



The Norkyst coastal ocean forecasting system

All the water that enters the Arctic from the Atlantic and European coastal oceans will at some point pass along the Norwegian coastline. The circulation on the Norwegian shelf is dominated by strong fronts with energetic eddies and complex water mass transformation processes, making it both very challenging and very interesting to observe and model the dynamics here. We present the latest version of "Norkyst"; the Norwegian coastal ocean forecasting system, which is the national complement to the Copernicus Marine service. Norkyst is based on the Regional Ocean Modeling System (ROMS), and uses inbuilt functionality for data assimilation (4D-Var) and two-way online nesting in selected domains for higher resolution in fjords. The horizontal resolution varies from 2.4 km in the analysis phase to 800 m in the forecasts, with 160 m resolution in the two-way nested domains, and hence Norkyst provides a detailed description of land-ocean couplings along the complex Norwegian coastline. The forecast system is used for monitoring of e.g. marine heat waves, for decision support in critical situations (oil spills, search-and-rescue, ship drift, and so on), and it is also the backbone of a salmon lice monitoring and assessment system that is used for management of the aquaculture industry. We present the system design and the associated observation network, model verification statistics, examples of use, and also provide an outline of future developments.

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