



Assessment of temperature observational networks in the North Sea

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Observing the coastal area may be very expensive and sometimes the data have a local information content. It is therefore necessary to apply modelling techniques to assess the impact of existing coastal observing systems and to plan the future ones. One method to achieve this is based on the integration of observations into dynamical models by data assimilation.

An ensemble Kalman filter is applied to assimilate temperature profiles on the North Sea domain located between 4°W to 10°E in longitude and 48.5°N to 60°N in latitude. Simulations are carried out for September 2001. Eight stations were selected amongst the stations of the North Sea existing network. Their impact on the modelled processes is compared to that of an optimally designed network of eight stations and two variants of the existing network. To this aim, data from model simulations performed with a higher horizontal resolution are assimilated. The impact of the assimilation of data from these networks on model forecasts is assessed in terms of two criteria: the reduction of the ensemble spread on the whole domain and the root mean square error between the model results obtained with data assimilation and the assimilated data.