Multiyear climate predictions using two initialisation strategies

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Multiyear climate predictions with two initialization strategies are systematically assessed in the EC-Earth V2.3 climate model. In one ensemble an estimate of the observed climate state is used to initialize the model. The other uses estimates of observed ocean and sea ice anomalies on top of the model climatology. The ensembles show similar spatial characteristics of drift, related to the biases in control simulations. As expected, the drift is less with anomaly initialization. The full field initialization overshoots to a colder state which is related to cold biases in the tropics and North Atlantic, associated with oceanic processes. Despite different amplitude of the drift, both ensembles show similar skill in multiyear global temperature predictions, but regionally differences are found. On multiyear time scales initialization with observations enhances both deterministic and probabilistic skill scores in the North Atlantic. The probabilistic verification shows skill over the European continent.