



## **Seasonal-to-decadal predictability in the Nordic Seas and Arctic with the Norwegian Climate Prediction Model**

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The Norwegian Climate Prediction Model combines the Norwegian Earth System Model and the Ensemble Kalman Filter data assimilation method. The prediction skills of different versions of the system (with 30 members) are tested in the Nordic Seas and the Arctic region. Comparing the hindcasts branched from a SST-only assimilation run with a free ensemble run of 30 members, we are able to dissociate the predictability rooted in the external forcing from the predictability harvest from SST derived initial conditions. The latter adds predictability in the North Atlantic subpolar gyre and the Nordic Seas regions and overall there is very little degradation or forecast drift. Combined assimilation of SST and T-S profiles further improves the prediction skill in the Nordic Seas and into the Arctic. These lead to multi-year predictability in the high-latitudes. Ongoing developments of strongly coupled assimilation (ocean and sea ice) of ice concentration in idealized twin experiment will be shown, as way to further enhance prediction skill in the Arctic.