

Summaries from the 1st ESMO meeting series

18-22 March 2024

The WCRP ESMO core project had its first official series of meetings at the German Climate Computing Centre (DKRZ) on 18-22 March 2024. It was a prolific gathering which concluded with presentations from the ESMO SSG, CMIP Panel and WGCM, as summarised in the points below.

CMIP

- CMIP has finalised the experiment selection for the “AR7 Fast Track”, including additions to the DECK (more information here), after extensive community consultation. The AR7 Fast Track experiment viewer can be found here.
- CMIP is continuing to evolve into a more continuous approach with small targeted “fast track” experiment sets, in addition to the DECK and the growing number of Community MIPs.
- The new timeline is ambitious, but nearly all modelling centres have already expressed interest in contributing.
- Progress on the AR7 Fast Track science goals were discussed and are being evolved by the CMIP Panel.
- The CMIP7 experimental design paper and potentially a *perspective* paper showcasing the “overview of the CMIP evolution and the community co-creation and science goals of the AR7 Fast Track” is being prepared.
- A CMIP7 Geophysical Model Development Special Issues has been launched - for those interesting in submitting please contact cmip-ipo@esa.int
- The need for cross-MIP collaboration was identified, suggesting a virtual workshop to brainstorm common themes and enhance efficiency - the CMIP IPO will follow up with MIPs.
- All MIPs should [register](#) on the CMIP website, if not already done so, where they can request CMIP IPO support (including web page hosting) and/or Panel review..
- The CMIP Panel also determined the need for a group to define what operationalisation means for CMIP and analyse potential mechanisms for a regular and sustained mode of operation. ESMO and WGCM endorsed this effort and pre-scoping meetings are underway.
- During task team discussions, needs for guidance were identified. These will be addressed by the Strategic Ensemble Design task team including through

the establishment of a Spin up WG (with potential links to ESMO activity) and potential for organisation of an emissions-driven model configuration strategy workshop.

- The Data Citation Task Team provided recommendations for developing a sustainable data citation service that will guide discussions with prospective funders.

WGCM

- WGCM approved the addition of piClim-control, piClim-anthro, piClim-4xCO₂, historical and esm-historical to the DECK and that the CMIP Panel can determine future additions to the DECK. Similarly, the AR7 Fast Track experiment selection presented by the CMIP panel was also approved.
- WGCM regional representatives also presented on the latest developments in model systems and the feasibility of delivering the AR7 Fast Track. Most model groups have updates in their models, while some might use the existing model or have it prepared as a backup.
- Most groups plan to provide more than one model version, based on resolution and complexity. Some groups are increasing their focus on the carbon cycle components.
- WGCM also presented several action items, including a planned white paper. There was a decision to prioritise emission-driven scenarios rather than concentration driven. A related workshop on best practices in running emission-driven ESMs and targeted discussion with ScenarioMIP on implementing BECCS in ESMs and defining the emissions in scenarios' extensions is being planned.
- The possibility for another systematic error workshop, potentially involving WGNE, was discussed.
- WGCM would also like to improve coordination with ESMO and CMIP, and establish connections with non-WCRP groups through ESMO.

ESMO SSG

- The ESMO SSG had intensive discussions on the key science and new structure of WGs and Panels. A template for Terms of Reference, including ESMO's basic one, was formulated, and task team requests were evaluated. Initial discussions on budget utilisation, IPO services, and ESMO endorsement have started. Basic functioning and governance have been settled.

- The SSG decided on the creation of a new Working Group on Observations for Researching Climate (WGORC) that will focus on observational data needs for specific climate research cases. WGORC will collaborate with observational communities and other partners and will address data provision bottlenecks, involve the Global South, LHAs, other CPs, and GPSDD (Global Partnership for Sustainable Development Data), and highlight good practices across WCRP.
- OBS4MIPs will be overseen by WGORC with the support of the CMIP IPO and ESMO IPO.
- Similarly, other panels can be created under WGORC, such as Obs4ET (to support Emerging Technologies such as ML) and Obs4RIP (for Reanalysis, Initialization, Predictions), to address other specific research needs.
- The SSG also noted the importance of bringing relevant observations and model analysis together to better measure and monitor the global Carbon, Energy and Water Cycles, potentially in collaboration with other WCRP and external partners (GEWEX, SOLAS, CLIVAR, GPEX, etc). A task team to cross integrate relevant activities is under discussion.
- WGORC and its new data panels need to be developed with various specific user needs and access considerations in mind, and will involve discussions with the relevant communities, data centres and other Working Groups to facilitate both data collection and usability.