



47th Session of the World Climate Research Programme  
**Joint Scientific Committee**



# Coupled Model Intercomparison Project (CMIP) and WCRP-ESMO Infrastructure Panel (WIP)

Presented by John Dunne (CMIP Panel Co-chair)  
on behalf of  
the CMIP Panel, WIP, Fresh Eyes and CMIP IPO

# Key highlights for the Joint Scientific Committee (1)

1. Preparation and initiation of the first CMIP7 simulations including:
  - a) Finalization and publication of CMIP7 experimental design ([Dunne et al., 2025](#))
  - b) Finalization of CMIP7 projection scenarios ([van Vuuren et al., 2026](#))
  - c) Delivery of historical and scenario forcing datasets ([CMIP7 forcing datasets page](#))
  - d) CMIP7 guidance development and modelling centre interaction ([CMIP7 guidance](#))
  - e) CMIP7 infrastructure and ESGF-Next Generation development including [Essential Model Documentation](#), [CMIP7 Data Request](#), [Branded variables](#) and [Quality Control](#).
2. IPCC Interaction including update meetings and plenary/LAM briefings
3. Launch of CMIP7 Assessment Fast Track ready [Rapid Evaluation Framework \(REF\)](#), [dashboard](#) and [best practice for use guidance](#) (developed with RfS)– providing systematic and rapid assessment of CMIP7 data

# Key highlights for the Joint Scientific Committee (2)

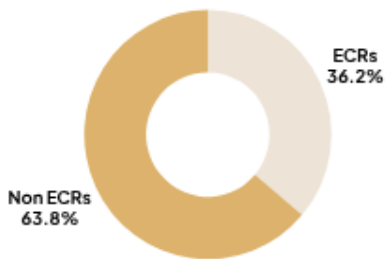
4. Growing success of [Fresh Eyes on CMIP](#) with first paper emerging and range of [ongoing projects](#).
5. CMIP Community Workshop (see next slide)
6. Nearly 30 peer reviewed publications
7. Successful fundraising for REF development, CMIP 2026 sponsorship, C3S tender to support historical forcings extensions and two new large scale Horizon Europe projects (FUTURA and ENES-RISE) with substantial CMIP contributions, plus the continued huge in kind contribution from national funders of modelling centres, infrastructure and forcing dataset providers.



9-13 MARCH

**641**  
ATTENDEES

**INCLUDING THE NEXT GENERATION**

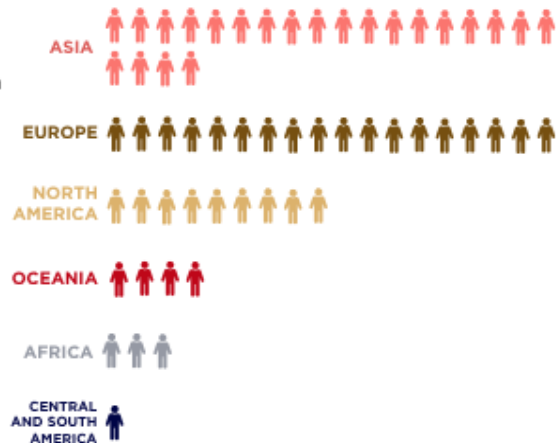


Over one-third of attendees at CMIP 2026 identified themselves as early career researchers.

**AN INTERNATIONAL EVENT**

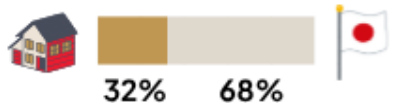
We saw attendees join us from all six continents, with the largest contingent joining from Asia.

**61**  
COUNTRIES  
**301**  
INSTITUTIONS



Each person icon in the figure represents approximately 15 attendees.

