



46th Session of the World Climate Research Programme  
**Joint Scientific Committee**



# Coupled Model Intercomparison Project (CMIP) and WGCM Infrastructure Panel (WIP)

Presented by Helene Hewitt (CMIP Panel Co-chair)  
on behalf of  
the CMIP Panel, WIP, Task Teams, Fresh Eyes and CMIP IPO

# Key highlights for the Joint Scientific Committee (1)

- [CMIP7 GMD Special Issue](#) including [CMIP7 description paper \(Dunne et al, 2024\)](#) and [CMIP7 Forcings GMD/ESSD Special Issue](#) (full publication list in [JSC report](#))
- The CMIP7 DECK forcing suite (up to end 2021) delivered (pending ozone and nitrogen deposition) and all information can be found at <https://wcrp-cmip.org/cmip-phases/cmip7/cmip7-forcing-datasets/> - supporting users in DCPD and EPESC.
- JSC endorsement of CMIP7 scenarios proposed by [ScenarioMIP \(van Vuuren et al, 2025\)](#) and the community engagement process used to define them.
- Development of the [CMIP7 harmonized Data Request](#) (incorporating needs of Assessment Fast Track and wider Community MIPs on AR7 timeline). An overview paper and five thematic papers submitted to GMD – representatives of many WCRP activities were part of author teams.

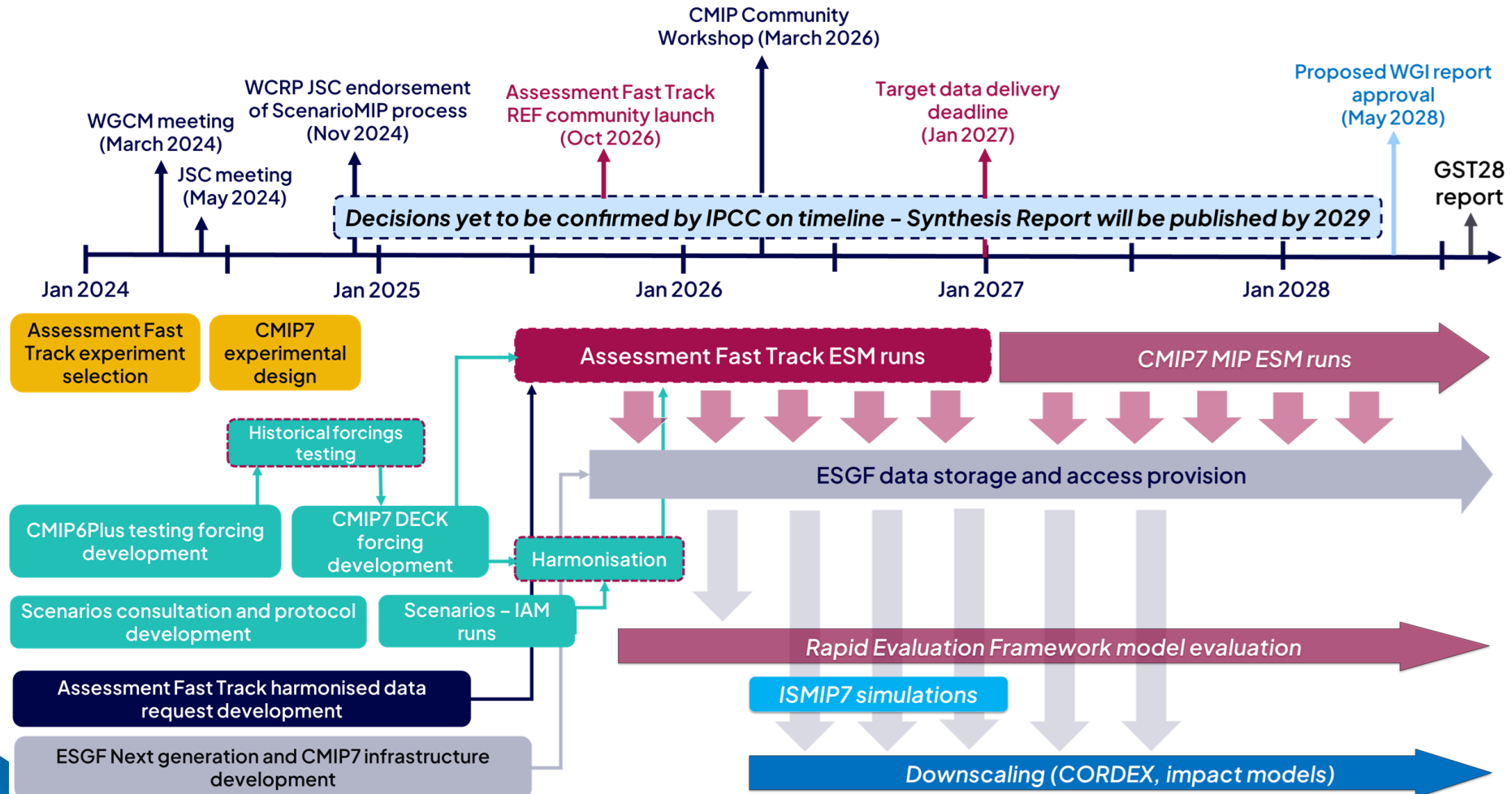
# Key highlights for the Joint Scientific Committee (2)

