Seasonal prediction skills of FIO-ESM for the North Pacific SST and precipitation

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Seasonal prediction skills for sea surface temperature (SST) and precipitation in the North Pacific based on the hindcast results of First Institute of Oceanography Earth System Model (FIO-ESM) have been assessed in this study. The Ensemble Adjusted Kalman Filter (EAKF) assimilation scheme is employed to generate the initial conditions which turn out to be reliable after compared with the observations. Based on the comparison, we analyze 6-month hindcast results of FIO-ESM starting from each month of 1993-2013. The model exhibits high SST prediction skill over most of the North Pacific for two seasons in advance. Furthermore, it still remains skillful at long lead times at mid-latitudes. Reliable prediction of SST can fairly well transfer to the precipitation prediction through air-sea interaction. Average skill for North Pacific variability (NPV) index from 1 to 6 month lead is calculated. It is up to 0.72 (0.55) when ENSO and NPV are in phase (out of phase) at initial conditions. Compared with CFSv2, the prediction skill for NPV index of FIO-ESM increases by 11.6% (23.6%). The prediction skill of NPV index has obvious seasonal dependence with the lowest skill in summer. And the skill of FIO-ESM is higher than the skill of persistence in the later period of prediction.