**SUPPORTING HYBRID ATTENDANCE**



**354** POSTERS

**99** ORAL TALKS

**9** SIDE SESSIONS

**13** SCIENCE SESSIONS

**TOPICS EXPLORED BY OUR KEYNOTE SPEAKERS**

Keynote speakers across the workshop covered a wide range of topics



CMIP7 development, plans and status update



CMIP7 user requirements



CMIP7 climate scenarios



Confronting models with observations



AMOC stability projections



CORDEX plans for CMIP7



Machine Learning in ESMs



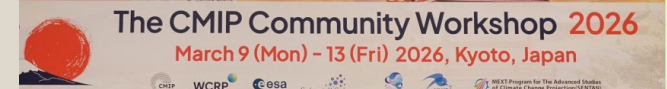
Radiative forcing from aerosol-cloud interactions



Amazon rainforest tipping



Global km-scale modelling



# CMIP7 science questions

Four key questions emerged during the CMIP7 planning process, which the current generation of Earth System Models could address through multi-model ensemble simulations.

More details are available in Dunne et al., 2025.



**Patterns of sea surface change:** How will tropical ocean temperature patterns co-evolve with those at higher latitudes?



**Changing weather:** How will dangerous weather patterns evolve?



**Water-carbon-climate nexus:** How will Earth respond to human efforts to manage the carbon cycle?



**Tipping Points:** What are the risks of triggering irreversible changes across possible climate trajectories?

# CMIP7 Assessment Fast Track

## Prediction & Projection

### DCPP

dcppB-forecast-cmip6

### ScenarioMIP

- (esm-)scen7-h
- (esm-)scen7-hl
- (esm-)scen7-m
- (esm-)scen7-ml
- (esm-)scen7-l
- (esm-)scen7-ln
- (esm-)scen7-vl
- Highest priority scenario extensions, as defined in van Vuuren et al., 2025

## Process Understanding

### Attribution

#### AerChemMIP

- (esm-)scen7-h-Aer
- (esm-)scen7-h-AQ
- (esm-)scen7-vl-Aer
- (esm-)scen7-vl-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

# CMIP7 Data Request

The [CMIP7 Data Request](#) is organised around Opportunities falling under five thematic areas, described in papers submitted to the [GMD CMIP7 Special Issue](#):