- Development of the [Rapid Evaluation Framework \(REF\)](#), a complete end to end system providing a systematic and rapid performance assessment of models participating in the CMIP Assessment Fast Track, supporting the next IPCC Assessment Report 7 (AR7) cycle.
- Number of Model Benchmarking TT papers, including REF paper, in preparation.
- [Fresh Eyes on CMIP projects](#) and [“Fresh Eyes around the world” workshop](#) – there are 184 Fresh Eyes from 36 countries across all continents.
- Development of [Essential Model Documentation](#) to support CMIP7 users.
- Regular [CMIP seminars, events and workshops](#).

# CMIP7 Emerging Science Questions

- **Patterns of sea surface change:** How will tropical ocean temperature patterns co-evolve with those at higher latitudes? *DECK, DCP, CFMIP, HighResMIP, OMIP, CERESMIP, SOFIA*
- **Changing weather:** How will dangerous weather patterns evolve? *DECK, GeoMIP, DAMIP, ScenarioMIP, RAMIP, LESFMIP/DAMIP, TIPMIP, HighResMIP*
- **Water-carbon-climate nexus:** How will the Earth respond to human efforts to manage the carbon cycle? *DECK, C4MIP, CDRMIP, ScenarioMIP, GeoMIP*
- **Tipping Points:** What are the risks of triggering irreversible changes across possible climate trajectories? *ScenarioMIP (overshoot scenarios), SOFIA, linking to ISIMIP, VIACS and CMIP6Plus experiments conducted through Horizon Europe TipESM, OptimESM*

# Future plans and priorities: CMIP7 Assessment Fast Track







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## Prediction & Projection



DCPP   
| dcppB-forecast-cmip6



ScenarioMIP    
| scen7-hc  
| scen7-mc  
| scen7-mlc  
| scen7-lc  
| scen7-vlhoc  
| scen7-vlloc  
| Highest priority  
| scenario extensions,  
| as defined in van Vuuren  
| et al., 2025

## Process Understanding

### Attribution




AerChemMIP   
| scen7-h-Aer  
| scen7-h-AQ  
| scen7-vlho-Aer  
| scen7-vlho-AQ  
| hist-piAer  
| hist-piAQ  
| piClim-CH4  
| piClim-N2O  
| piClim-NOx  
| piClim-ODS  
| piClim-SO2




GeoMIP   
| g7-1p5K-sai  
PMIP    
| abrupt-127k


DAMIP    
| hist-nat  
| hist-aer  
| hist-GHG

LMIP   
| land-hist





### Characterisation

C4MIP     
| 1pctCO2-bgc  
| 1pctCO2-rad  
| esm-flat10  
| esm-flat10-cdr  
| esm-flat10-zec

CFMIP     
| amip-p4k  
| amip-piForcing  
| abrupt-2xCO2  
| abrupt-0p5CO2

RFMIP   
| piClim-histaer  
| piClim-aer  
| piClim-histall

## Scientific questions

-  Patterns of sea surface change
-  Changing weather
-  Water-carbon-climate nexus
-  Tipping Points

