

FerryBox- Continuous and Automatic Water Quality Observations along Transects in the Southern North Sea

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In order to distinguish between anthropogenic and natural changes in an ecosystem, the environmental parameters and the driving forces need to be monitored in different temporal and spatial scales. The limitation of conventional monitoring methods particularly with regard to temporal and spatial resolution is often a serious hindrance to a better understanding of marine ecosystems and the underlying biogeochemical processes. The use of unattended automatic observing systems onboard of ships of opportunity offers a cost-effective and reliable possibility to obtain regular observations of near-surface parameters with a high spatial coverage and temporal resolution.

In the Southern North Sea the application of the so called FerryBox systems has been proved since 2002. FerryBoxes have been installed on different ferries and cargo ships as well. The system allows high frequent monitoring of oceanographic parameters (temperature, salinity, turbidity) as well as biological relevant parameters such as chlorophyll, nutrients, oxygen and pH along a transect. In combination with remote sensed data the spatial limitation to a certain transect can be overcome. On the other hand the data from the FerryBox can be used as ground truth data for the remote sensing data. Special events like strong short-term algae blooms, which will be detected only occasionally by standard monitoring methods, can be studied in detail and related to variations in influencing factors such as temperature, wind and nutrient load. High precise oxygen observations can be used to estimate productivity including short term events which would be not detected by conventional monitoring strategies.

The experiences on different types of ships with FerryBoxes as well as the limitations of such instruments (e.g. surface measurements, certain ship tracks only) will be shown. Examples of application of the collected data in combination with remote sensing and numerical modelling will be demonstrated and the synergistic effects in order to optimize monitoring strategies by combination of FerryBox data with other data (e.g. from research vessels, buoy measurements as well as numerical modelling) will be discussed.