**Overview paper:** [Mackallah et al. \(2026\)](#)

**Atmosphere:** [Dingley et al. \(2025\)](#)

**Earth System:** [McPartland et al. \(2026\)](#)

**Impacts and Adaptation:** [Ruane et al. \(2025\)](#)

**Land and Land Ice:** [Li et al. \(2026\)](#)

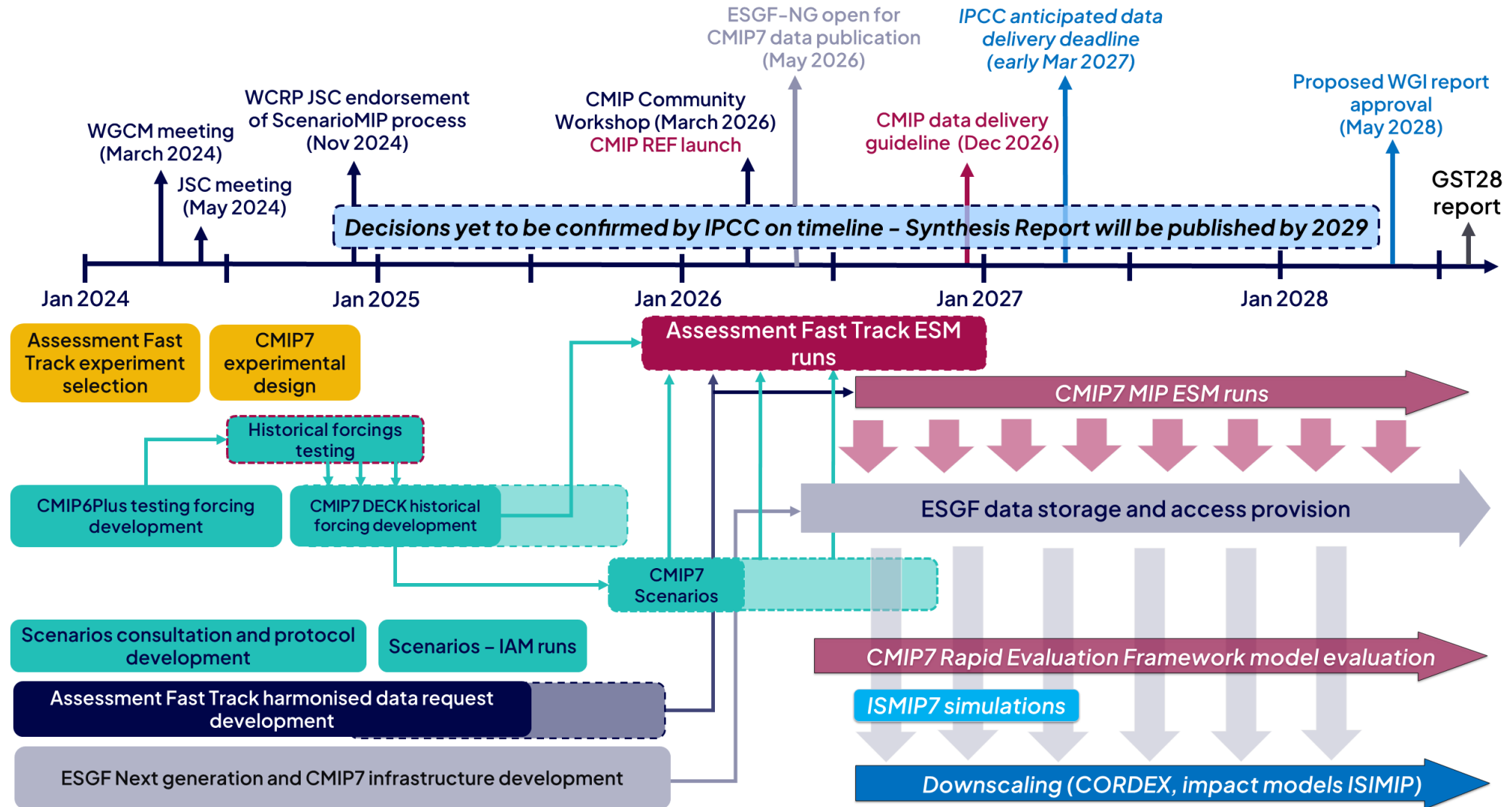
**Ocean and Sea Ice:** [Fox-Kemper et al. \(2025\)](#)

