

MiKlip

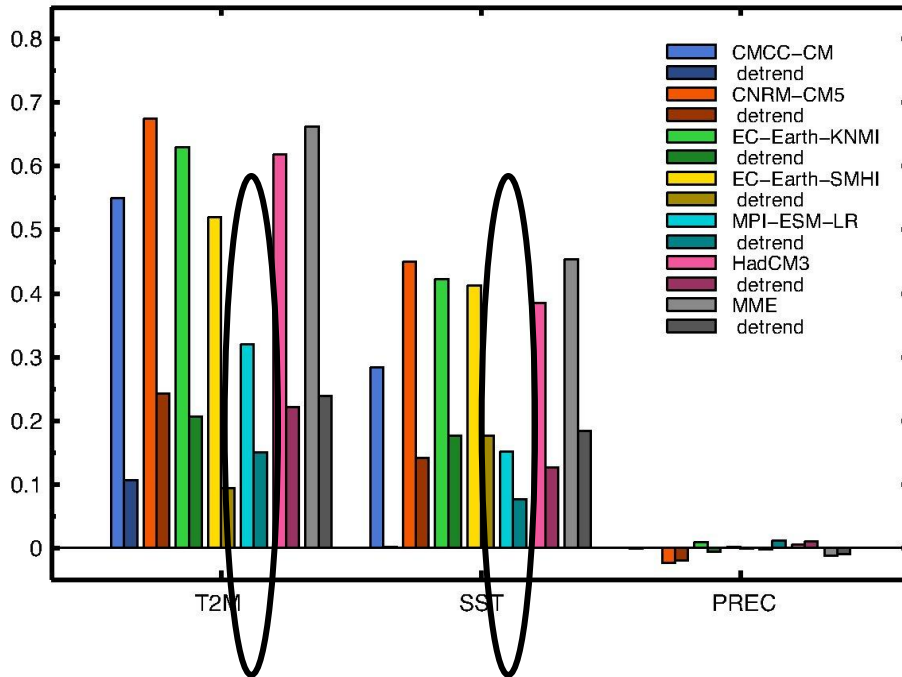
„Mittelfristige Klimaprognosen“ Decadal Climate Prediction

