



Dependence of sea level variability in the Nordic Seas on the NAO - results from a Pan-Arctic coupled ice-ocean model

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Monthly mean sea level output from the Naval Postgraduate School regional Arctic Ocean and sea ice model (Maslowski et al., 2004) is used to investigate the connection between the North Atlantic Oscillation (NAO) and sea level variability in the Nordic Seas for the period of 1979-2004. The coupled ice-ocean model was forced with daily averaged atmospheric reanalysis data derived from European Centre for Medium-range Weather Forecast (ECMWF).

Simulated fields of sea surface height (SSH) reveal dependence on winter-mean (DJFM-winter) NAO index. Significant at 95% level, positive correlations (coefficients > 0.4) are found in the eastern regions along the coast of Norway, while negative correlations are found along the coast of Iceland and in the deep basins of the Greenland, Iceland and Norwegian Seas. Two data sources for NAO index have been used in these analyses, one from Hurrell (1995; <<http://www.cgd.ucar.edu/cas/jhurrell/indices.data.html\%5Cnaostatdjfm>>) and the other from Jones et al. (1997; <<http://www.cru.uea.ac.uk/cru/data/nao.htm>>). Comparison of results from two calculations shows small, but remarkable, differences in both the values of calculated correlation parameters and in their spatial distribution. The obtained relationships have been validated using observed data recorded at selected coastal tide gauge stations taken from the Permanent Service for Mean Sea Level (Woodworth and Player, 2003)

References

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