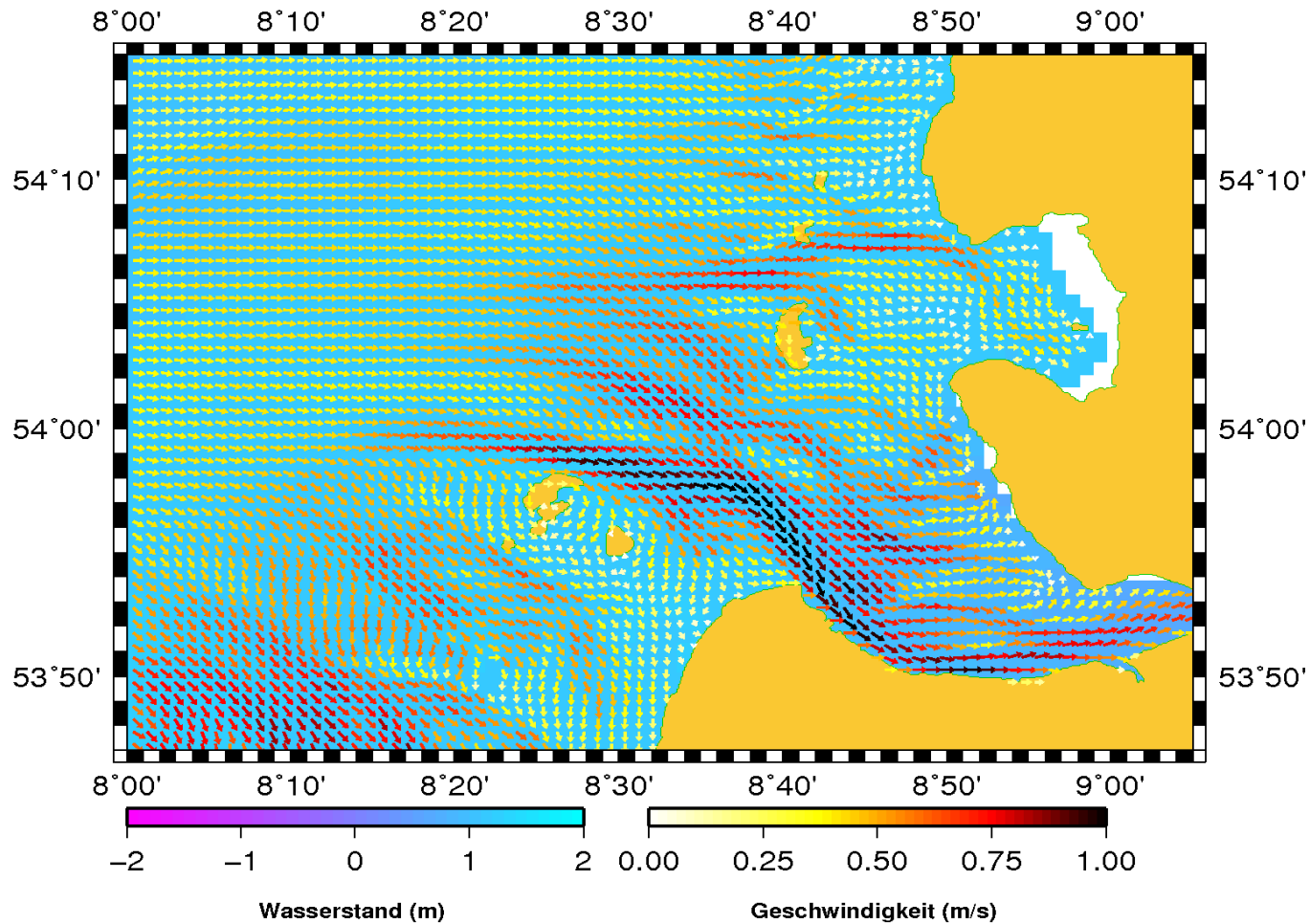
Oceanographic data - currents



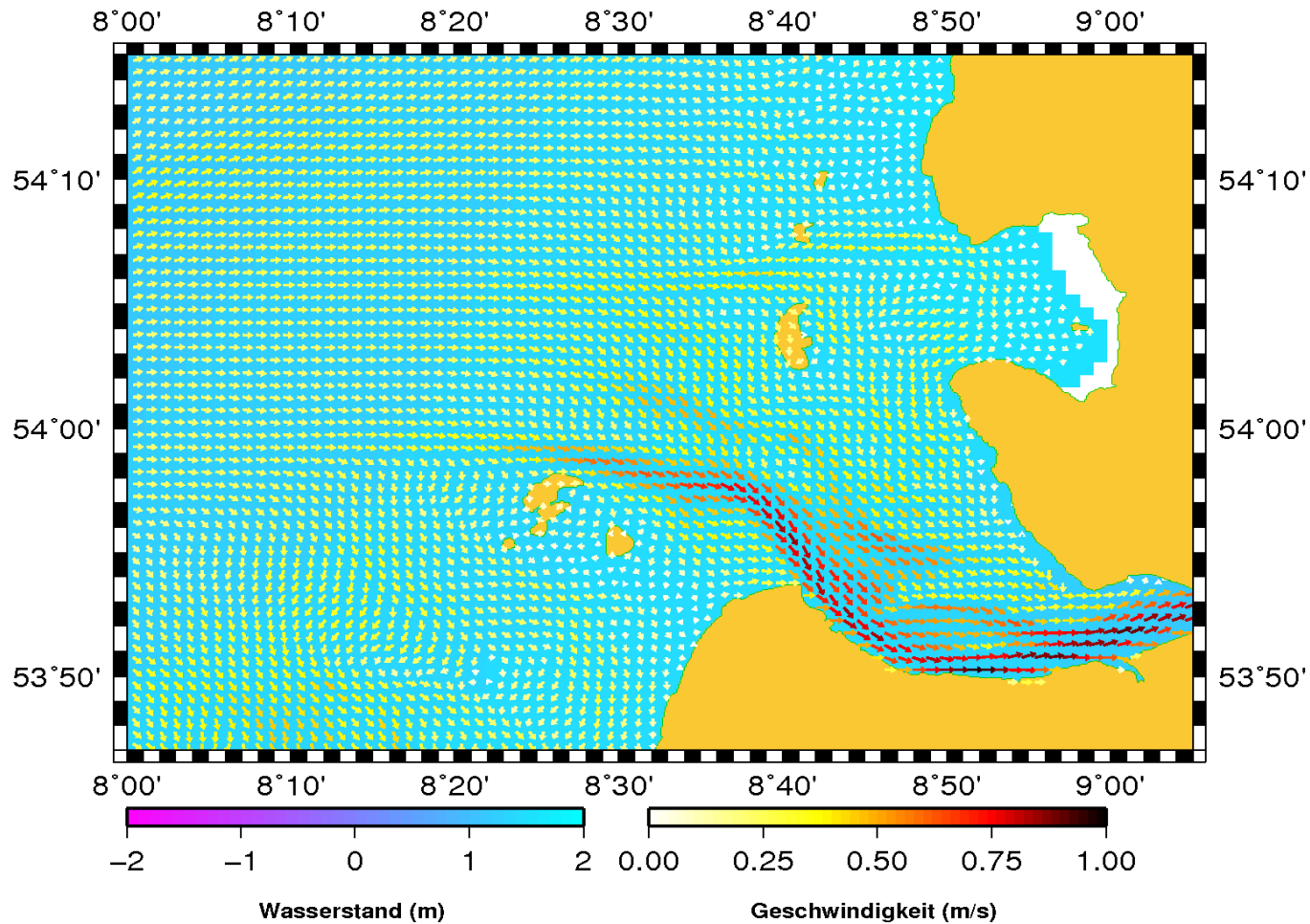
Oceanographic data - currents



Oceanographic data - currents



Oceanographic data - currents



- 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
 - Combination of high resolution bathymetry with water level measurements and forecasts
 - Presentation and demonstration of new pilot products (water levels, depths, currents...) in ENC systems
 - ImoNav shall support work of TWCWG and provide S-104 and S-111 test datasets

Thank you!



BUNDESAMT FÜR
SEESCHIFFFAHRT
UND
HYDROGRAPHIE



German activities:

