



A skill assessment of the extratropical circulation in different stages of the MiKlip decadal prediction system

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The development of skillful decadal forecast systems is ongoing research in different institutions around the globe. In this paper we assess the change of decadal forecast skill in different development stages of the MiKlip (fona-miklip.de) decadal prediction system with respect to the extratropical circulation and synoptic variability. Therefore, a collection of three different metrics, which assess extratropical synoptic weather systems, is applied to the above mentioned decadal prediction datasets. These decadal predictions were derived from models of different physics and different spatial resolution. Two of the synoptic assessment methodologies are based upon a Lagrangian approach, objectively identifying and tracking extratropical cyclones (Murray & Simmonds, 1991) and windstorms (Leckebusch, 2008) respectively. The third approach is an Eulerian one, and uses the definition of the extratropical stormtrack (Blackmon, 1976). All used synoptic measures as well as the skill metrics are part of the Freie Universität Berlin evaluation system (Freva; www-miklip.dkrz.de).

Current results indicate initially a loss of skill for European and North Atlantic cyclone frequencies when the model physics are changed. Subsequently, with the refinement in resolution, the forecast skill in terms of anomaly correlation in turn increases significantly. In fact, it increases that much, that the latest development stage of higher resolution outperforms the earlier stages of the prediction system. Consistent results are found for the other measures, however local details differ.