

Forecast skill of multi-year seasonal means in the MPI-ESM decadal prediction system

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We examine the latest decadal predictions performed with the coupled model MPI-ESM as part of the Coupled Model Intercomparison Project Phase 5 (CMIP5). We use ensembles of uninitialized and yearly initialized experiments to estimate the forecast skill for surface air temperature. Like for its precursor, the initialisation of MPI-ESM improves forecast skill for yearly and multi-yearly means, predominately over the North Atlantic for all lead times. Over the tropical Pacific, negative skill scores reflect a systematic error in the initialisation. We also examine the forecast skill of multi-year seasonal means. Skill scores of winter means are predominantly positive over northern Europe. In contrast, summer to autumn means reveal positive skill scores over central and south-eastern Europe. The skill scores of summer means are attributable to an observed pressure-gradient response to the North Atlantic surface temperatures. The current model configuration, however, shows a considerably different response of surface temperature and sea level pressure to North Atlantic SST compared to observations, which limits the forecast skill.