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Decadal predictability of the North-Atlantic region in the EC-Earth model

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We present an analysis of predictability of the ocean and atmosphere conditions in the EC-Earth model, a new global climate model based on the seasonal prediction system of ECMWF, focusing on the subpolar North-Atlantic region. In the model, this region is characterized by low-frequency variations, implying a certain degree of potential predictability. This is being verified by means of a set of hindcast experiments for the period 1960-2005. We initialize the ocean using NEMOVAR re-analysis data and sea-ice is obtained from a forced ocean-only model run. The model shows skill in predicting observed variations in sea surface temperature up to 6 to 9 years ahead. A good skill is found both in hindcasting the observed trends in the regions, as well as in capturing the interannual variability. Marginal predicitability is found over land, although regions under the influence of the Atlantic Multidecadal Oscillation appear to have some skill. Finally, we compare the subpolar gyre strength in the model to a 20 year record of satellite altimetry observations, and discuss its predictability in our model, and the consequences thereof.