Views at MPI-M on DECK, CMIP6 and the MIPs

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Models to be used

- For CMIP5 the MPI-ESM-1.0 (ECHAM6.2/MPIOM) in two resolutions
  - LR: atm. T63L47, ocean 1.5°L40
  - MR: atm. T63L95, ocean 0.4°L40

- For CMIP6 two models:
  - MPI-ESM-1.1 (ECHAM6.3/MPIOM) for a baseline of experiments (cf. Thorsten Mauritsen's talk at the Tuning Workshop)
  - MPI-ESM-2 that is under development, based on the ICON GCMs, for a 2nd set of experiments (unstructured grid, triangular cells)

- Resolutions:
  - The new computer system at DKRZ will be ready in spring 2015.
  - The resolution will be chosen such that the turnover is ~20 years/day on 10% of the machine,
  - Currently we expect ~100 km / 0.4° in atmosphere / ocean.

DECK

- DECK should include experiments that serve the development of coupled climate models.
- The less expensive (years to simulate) the more often it can be used.
- Ideal structure:
  - Realistic experiments for the past to measure systematic biases (means and var.)
  - Idealized experiments to measure system properties (ECS, TCR, feedbacks)

- CMIP5 experiments for the development of MPI-ESM-1.1
  - Done : amip, amip4K, piControl [DECK, NUCLEUS6]
  - To do : historical, 1pctCO2, abrupt4xCO2
- For the development process we avoid the RCP scenarios because we do not see any advantage for the model development compared to the idealized 1pctCO2 scenario.

CMIP6

- We prefer (b), i.e. a CMIP6 set of experiment consisting of:
  - DECK for the model development baseline
  - High priority experiments = Tier 1 of CMIP6-endorsed MIPs
  - Low priority experiments, which complete the CMIP6-endorsed MIPs
- We would make the CMIP6 experiments within the given constraints:
  - Scientific interest (involvement in MIPs)
  - Resources (CPU and working time)
- Advantages:
  - Evaluation: Larger multi-model ensembles for the prioritized experiments
  - Resources: The CMIP6-endorsement for a CMIP set of experiments with defined priorities will be helpful for obtaining additional resources.

MIPs

- Criteria for the CMIP6 endorsement of MIPs
  - Scientific quality, and contribution to the WCRP Grand Challenges
  - Experiments or diagnostics have been tested and published
  - Specifications and initial/boundary data must be ready in time.

- MIPs of interest for MPI-M: (1 = yes we plan, 2 = not sure yet)
  - 1: C4MIP, CFMIP, DCPP, HighResMIP, LUMIP, PMIP, RFMIP, VolMIP, DynVar
  - 2: DAMIP, GeoMIP, LS3MIP, OCMIP6, GMMIP, FAFMIP

- Contact between MIPs and modeling group needs to be established.
- Number of years: ~7000

Other issues

- CMIP6 timeline?
- Is the DECK forcing the same as for CMIP5?
- When are the forcing data ready for the CMIP6 MIP experiments?
- CMOR: What will change and when is it available?
- Data portals: When ready to feed in data, and how?
- How to link ESGF data files better to:
  - Model publications in journals
  - Experiment publications (DOIs)

Thank you