

Forecasting upwelling events on the Gulf of Bothnia with monthly ensembles

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The coastal upwelling phenomenon in the Baltic Sea is caused by favourable conditions in the sea and wind blowing from suitable direction for long enough time. The upwelling has effect on local weather on the coastal zone, it effects on physical processes as well as chemical and ecological processes along the coast.

The probability based predictions are long time used in meteorology and more and more in oceanographic forecasts. With the ensemble predictions we have an insight of uncertainties in the forecast. In oceanography the time-span of operational forecast is typically 3-5 days depending on the parameter. In this study we took a look on 27-day forecasts.

The coast of Gulf of Bothnia is suitable for upwelling events to occur relatively frequently during the summer months. In this study we detected upwelling events on the Gulf of Bothnia for years 2008 and 2009 from satellite pictures as well as SST observation on tide-gauge locations and compared the results to the probability based forecasts.

In this presentation we show that it is possible to predict most major upwelling events on the Gulf of Bothnia within one-week lead time and significant number of major upwelling events within two-week lead time.