Application for CMIP6-Endorsed MIPs

Please return to CMIP Panel Chair Veronika Eyring (email: <u>Veronika.Eyring@dlr.de</u>*)*

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The recently proposed, revised CMIP structure (see information on the CMIP Panel website at <u>http://www.wcrp-climate.org/index.php/wgcm-cmip/about-cmip</u>) provides for a small set of experiments to be routinely performed by modeling groups whenever they develop a new model version. The output from these so-called *ongoing CMIP Diagnostic, Evaluation and Characterization of Klima (DECK)* experiments and the *CMIP6 Historical Simulation* will be distributed for community use via the ESGF infrastructure. Other Model Intercomparison Projects (MIPs) will build on the CMIP DECK experiments and the CMIP6 Historical Simulation and augment them to address a broad range of scientific questions. Additionally proposed MIP experiments together with the CMIP DECK experiments and the CMIP6 Historical Simulation will constitute the suite of simulations for the next phase of CMIP.

MIPs are invited to request endorsement for the next phase of CMIP (i.e., CMIP6). Applications from MIPs requesting status as a CMIP6-Endorsed MIP should be sent to the CMIP Panel Chair. The current set of MIP proposals is now complete and will be revised on the agreed timeline. We will review any additional proposals in a year from now at the next WGCM meeting in October 2015. A MIP may propose that a subset or even all of their experiments be included as part of the suite of simulations constituting CMIP6. The CMIP Panel will, together with the WGCM co-chairs, decide whether a MIP and its experiments meet the criteria for endorsement for CMIP6. Note that it is expected that all additional experiments proposed for CMIP6 will be scientifically analyzed and exploited by the MIP.

CMIP6-Endsored MIPs can make full use of the ESGF infrastructure. In order to minimize the burden imposed on modeling groups wishing to participate, the MIPs seeking to be part of CMIP Phase X must agree to comply with the CMIP standards in terms of experimental design, data format and documentation. In general the WGCM encourages adhering to the standards in place for CMIP.

The main criteria for MIPs to be endorsed for CMIP6 are

1. The MIP and its experiments address at least one of the key science questions of CMIP6.

2. The MIP demonstrates connectivity to the DECK experiments and the CMIP6 Historical Simulation.

3. The MIP adopts the CMIP modeling infrastructure standards and conventions.

4. All experiments are tiered, well-defined, and useful in a multi-model context and don't overlap with other CMIP6 experiments.

5. Unless a Tier 1 experiment differs only slightly from another well-established experiment, it must already have been performed by more than one modeling group.

6. A sufficient number of modelling centers (~8) are committed to performing all of the MIP's Tier 1 experiments and providing all the requested diagnostics needed to answer at least one of its science questions.

7. The MIP presents an analysis plan describing how it will use all proposed experiments, any relevant observations, and specially requested model output to evaluate the models and address its science questions.

8. The MIP has completed the MIP template questionnaire.

9. The MIP contributes a paper on its experimental design to the CMIP6 Special Issue.

10. The MIP considers reporting on the results by co-authoring a paper with the modelling groups.

Proposals from MIPs should include the following information:

*   Preliminary information used to determine whether a MIP should be endorsed for CMIP6 or not.
** Information that must be provided later (and before the panel can determine which experiments, if any, will be incorporated in the official CMIP6 suite).

➢ Name of MIP*
➢ Co-chairs of MIP (including email-addresses)*
➢ Members of the Scientific Steering Committee*
➢ Link to website (if available)*
➢ Goal of the MIP and a brief overview*
➢ References (if available)*
➢ An overview of the proposed experiments*
➢ An overview of the proposed evaluation/analysis of the CMIP DECK and CMIP6 experiments*
➢ Proposed timing*

➢ For each proposed experiment to be included in CMIP6**
  ○ the experimental design;
  ○ the science question and/or gap being addressed with this experiment;
  ○ possible synergies with other MIPs;
  ○ potential benefits of the experiment to (A) climate modeling community, (B) Integrated Assessment Modelling (IAM) community, (C) Impacts Adaptation and Vulnerability (IAV) community, and (D) policy makers.
➢ If possible, a prioritization of the suggested experiments, including any rationale**
➢ All model output archived by CMIP6-Endorsed MIPs is expected to be made available under the same terms as CMIP output. Most modeling groups currently release their CMIP data for unrestricted use. If you object to open access to the output from your experiments, please explain the rationale.**
➢ List of output and process diagnostics for the CMIP DECK/CMIP6 data request**
  ○ whether the variable should be collected for all CMIP6 experiments, or only some specified subset and whether the output is needed from the entire length of each experiment or some shorter period or periods;
  ○ whether the output might only be relevant if certain components or diagnostic tools are used interactively (e.g. interactive carbon cycle or atmospheric chemistry, or only if the COSP simulator has been installed);
  ○ whether this variable is of interest to downstream users (such as impacts researchers, WG2 users) or whether its principal purpose is for understanding and analysis of the climate system itself. Be as specific as possible in identifying why the variable is needed.
  ○ whether the variables can be regridded to a common grid, or whether there is essential information that would be compromised by doing this;
  ○ the relative importance of the various variables requested (indicated by a tiered listing) is required if the data request is large.
➢ Any proposed contributions and recommendations for**
  ○ model diagnostics and performance metrics for model evaluation;
  ○ observations/reanalysis data products that could be used to evaluate the proposed experiments. Indicate whether these are available in the obs4MIPs/ana4MIPs database or if there are plans to include them;
  ○ tools, code or scripts for model benchmarking and evaluation in open source languages (e.g., python, NCL, R).
➢ Any proposed changes from CMIP5 in NetCDF metadata (controlled vocabularies), file names, and data archive (ESGF) search terms.**
➢ Explanation of any proposed changes (relative to CMIP5) that will be required in CF, CMOR, and/or ESGF.**