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Ocean versus Atmosphere impacts on European Summertime Temperatures

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Seasonal forecasts of summertime conditions in extra-tropical regions have low skill compared to the winter. Recent observation based studies found links between North Atlantic Sea Surface Temperatures in the spring and European summer, suggesting that there is potential for predictability. Through the use of the global coupled climate model HadGEM3, this study aims to expand the understanding of the relative roles of the initial state of the atmosphere and ocean in forecast summer temperatures over Europe. The coupled model is initialized using anomalies from 3D temperature and salinity fields from the same ocean model component forced with atmospheric reanalyses. These are coupled to arbitrary atmosphere and sea ice conditions taken from the historical/rcp4.5 simulation of HadGEM3. No data-assimilation is used. Initial results show especially for the summer of 2015 large signal-to-noise ratio with surface air temperature anomalies of 2 degree Celsius over large parts of Europe.