

CMIP summary from the week

Helene Hewitt (Met Office) and John Dunne (NOAA/GFDL), CMIP Panel Co-chairs
Paul Durack (PCMDI/LLNL) and Matt Mizielski (Met Office), WIP Co-chairs
CMIP Panel and WIP members

ESMO Final Plenary, Friday 22nd March 2024 – DKRZ, Hamburg





The AR7 Fast Track





The CMIP approved this experiment selection, including additions to the DECK, as the “AR7 Fast Track”. This was presented to the WGCM members for their consideration and endorsement.

DECK

amip

piControl

and

esm-piControl

1pctCO2

abrupt-4xCO2

piClim-control

piClim-anthro

piClim-4xCO2

historical

and/or

esm-historical

Additions to the DECK

Climate services

DCPP

Initialised prediction (2025-2036)

ScenarioMIP

High scenario

Medium scenario

Low scenario 1

Low scenario 2

Low scenario 3

Process understanding

AerChemMIP

piClim-X

hist-piSLCF/hist-piAer

SSPX-SLCF

C4MIP

1pctCO2-bgc

1pctCO2-rad

esm-flat10-cdr

esm-flat10-zec

CFMIP

amip-p4k

amip-piForcing

abrupt-2xCO2

abrupt-0p5CO2

DAMIP

hist-nat

hist-aer

hist-GHG

GeoMIP

newGeoMIP

LMIP

land-hist

PMIP

LIGabrupt

RFMIP

piClim-histaer

piClim-aer

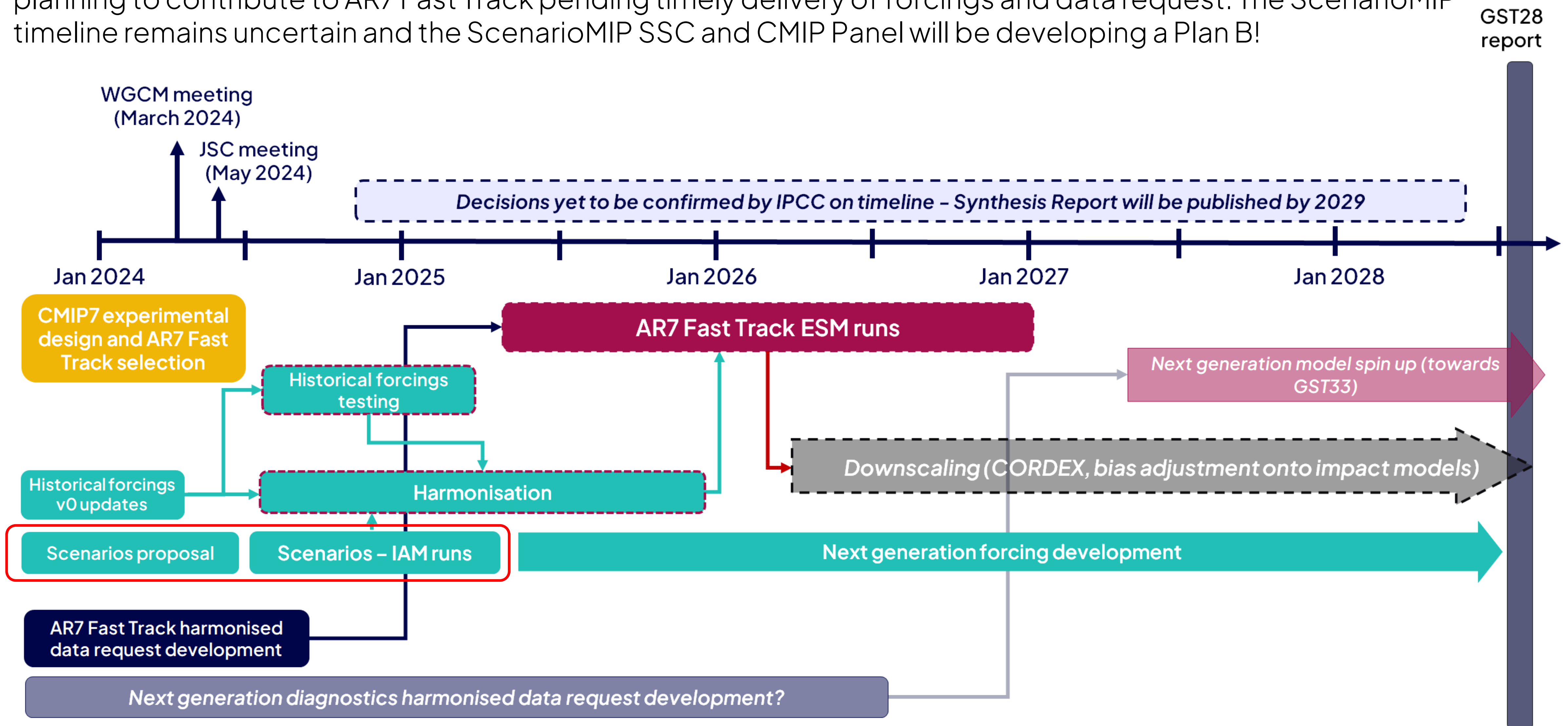
piClim-histall

AR7 Fast Track computational load (updated)

