MiKlip Module A: Determination of Initial Conditions and Initialisation

Improvements in the forecast skill of coupled climate models has to come from improved initial condition and improved initialisation procedures, but also from reducing errors in the coupled model. To further improve decadal predictions therefore requires that we improve the way we determine the present day climate, specifically the ocean state, as initial conditions for a coupled climate model from the existing climate observing system. This implies that we improve the estimation procedure of the ocean state using modern data assimilation approaches, and that we improve at the same time the procedure by which we use those estimates of the present-day ocean state as initial conditions of a coupled climate model, that is, to provide an initialisation procedure that is optimal for a given coupled forecast system.

The coordination proposal of the Module A Coordination will deal (1) with the determination of initial conditions for a coupled climate model for use in the prototypical system, and (2) with the improvement of the initialisation of forecasts of coupled model systems, trying to use existing initial conditions in a most dynamically-consistent way in the coupled system, thereby avoiding initialisation shocks. The Module-A Coordination will deal also with model improvements through parameter estimation, thereby contribute directly to the overall goal of **MiKlip**. In detail, the project address two central and unique aspects of MiKlip 1) by improving initial conditions while simultaneously learning how to estimate uncertain model parameters and 2) to improve initialisation procedures and thereby to understand the way to initialise not only model anomalies but also the full model state.