DKRZ User Workshop 2013

Project 778: INTEGRAted data and evaluation system for decadal scale predicTION - MIKLIP

A Standardized Evaluation System for Decadal Climate Prediction

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FONA Decadal Climate Prediction BMBF

MiKlip

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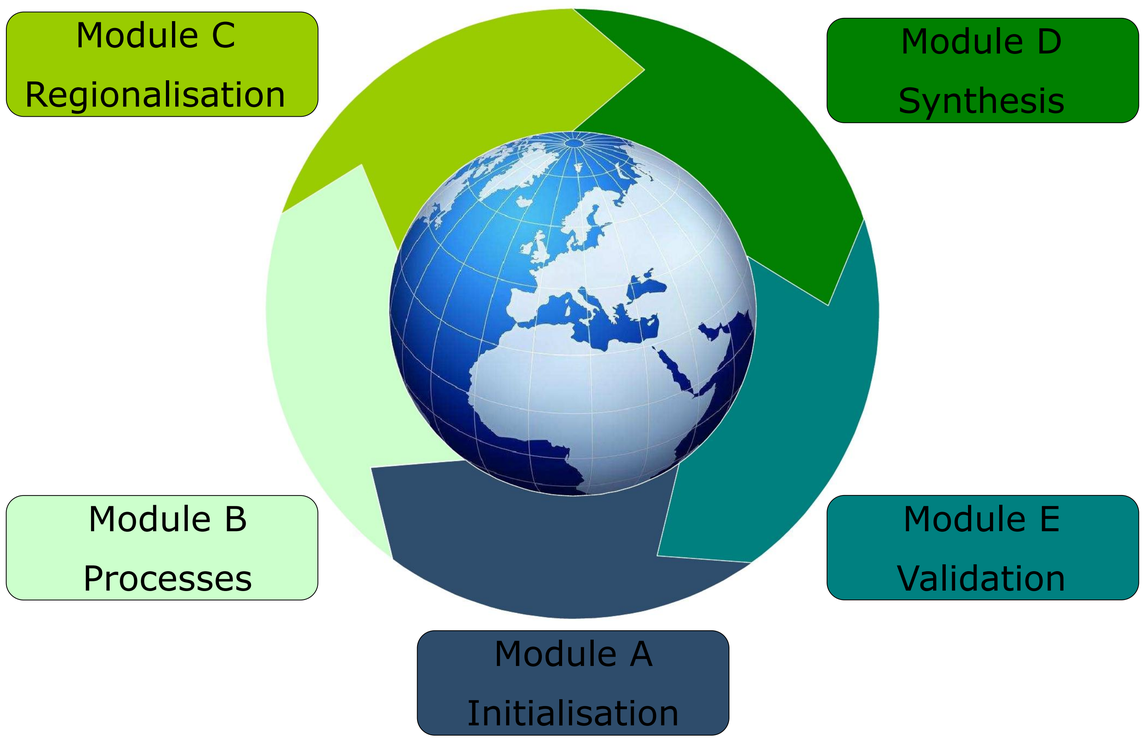
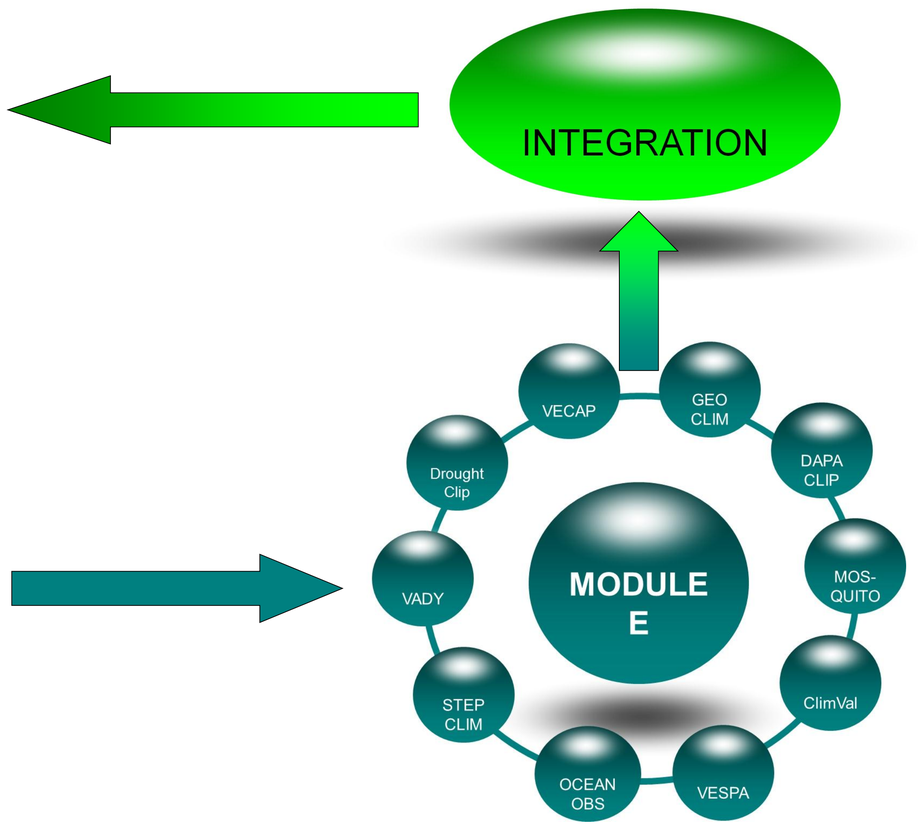
OVERVIEW

