



Combining FerryBox data and Lagrangian transport modelling

M. Kreuz (1), U. Callies (1), W. Petersen (1)

(1) GKSS Research Centre, Institute for Coastal Research

The use of ships of opportunity as a platform for water quality measuring systems (FerryBox) offers the possibility to obtain regular observation along a transect. Such a FerryBox was operated on the route from Cuxhaven (Germany) to Harwich (United Kingdom). While running more or less the same route the spatial and temporal resolution of observations is very high along the track. However, the temporal and spatial information beside the transect is limited. Numerical hydrodynamic models were applied to cover the dispersion of water parcels measured by the FerryBox system. FerryBox observations were linked to particles which have been drifted by a Lagrangian model and the information of the transect of the Ferry will be spread aside the routes with a broader spatial extension. The method has been tested by comparing water parcels observed both by the FerryBox and buoys in terms of salinity. The Lagrangian model is forced by current fields generated from Eulerian models. The agreement of drifted passive tracers with stationary measurements can be used as an indicator for the quality of the simulated current fields. The combination of FerryBox data and Lagrangian transport modelling allows to transform the information of the transect to spatial patterns. These patterns have been compared with simulated Eulerian fields. The investigation showed that hydrodynamic models are in principle able to link FerryBox transects to local observations. Synoptic salinity patterns constructed from FerryBox transects have higher spatial resolution than simulated Eulerian fields. The consistency of the general structure varies with time. Problems may arise from the assumption of passive tracers and the spatial resolution of models.