



Atmospheric and Oceanic Data Assimilation Plus ENsembles Generation (AODA-PENG): A contribution to the MiKliP Program

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There are three major aims of the project AODA-PENG. First, we will incorporate state-of-the-art ensemble techniques into the recent medium range climate prediction system formed by the MPI Earth System model using the experience gained during the development of a weather prediction system.

The consortium formed by MPI for Meteorology (MPI-M), Meteorological Institute University Bonn (MIUB), and the German National Weather Service (DWD) has already successfully developed an ensemble forecasting scheme for the global weather forecast model GME of DWD. Here a modified breeding technique was used which combines the conventional breeding with a statistically based orthogonalization similar to an EOF analysis. As a first step towards the full breeding we implement the random field method from Magnusson et al (2009) together with an orthogonalization based on an energy norm. Second, we apply 3D variational (3DVar) and EnKF data assimilation techniques together with an observational dataset including Argo float data to the oceanic component within the MPI Earth System model, following e.g. Evensen (2004) and Nerger et al (2005). Combined with the improved ensemble generation this provides a state-of-the-art initialisation of the oceanic component of the planned decadal prediction system. The approach is done systematically for the atmospheric and oceanic components. Later, other methods for analyzing the phase space of the coupled system will also be considered. Third, we will analyse the aerosol forcing being an important but still very uncertain external forcing factor on the long time scales of climate projections with respect to its relevance for medium range climate predictions. The poster will present some results from the first months of the project.