The **INTEGRATION** project provides a standardised data and evaluation system for application within the MiKlip system. The application system enables the assessment of the MiKlip system during each of its development stages. Research progress from different modules of MiKlip directly flows into the system enabling efficient development and continous improvement of the MiKlip system.

The MiKlip project -

Developing a System for Decadal Climate Predictions





TECHNICAL & SCIENTIFIC TASKS

DS1 DS2 DS3

INTEGRATION – Technical Interface between Module D & E

- Establishment and application of **standardised methods for evaluation** of the MiKlip system and different model components
- **Definition of standards** for integrated evaluation and the elaboration of **strategies for system design** and the preparation of according methods
- Preparation of benchmarks in order to assess the **skill of different configurations** of the forecast system according to the coordinated MiKlip strategy
- Selection of variables and **definition of appropriate metrics** focusing on the inclusion of parameters with a potential forecast skill on the seasonal to decadal time scale
- **Optimisation of the evaluation system** by exploration and documentation of uncertainties related to the choice of different observation based evaluation datasets and the assessment of the robustness of the employed metrics used for standard evaluation.

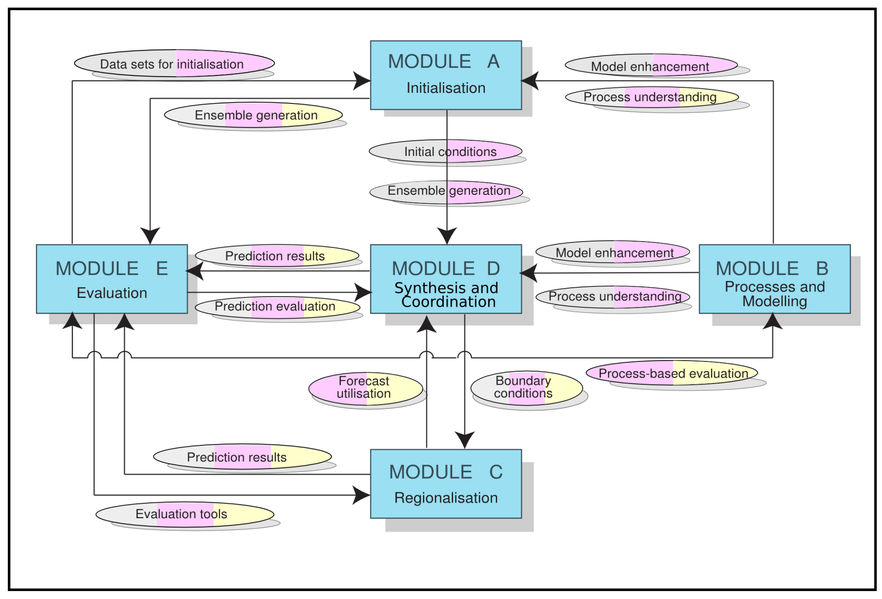
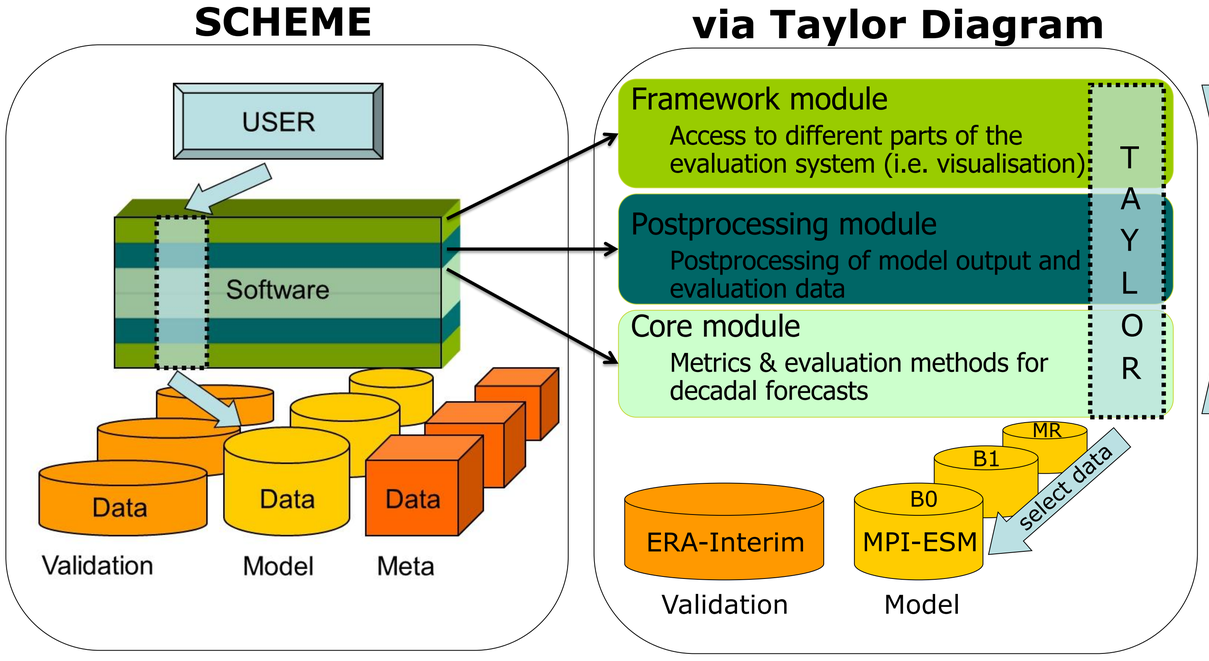


