CMIP - successes and where to next?

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March 21, 2022
Background on CMIP

The objective of the Coupled Model Intercomparison Project (CMIP) is to better understand past, present and future climate changes arising from natural, unforced variability or in response to changes in radiative forcing in a multi-model context.

Started in 1995 -> first set of common experiments: comparing the model response to an idealized forcing - a constant rate of increase which was accomplished using a CO₂ increase of 1% per year compounded.

Dual role of CMIP: scientific enterprise and support for policymakers.

CMIP has played a critical role in supporting the IPCC Assessment Reports, as data & papers from CMIP simulations have been used extensively in the ARs. All CMIP activities are overseen by a coordinated pair of subcommittees: the CMIP Panel and the WGCM Infrastructure Panel (WIP).
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Based on the 2018 WCRP review, “A conservative estimate of the national investments in CMIP6 places their value in excess of US$3 bn, based on scientists’ time to develop and run the models and to design the experiments, and the supercomputing costs to deliver the simulations”.

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CMIP6

- Number of models/model versions on ESGF: 114 (44 centers)
- Generated data: > 10 PB and growing

Diagnostic, Evaluation, and Characterization of Klima (DECK)

- Pre-industrial control
- 1%CO2
- 4xCO2
- AMIP
CMIP6 Survey

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Figures from Eleanor O’Rourke (CMIP Project Office). Preliminary data, do not cite.
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Conclusions

- CMIP is central to the use of multi-model approaches to answer scientific and societally-relevant questions, exemplified by its role in assessment reports.
- CMIP6 survey indicates a strong support for the overall scientific focus.
- CMIP6 represents a LARGE investment worldwide, with a growing participation of non-OECD countries.

How do we optimize the resources? Balance high-res/low # members with low-res/high # members.

How do we maximize the relevance of the simulations and the generated data to support the broad international community needs, research and stakeholders?

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