Activity	Coupled	Atmosphere only	Land only	Grand total
DECK	975	136		1111
DCPP	100			100
ScenarioMIP	695			695
AerChemMIP	875	495		1370
C4MIP	700			700
CFMIP	300	201		501
DAMIP	1620			1620
GeoMIP	50			50
LMIP			175	175
PMIP	100			100
RFMIP		456		456
GRAND TOTAL	5415	1288	175	6878

We do not expect every group to run every experiment with every model. Typically, a minimal set of experiments for a physical climate model would be just under 4000 years, with just over 4000 for an ESM.

The ambition of the timeline has been raised a number of times during the week but majority of modelling centres planning to contribute to AR7 Fast Track pending timely delivery of forcings and data request. The ScenarioMIP timeline remains uncertain and the ScenarioMIP SSC and CMIP Panel will be developing a Plan B!





Progress on the AR7 Fast Track science goals

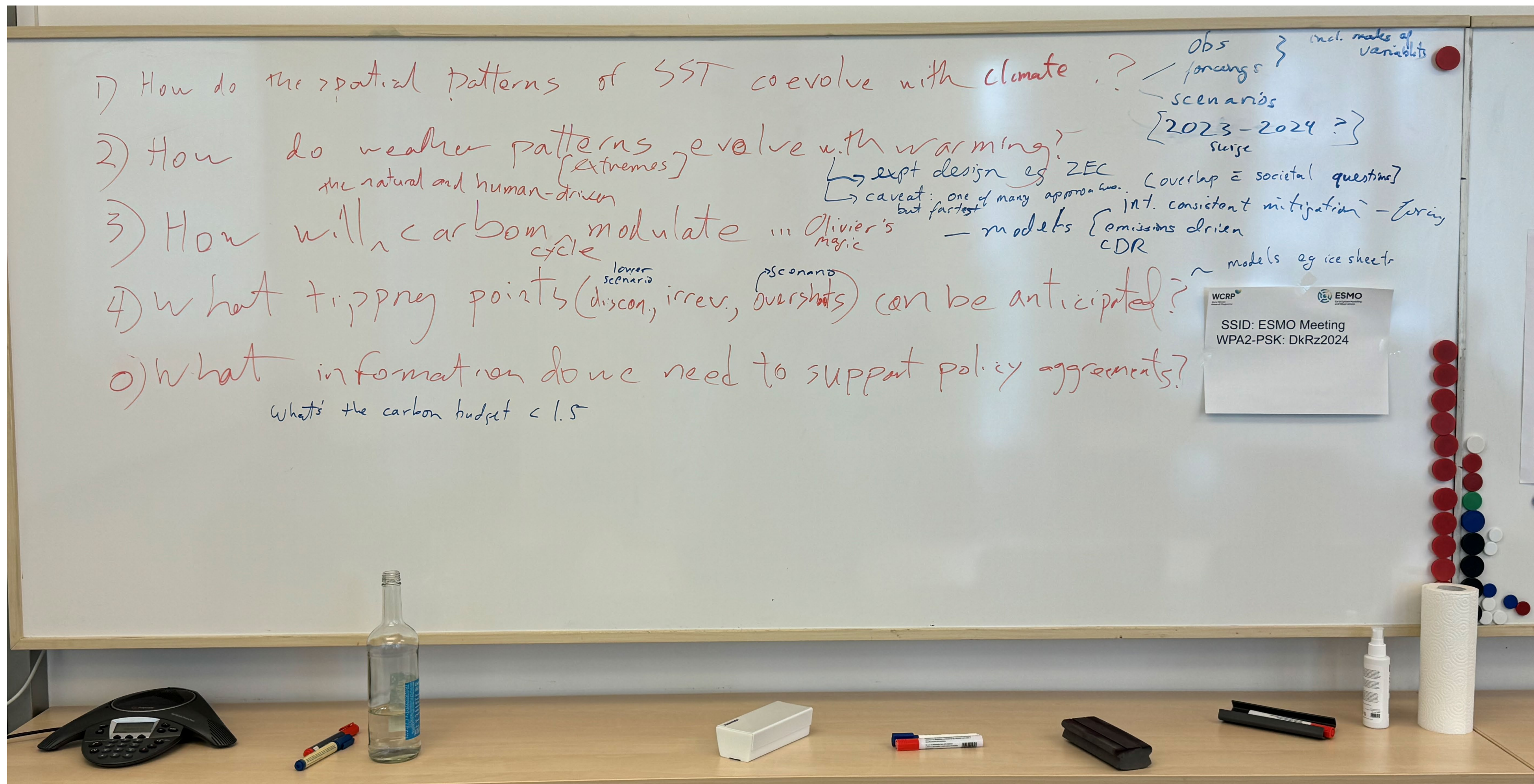


The CMIP vision

....to coordinate a community-based effort to tackle key and timely climate *science questions* and facilitate delivery of relevant multi-model simulations through shared infrastructure for the benefit of the *climate research community, climate impact and adaptation practitioners, national and international climate assessments, and society at large.*



Brainstorming in action!



Science goals (in progress)

1. **PATTERN EFFECT:** How do forcings, feedback mechanisms and natural variability interact and to which extent can we explain historical patterns of climate change and predict/project future ones? => builds upon DECK, AerChemMIP, CFMIP, DAMIP, DCPP, ScenarioMIP, CFMIP, RFMIP
2. **EXTREMES:** How do weather patterns evolve with warming and how do these changes translate into changes in climate extremes and associated impacts? => DECK, DCPP, DAMIP
3. **CARBON CYCLE:** What CO₂ emission trajectories align with climate stabilization objectives, considering both the influence of natural marine and terrestrial carbon sources and sinks and potential for anthropogenic carbon dioxide removal? => builds upon AerChemMIP, C4MIP, CDRMIP, RFMIP.
4. **TIPPING POINTS:** What are the risks of crossing tipping points or triggering irreversible changes in future climate change scenarios, particularly in the context of overshoot? => builds upon ScenarioMIP, GeoMIP



Paper plans

- Technical CMIP7 experimental design paper in GMD CMIP7 Special Issue.
- Perspective paper providing overview of the CMIP evolution and the community co-creation and science goals of the AR7 Fast Track.