Figure 1: The structure of **MiKlip** and the major interactions among the Modules. The colour coding of the interactions marks the development stages during which these interactions will be most prominent (grey: DS1, magenta: DS2, yellow: DS3).

WORKFLOW & EXAMPLE

SCHEME



EXAMPLE via Taylor Diagram

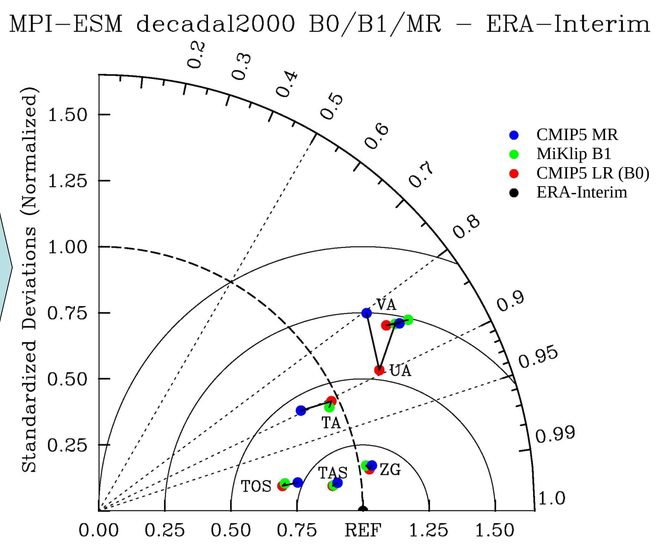


Figure 2: Taylor Diagram – CMIP5 decadal2000 experiment runs with the first set of 3 ensembles from MPI-ESM (LR (B0) red, MR blue and MiKlip Baseline 1(B1) green) and ERA-Interim as reference. Example monthly mean variables temperature (TA), u-wind (UA) and v-wind (VA) in 200hPa, geopotenial height in 500hPa, near surface temperature (TAS) and sea surface temperature (TOS) on the MiKlip-EU domain. The lines from B0 to B1 and LR to MR indicate the changes in the model development and help to analyse the setups, e.g. here the annual cycle of variables.

OUTLOOK

Installation of a module for extensive analysis and **visualisation of model output**(hindcast/forecast), validation data and results from evaluation (Figure 2).

Preparation of a user manual for comprehensive documentation of the application system.

Development of an application system as an easy to use low-end application which minimises technical requirements for users within MiKlip and potential end users outside of MiKlip. It is designed for **interactive usage** via a **website based** portal.

REFERENCE / ACKNOWLEDGEMENT

MiKlip – A Research Proposal on Decadal Climate Prediction Jochem Marotzke (MPI-M), Detlef Stammer (Univ. Hamburg), Ulrich Cubasch (FU Berlin), Christoph Kottmeier (KIT), Uwe Ulbrich (FU Berlin), Paul Becker (DWD)

All runs and data from the MPI-ESM model were provided by the DKRZ (Deutsches Klimarechenzentrum).

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