Max-Planck-Institut für Meteorologie
Hamburg

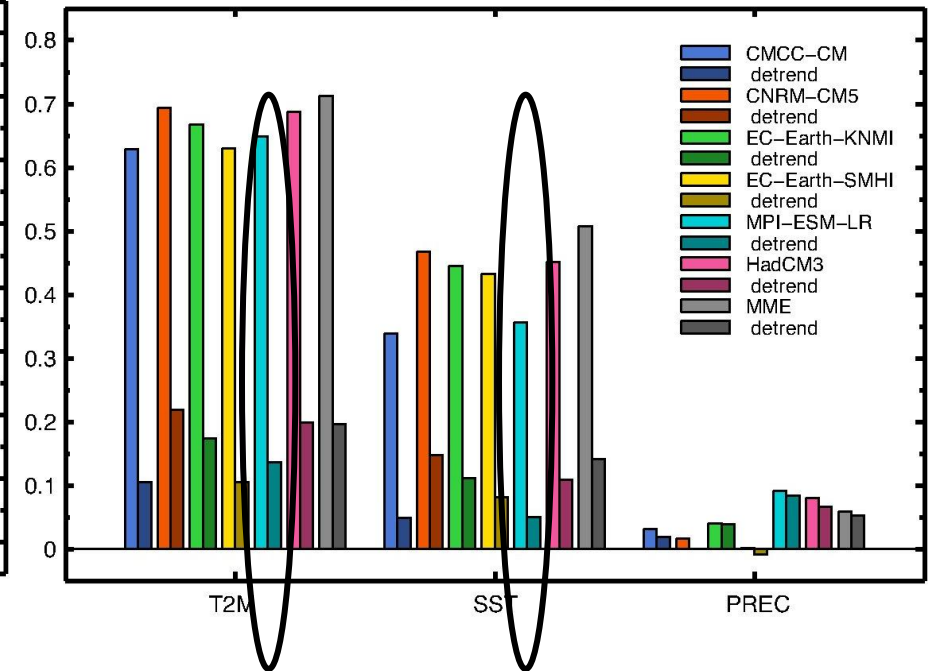


CMIP5 MPI-ESM decadal predictions

Anomaly Correlations: 2–5 years

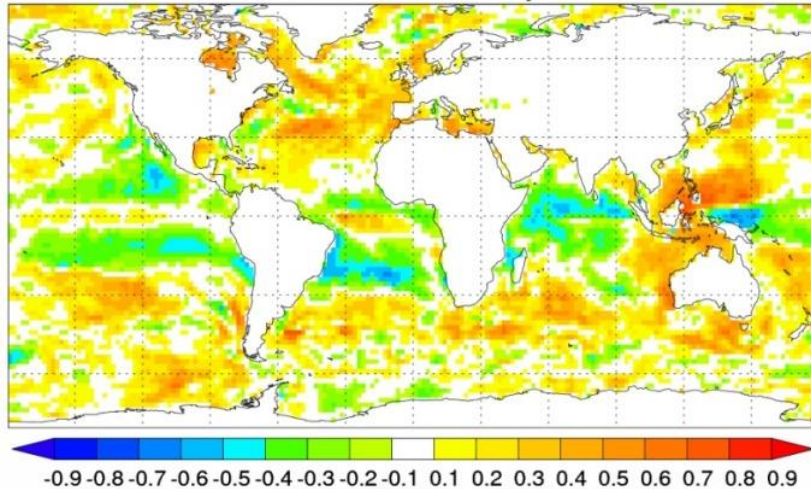


Anomaly Correlations: 6–9 years

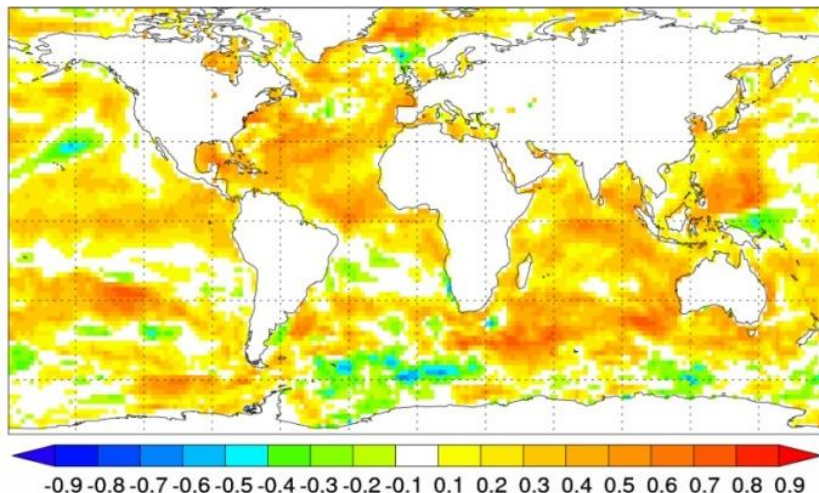


CMIP5 -> MiKlip

Surface temperature - correlations of Hindcast yr2 with HadISST
MPI-ESM-LR, 1961-2001, 3 members mean