- [GMD forcing special issue](#) - evaluation and documentation of CMIP7 forcings already in action!

Also plans for a dynamic webpage to ensure links to all relevant papers (Fast Track and Community MIPs) and high level AR7 Fast Track experiment information provision.

Supporting community MIPs

- Discussions during this week have highlighted need for facilitating cross-MIP collaboration and coordination.
- Suggestions to support MIP collaboration included a virtual workshop to identify and brainstorm themes of common interest and ensure maximum efficiency across MIPs – the IPO will follow this up!
- All MIPs are encouraged to register on the CMIP website – where you can also submit a request for Panel feedback or IPO support (all requests will be reviewed against available resource – human and financial).
- A new CMIP Science webpage is being developed to capture community science goals and ambitions and how CMIP is driving progress.



Operationalisation



Operationalisation scoping study

- Discussions at the CMIP Panel, ESMO Plenary and the WGCM on the operationalisation question.
- The CMIP Panel concluded that there is a need for a group to scope the definition of operationalisation and viability analysis of potential mechanisms with an initial focus on CMIP.
- WCRP endorsed this and the WGCM, CMIP Panel and WIP chairs will scope the requirements for this scoping report.



Task Team discussion outcomes



Strategic Ensemble Design: guidance development

- Potential guidance around modelling centre coordination (together with MIPs) to ensure adequate AR7 Fast Track ensemble
 - **Strategic Ensemble Design TT**
- Spin up protocol (dependency assessment)
 - **Spin up WG is being established (link to potential ESMO activity)**
- Emissions-driven model configuration strategy (for scenarios and wider MIPs e.g. DAMIP)
 - **a workshop will be organised.**

Thank you Data Citation Task Team!



Co-lead: Sasha Ames
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Co-lead: Martina
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TT members

- Brian Lawrence (NCAS, UK)
- Hsin-Chien Liang (Sinica, TW)
- Yiling Liu (NCI, AU)
- Graham Parton (STFC, UK)
- Aparna Radhakrishnan (Princeton University, USA)

The Task Team has achieved its objective to provide a set of recommendations to develop a sustainable data citation service and will close. A sustainable funding source has not been identified and will be raised with prospective funders.

And fun times!

