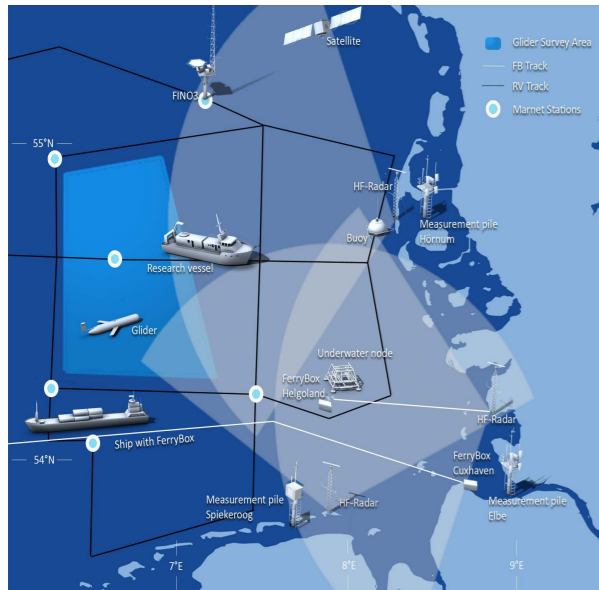


COSYNA

Observing and Understanding the North Sea

Combining measurements and mathematical models enables the coastal observing system COSYNA to obtain a comprehensive picture of the North Sea condition. COSYNA develops methods and systems with which the current state and changes in the North Sea coastal region and the Arctic Seas can be described, analysed and forecast.

The measurement and modelling data is immediately made available and visualised after the measurements have been taken or the computer simulations have been carried out (COSYNA data portal, www.cosyna.de).



FOR PEOPLE AND THEIR
FUTURE ENVIRONMENT



**Helmholtz-Zentrum
Geesthacht**
Centre for Materials and Coastal Research

The North Sea – Today and Tomorrow

COSYNA

Coastal Observing System for Northern and Arctic Seas

COSYNA is coordinated and financed by the Helmholtz-Zentrum Geesthacht, Centre for Materials and Coastal Research. The studies are carried out in cooperation with partners from the Helmholtz Association of German Research Centres, universities as well as state and federal authorities.



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wissen
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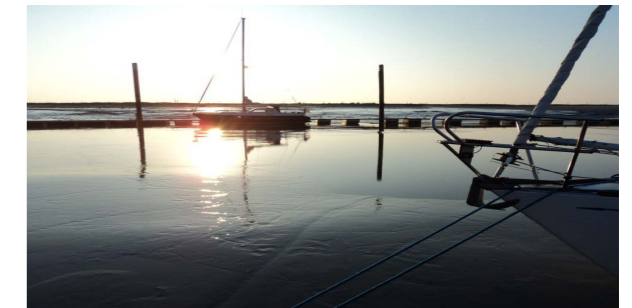
The North Sea

Living on the North Sea Coast

The North Sea and its coast provide unique habitats for numerous plants and animals. Impact from land, such as nutrient input from rivers, as well as impact from the sea, such as sea level rise and storm floods, shape the ecologically singular transition zone on the coast. Marine protected areas, national parks and the UNESCO “Wadden Sea World Heritage” secure their preservation.

In Transition

In recent decades, enormous changes in North Sea material cycles and ecosystems have been detected. Overfishing, nutrient and pollutant input, migration of new species and climatic changes have been playing a role.



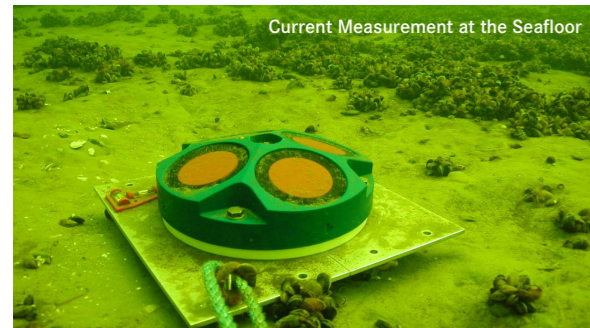
Intensive Utilisation

People are utilising the North Sea and its coastal culture and habitat in versatile ways and are exploiting them more intensively. Shipping, fishing and tourism have always played a huge role, but now offshore wind energy is additionally being put to use. Dikes protect the land from storm floods and newly gained marshland provides fertile farmland.