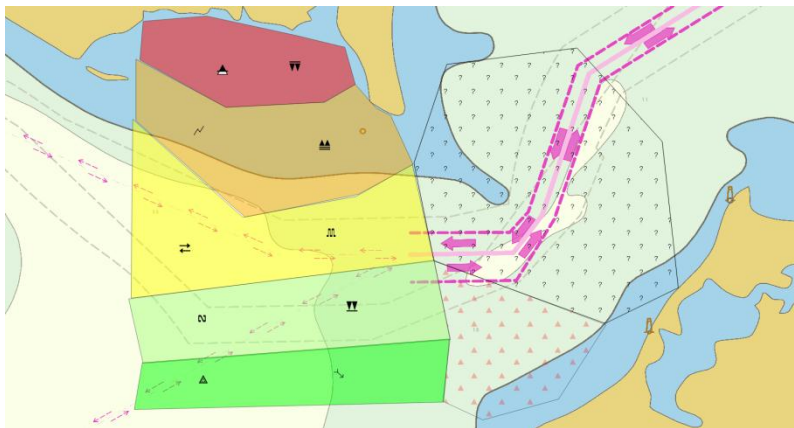
- Participation in the EU project ICEMAR. The goal of the project was to develop a system providing sea ice information to ships in an easy way.
- Within the framework of the WMO-IOC JCOMM Expert Team on Sea Ice the German ice service at BSH in close cooperation with the IICWG (International Ice Charting WG) and ETSI developed an ice information product specification within the IHO S-100 standard (S-411).

Sea ice in ECDIS (S-411)

December 2013: first operational S-411 ice charts available and viewable in GIS programs.

June 2014: S-411 Ice Information Product Specification approved

since December 2015: most operational ice charts available in S-411



INTERNATIONAL HYDROGRAPHIC ORGANIZATION

JCOMM



Ice Information Product Specification

Edition 1.1.0, June 2014

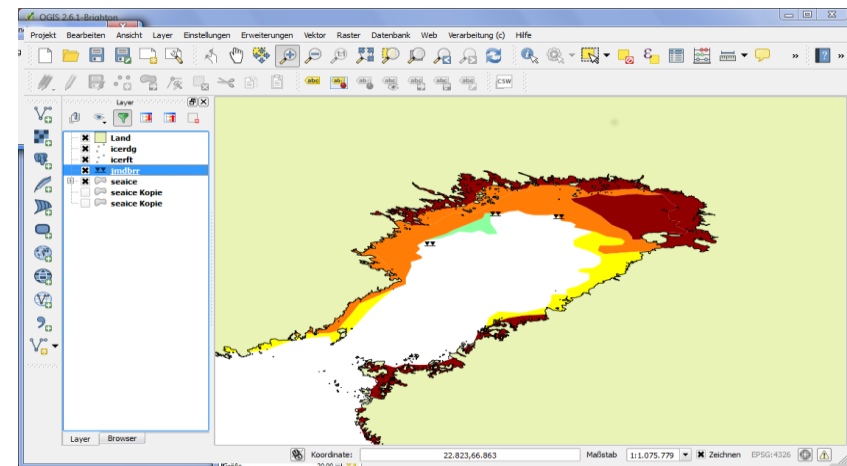
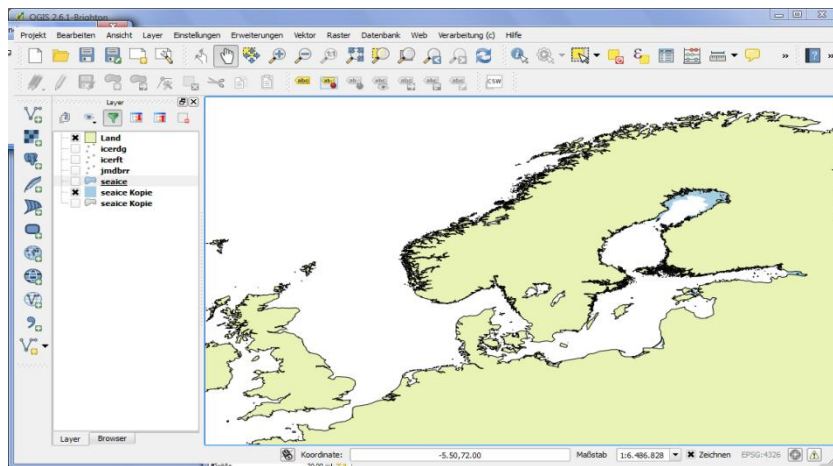
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Web: www.ihb.int

Planned development of S-411 in 2017

- A) better iceberg objects (points, lines and polygons)
- B) Adjust the „traffic light“ portrayal according to discussions and decisions in the context of the IMO polar code
- C) scale dependent representation based on predefined rules:

- unify nearby/overlapping symbols of the same category
- join nearby/overlapping symbols of different categories into a new symbol
- do not represent some symbols in small scale maps or join them into a polygon area
- incorporate smaller polygon areas into larger areas
- change the polygon representation on small scale maps



Same S-411 chart shown at different scales