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Reliability of decadal predictions

Susanna CORTI

ISAC-CNR & ECMWF, Italy & UK, s.corti@isac.cnr.it
Antje Weisheimer, Tim Palmer, Francisco Doblas-Reyes, Linus Magnusson
Presenter : Susanna Corti

The reliability of multi-year predictions of climate is assessed using probabilistic Attributes Diagrams for near-surface air temperature and sea surface temperature, based on 54 member ensembles of initialised decadal hindcasts using the ECMWF coupled model. It is shown that the reliability from the ensemble system is good over global land areas, Europe and Africa and for the North Atlantic, Indian Ocean and, to a lesser extent, North Pacific basins for lead times up to 6–9 years. North Atlantic SSTs are reliably predicted even when the climate trend is removed, consistent with the known predictability for this region. By contrast, reliability in the Indian Ocean, where external forcing accounts for most of the variability, deteriorates severely after detrending.

Similar results are obtained when the same analysis is performed on initialised and non-initialised decadal hindcasts from the CMIP5 dataset.