Science

Key Topics

On the coasts, energy, nutrients and pollutants are exchanged between the open sea, the mudflats and the land. The impact of natural variability, trends and extreme events as well as human influence are studied in order to better understand coastal events and to predict changes.



Current Measurement at the Seafloor

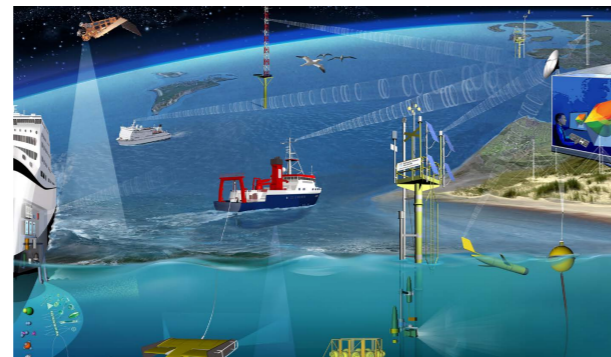
In regard to wind park impact on the marine environment, current questions arise, such as: „Do wind parks influence mixing in the water body?“ and “How are turbidity in the water and the growth of algae altered?“



Measurements & Modelling

Measurement Data

COSYNA consists of a comprehensive network of measurement systems. Data is recorded around the clock – from the seabed to the water’s surface – in the North Sea coastal region. Temperature, wave height, ocean currents, nutrients, pollutants, oxygen and many other physical, biogeochemical and biological parameters are measured. The observational data is transmitted in “near real time” to the Institute of Coastal Research at the Helmholtz-Zentrum Geesthacht and immediately made available on the Internet.



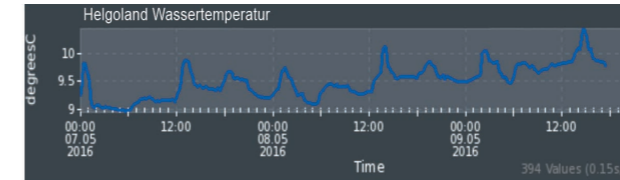
The interaction between the measurement systems provides the building blocks for three-dimensional North Sea observation.

Combined with Models

Computer calculations facilitate large-scale predictions and the ability to estimate various scenarios and impact factors. They close spatial and temporal measurement gaps. In order to obtain the most realistic results possible and to improve COSYNA forecasts, near real-time observation data is always integrated as additional information into the model calculations.

Data & Information

From Data

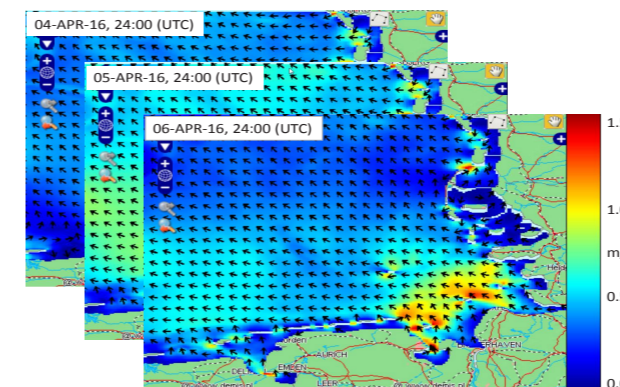


The following measurement parameters are

- measured at different water depths:**
 temperature, salinity, oxygen, pH, chlorophyll, suspended matter, nutrients, turbidity, currents, water levels, waves, algae
- measured with radar and satellite at the water surface:**
 suspended matter, chlorophyll, dissolved organic matter, currents, waves, wind, soil morphology

To Information

Current maps for the German Bight are, for example, calculated hourly from models and radar data. Like current forecasts (maps, up to six hours), these are also freely available on the Internet.



Only One Click Away

COSYNA App

informative with short texts and images about measurements, models, products and partners. With one click, you can obtain direct access to current data. The app is available in three versions (Apple, HTML, Android) in German and English from the respective stores and is integrated into the website.

The Website www.cosyna.de

provides detailed information about the aims, integrated approach, methods, results, data and information products as well as COSYNA activities. Brochures, flyers, newsletters and research reports are available for download. The data portal is freely accessible through the website.

Data Portal

provides access to all COSYNA data. The users can choose – individually or in combination – state variables, measurement stations, time frames and image type, and they can then download the data accordingly. Anyone who would like to delve deeper into the data is in the right place here.