## Assessment Fast Track

# Future plans and priorities: a resilient infrastructure

The WIP is working hard, together with WIP Task Teams and ESGF partners, to ensure the CMIP7 infrastructure is developed in open-access public GitHub repositories, and is ready and fit for purpose:

- ESGF Next Generation (ESGF-NG) infrastructure is expected to be ready in July 2025.
- The [Controlled Vocabularies \(CVs\) TT](#) is developing, designing and implementing an improved framework for recording and managing vocabularies that can serve CMIP and related WGCM and ESMO activities.
- CMIP7 experiment registrations are taking place in the [CMIP7 CVs Github](#)
- The joint WIP-ESGF Quality Assurance/Quality Control WG is developing a tool (leveraging Copernicus activity).
- Variable registry: Introduction of a registry to contain variable definitions across multiple WCRP activities.

# Future plans and priorities: path to sustained mode

- Climate information is needed more regularly than phases of CMIP provide.
- Scoping of sustained mode of delivery for limited parts of CMIP is underway.
- Climate forcings is the first priority.
- Wider WCRP consultation.
- Commentary paper (Hewitt et al., 2025) in preparation

- 1. Extend historical forcings through the previous year** – up to date historical simulations to understand recent climate.
- 2. Update scenarios responding to changing policy** – climate projections with new Earth System Models.



# Future plans and priorities: CMIP Community Workshop

- CMIP Community Workshop will take place in Kyoto, 9th-13th March 2026 hosted by the Japanese modelling community, the first time a major CMIP workshop has been held outside US/Europe.
- The workshop will include science sessions, an ECR hackathon, policy, user and funder engagement session, and networking opportunities.
- The CMIP Panel and WIP are keen to ensure participation from across WCRP CPs and LHAs.
- [Call for sessions](#) in April and programme development now underway.
- Welcome WCRP support for global south and ECR travel but understand budget restraints – sponsorship being sought and baseline budget through IPO.

# Suggestions for JSC consideration

- Given the increased profile and importance of scenario development to climate policy assessments, we feel **greater visibility of IAM community activities within WCRP may be beneficial** to ensure timely delivery, adequate structural support, and a closer connection across the WCRP and IAM communities. For example, perhaps by expanding Safe Landings LHA
- **A clear definition of the role and responsibilities of the WCRP secretariat**, particularly to ensure there is no duplication of effort with IPOs e.g., development of governance or guidance materials. The secretariat has an important role to play with linking to other activities based at WMO including GCOS, Climate Services and IPCC as well as the high-level view across all CP's, LHAs, and JSC.

# Issues for JSC consideration: Forcings updates

- CMIP is keen to investigate the possibility of a mandate and discuss governance options for the informal consortium producing the climate forcings datasets to support proposed delivery of regular updates.
- Some initial discussions have taken place with WMO Climate Infrastructure Task Team (chaired by INFCOM president) and suggestions of possible approach similar to WMO annual to decadal forecast (under SERCOM).
- Should our timeline for extensions consider the needs of IPCC AR7?
- CMIP leadership would appreciate JSC feedback on how to advance discussions including suggestions of alternative approaches.

# Issues for JSC consideration: ESGF resilience

- Delivery of CMIP data is dependent upon publication and accessibility of the model output and associated input data on the Earth System Grid Federation (ESGF).
- Financial and human resources are constrained across the globe putting open access to CMIP and CORDEX data at risk and limits potential to address evolving data access needs and equitable provision of analysis capability.
- JSC leadership towards widening participation, strengthening existing contributions, and supporting provision of compute resources alongside MIP data hosted on these systems to facilitate an even broader WCRP community to access and use MIP data would be welcomed aligning with [WCRP data policy](#).
- A more structured relationship between CMIP/WCRP and ESGF consortium would also be beneficial. We might want to also consider a mandate that enables broader global contribution and increased awareness of emerging user needs.

# Thank You



[www.wcrp-climate.org](http://www.wcrp-climate.org)