**WCRP**

World Climate  
Research Programme



# Future plans and priorities: Assessment Fast Track timeline



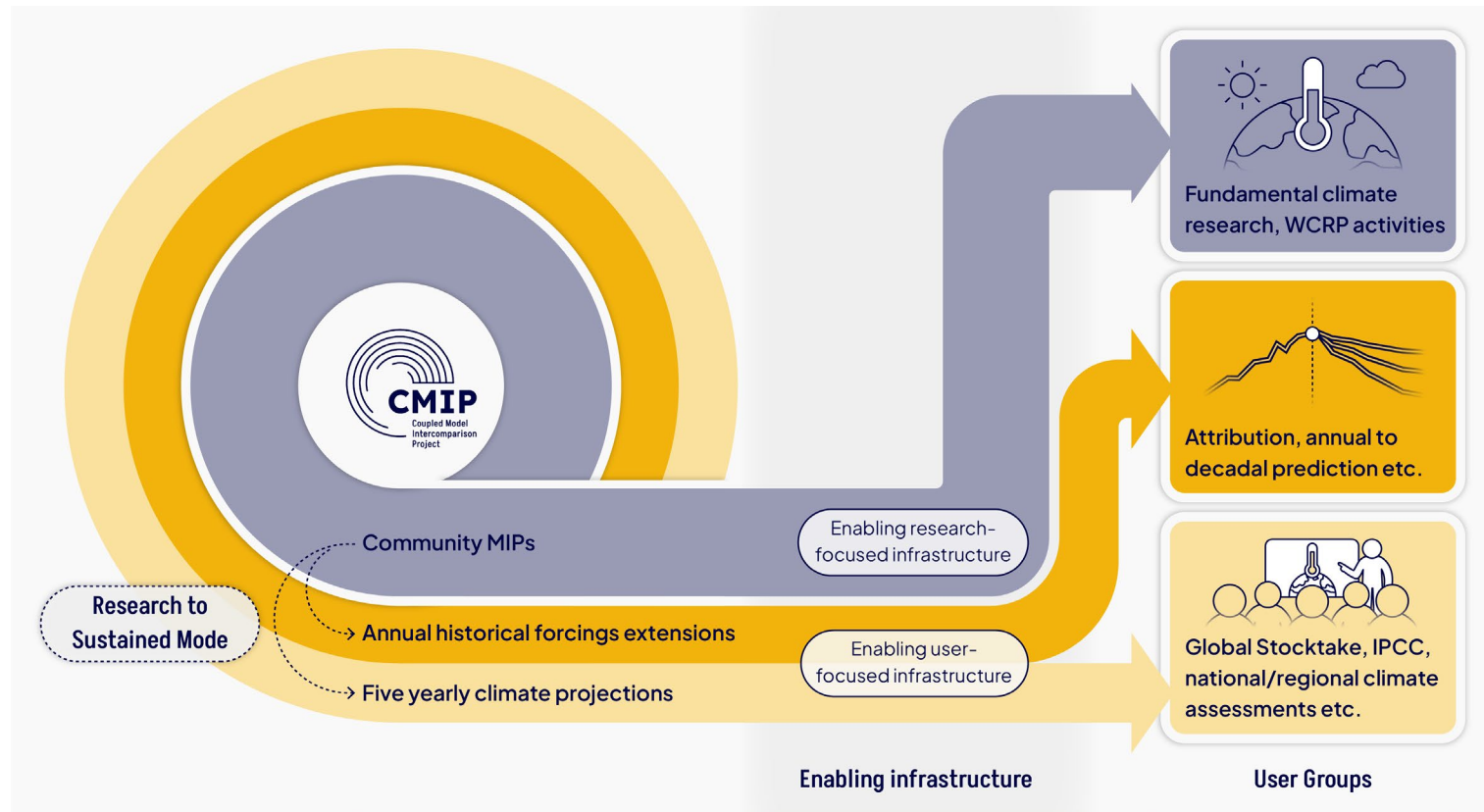
# Near-term plans and priorities

1. Delivering the CMIP7 Assessment Fast Track data! – first data expected in May/June.
2. Streamlining, enhancing robustness and improving user experience (enhancing documentation and quality control standards) of processes and systems.
3. Continuing to engage and support CMIP7 Community MIPs, beyond AFT.
4. Facilitating CMIP7 AFT analysis through community coordination (forums, hackathons).
5. Evolution of the REF with established of a Climate-REF Panel to support community expansion and dedicated REF training sessions for IPCC.

# CMIP sustained mode development and implementation

Priorities for next year, building on [Hewitt et al \(2025\)](#) vision:

1. Initiation of prototype of annual historical forcings extensions
2. Establishment of new Forcings Panel (building on [Naik et al., 2025](#))
3. Developing concept of five yearly climate projection cycles aligned with GST (including extension community and user consultation)



# Issues for JSC consideration

Ongoing concerns regarding:

- Governance, sustainability and lack of formal agreement between WCRP/CMIP and the ESGF.
- Need for a more structured relationship with the Integrated Assessment Modelling Consortium (IAMC), the governing body for the IAM community.

CMIP and WIP leadership have submitted proposals for action to be considered by JSC members.

# Issues for JSC consideration

There is concern in the community that publication review processes are moving too slowly to accommodate the tight timeline from CMIP data publication to IPCC AR7 submission deadlines.

Is there an opportunity for the JSC to issue a statement to the whole community (editors, potential reviewers etc) to recognise this need?

# Challenges

1. Rapidly evolving needs for CMIP infrastructure
  - **Question:** Is a different infrastructure required to deliver sustained mode data and products and what collaborations should be investigated?
2. Inclusion and capacity building
  - **Question:** How can the WCRP community highlight and act against increasing inequity.
3. Moving from research to delivery structure and governance for sustained mode
  - **Question:** Are changes required within WCRP structure and governance required to accommodate sustained mode? If so, what is needed and how can it be implemented?

# Thank You



World Climate  
Research Programme

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



# Additional slides and information

- *Please see JSC specific submitted report*

**WCRP**

World Climate  
Research Programme

