Seasonal forecasting of the Atlantic Niño

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The Atlantic Niño is the leading mode of interannual variability in the Tropical Atlantic, which has impacts not only on the African monsoon but also in remote regions. In the present study, we investigate the predictability of the Atlantic Niño's mature phase (June-July) at seasonal time-scale, as well as its conditioning. We analyze a large set of state-of-the art forecasts systems from the North American Multi-Model Ensemble (NMME) and Copernicus Climate Change Service (C3S) multi-models. The prediction skill of the ATL3 index has considerably improved as compared to previous forecast quality assessments, with Anomaly Correlation Coefficient (ACC) reaching up to 0.8 for the May start date. Most of the models achieve skillful prediction of the Atlantic Niño from the May start-date, and some outperform persistence. For the start-dates of April, March and February, most of the models perform better than persistence and some achieve significant correlation skill for ATL3. While there has been improvement in forecasting capability, overall the warm SST bias and associated drift remain large in the equatorial Atlantic in most of the systems. Our results suggests that the skill in predicting the Atlantic Niño in summer is weakly related to the local SST drift during the first month of the forecast, but not to the magnitude of the SST bias during the peak. In addition, we find evidence that the skill in the equatorial Atlantic is related to the ability of the models to properly represent the large-scale atmospheric circulation pattern in the South Atlantic (i.e. St. Helena high).

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