- **Assimilation with ocean T&S of forced NCEP MPIOM (baseline version 0)**

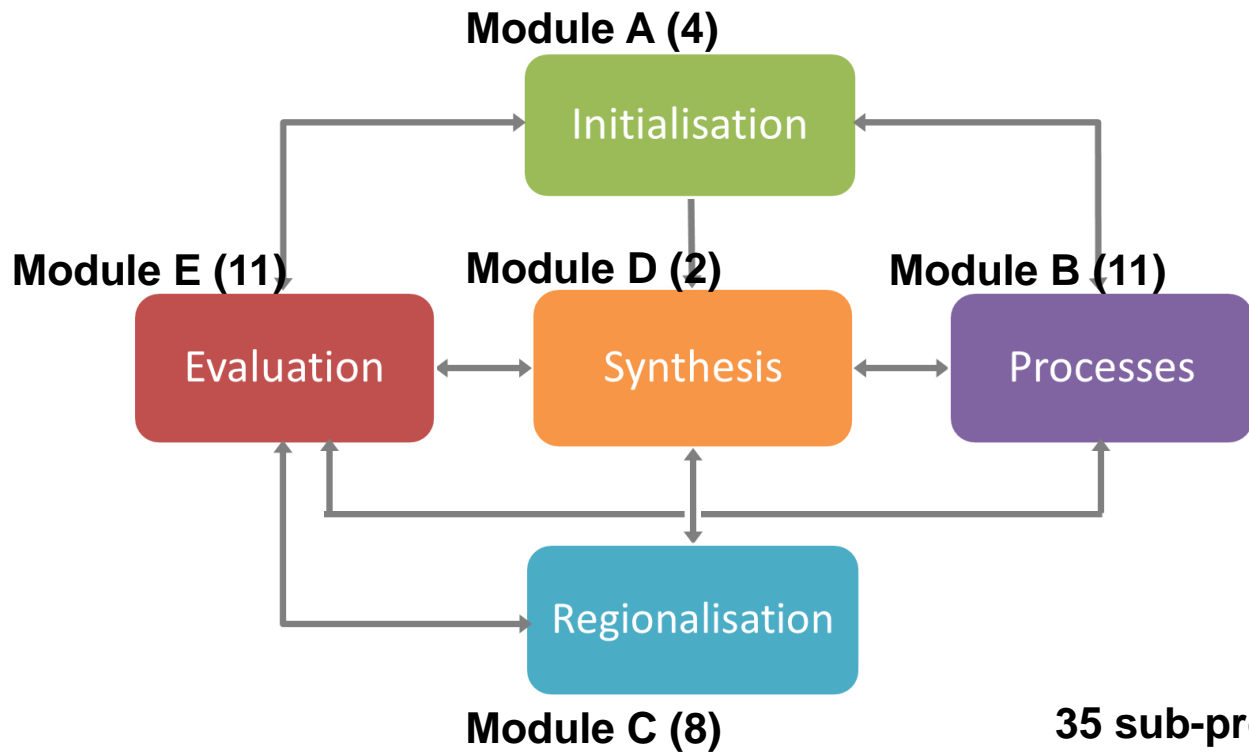


- **Assimilation with ocean T&S of NEMOVAR plus T,p,vor,div of ERA40/ERAinterim (baesline version 1)**

Next Step: MPI-ESM-MR

Aims

“MiKlip aims to perform vigorous prediction research, while at the same time providing the best currently possible decadal climate predictions..”



**35 sub-project in total
plus project office and
MiKlip data server**

Objectives

- Module A „Initialisation“ (D. Stammer)
 - Improving initial conditions of coupled climate models
 - Improving initialisation procedures
- Module B „Processes“ (U. Cubasch)
 - Assessing the effects of enhanced resolution and parameterisation
 - Investigating mechanisms of decadal variability
 - Coupling of additional climate subsystems
- Module C „Regionalisation“ (C. Kottmeier)
 - Climate prediction for Europe and Africa
 - Impact of regional scale processes on global predictability
- Module E „Evaluation“ (U. Ulbrich, P. Becker)
 - Generation and application of new observational data for validation
 - Development of process-oriented validation tools

Module D - Synthesis

- Overall Project Coordination (J. Marotzke)
 - MiKlip Office (F. Vamborg)
 - MiKlip Data Server (F. Vamborg + DKRZ)
- Development of an ensemble prediction system (WG DP)
- Development of an evaluation system (FU Berlin)
- Dissemination of predictions (WG DP)
 - Project partners and users e.g. DWD, CSC
 - External partners e.g. DP exchange, EU FP7 SPECS



Development of the DP system

- During each of the 3 development stages (DS) we provide new sets of hindcasts/forecasts
- Generally, we refer to the results from other modules
 - DS1 (-03.13): new initialisation (ERA/NEMOVAR)
 - DS2 (-09.14): new assimilation (3DVAR, EnKF) and perturbation, increase of ensemble size (~ 50)
 - DS3 (-09.15): increase of resolution
- In progress I : model environment infrastructure
 - Transition from IMDI runscripts to meta scheduler (cylc)
- In progress II: EPS infrastructure
 - Technical infrastructure for ensemble generations and data assimilation (e.g. implementation of DWD 3DVar in MPI-ESM)
 - Meta data and standardisation for an EPS