Impact of initialization and model resolution on decadal climate predictions with the MiKlip system

Holger POHLMANN

Max Planck Institute for Meteorology, Germany, holger.pohlmann@zmaw.de
Wolfgang Müller, Ketan Kulkarni, Jochem Marotzke
Presenter : Holger Pohlmann

We analyse hindcasts with the Max Planck Institute decadal climate prediction system performed within the MiKlip project in two distinct model resolutions and initialization techniques, respectively. The climate model employed here is the Max Planck Institute Earth System Model (MPI-ESM) in low resolution (LR, atmosphere: T63L47, ocean: 1.5degL40) and medium resolution (MR, atmosphere: T63L95, ocean 0.4degL40). In the CMIP5 system, which is named baseline0, the oceanic fields (temperature and salinity) are initialized with data from an forced ocean simulation while in the baseline1 system the fields are initialized with data from the ORA-S4 reanalysis. Additionally, the atmospere is initialized with ERA40 and ERAinterim reanalyses data in baseline1. In the baseline0 system a negative prediction skill is present for temperature predictions in the tropics with a 2-5 year lead time which is much improved in the baseline1 system. Another advantage is an improved initialization of the Atlantic meridional overturning circulation in baseline1.