

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

**ESMO**

# **Earth System modelling and Observations**

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# Key highlights for the Joint Scientific Committee

## New activities

- Scoping and establishment of new **WG on Observations for Researching Climate** [WGORC](#) (incl. liaison with WGORC-relevant groups)
- Co-hosting of **Transient Climate Response to cumulative carbon Emissions (TCRE) activity** with Safe Landing Climate activity
  - **Assessment** to be prepared
- Scoping WCRP-wide **Carbon Cycle activities** coordination
- Initiation of a Task team on **Climate Emulators**
- Scoping of **catalogue** of climate datasets
- Contribution to the reanalysis community efforts (e.g., maintaining **reanalysis.org portal**)

# Key highlights for the Joint Scientific Committee

## Past meetings & events

- **ESMO Kick Off meeting** in Hamburg (March 2024)
  - incl. the **WGCM** (Working Group on Coupled Modelling) **annual meeting**
- Joint **WGNE39-WGSIP25** meeting in Toulouse (Nov 2024)
  - (WG on Numerical Experimentation and WG Subseasonal to Interdecadal Prediction)
- Co-coordination of [WCRP Global Hackathon](#) with DE
- **ESMO EGU25 townhall** joint with RfS & CORDEX

## Governance

- ESMO **governance processes** definition
- Finalisation of **ToRs**: [ESMO zenodo community portal](#)
- Finalisation of **ESMO Science Plan**

## Global South capacity building

- Provision of 8 travel grants for the ICR6

# Key highlights for the Joint Scientific Committee

## WGSIP & DCP

(WG on Subseasonal to Interdecadal Prediction & Decadal Climate Prediction Project)

- **WGSIP engagement in WMO Operational Climate Prediction Conference => BAMS paper**
- **Volcanic Response Readiness activity**  
WGSIP/DCPP collaboration with APARC's Volcanic Response activity  
=> BAMS paper
- **Guidance** on: “**Good Practices for the Development of Subseasonal, Seasonal and Decadal Forecast Multi-model Ensembles (MME)**”  
Shared initiative with ET-OPCS (Expert Team on Operational Climate Prediction System) - to be finalised soon

**BAMS**  
Article

### World Meteorological Organization (WMO)-Accredited Infrastructure to Support Operational Climate Prediction

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Rupa Kumar Kolli,<sup>f</sup> Kristina Fröhlich,<sup>g</sup> Eunha Lim,<sup>h</sup> Yuheng He,<sup>h</sup> Yuki Honda,<sup>h</sup>  
Jose A. M. P. A. Silva,<sup>h</sup> Sarah Diouf,<sup>h</sup> Wilfran Moufouma Okia,<sup>h</sup> and  
Anahit Hovsepian<sup>h</sup>

**BAMS**  
Article

### Decadal Prediction Centers Prepare for a Major Volcanic Eruption

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Claudia Timmreck,<sup>c</sup> Jean-Paul Vernier,<sup>d,e</sup> Ingo Bethke,<sup>f</sup> Yiguo Wang,<sup>g</sup> Roberto Bilbao,<sup>h</sup>  
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David Paynter,<sup>j</sup> Fanrong Zeng,<sup>j</sup> Liping Zhang,<sup>k</sup> Myriam Khodri,<sup>j</sup> Juliette Mignot,<sup>j</sup>  
Didier Swingedouw,<sup>m</sup> Olivier Torres,<sup>j</sup> Shuai Hu,<sup>n</sup> Wenmin Man,<sup>n</sup> Meng Zuo,<sup>o</sup>  
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Online Publication: 20 Dec 2024

# Key highlights for the Joint Scientific Committee

## WGNE

(WG on Numerical Experimentation)

- **WP-MIP**: Weather Prediction Model Intercomparison Project
  - Public database of predictions from the full spectrum of artificial intelligence-based (AIWP), physically based (NWP) and hybrid systems
  - WP-MIP White Paper in prep.
- **Systematic errors survey for EW4All** (Early Warnings 4All)
- **South American Regional Model Verification Pilot project**: Enhancing the assessment of regional forecasts to contribute to the EW4All initiative – jointly with JWGFVR
- **WGNE Blue book 2024** published



## obs4MIPS

- Data set proposal submission & review workflow established
- Support for non-gridded data sets (e.g. site-based in-situ)
- Many new datasets in preparation!
- Supporting the data requirements of the CMIP7 Rapid Evaluation Framework (REF)
- Update of the obs4MIPs data specifications



### Obs4MIPs Data Specifications ODS2.5

April 15, 2024

Previous version: [ODS2.1](#)

Contributors to ODS2.5 and/or earlier versions: Peter Gleckler (PCMDI), Karl Taylor (PCMDI), Paul Durack (PCMDI), Denis Nadeau (LANL), Jim Biard (NOAA/NCEI), Gregory Elsaesser (NASA GISS/Columbia University), Robert Ferraro (JPL), Stephan Finkensieper (DWD), Birgit Hassler (DLR), Andrew Manaster (RSS), Carl Mears (RSS), Simon Pinnock (ESA), Scott Stevens (NOAA/NCEI), Matthias Tuma (WCRP), Briony Turner (CMIP-IPO), Allison Waterfall (CEDA) and Kate Willet (MOHC)



# Future plans and priorities

## ESMO-wide foci

- Establishment of [WGORC](#) SSG
- Co-organisation of **TCRE's** **assessment** finalisation with Safe Landing Climate
- Coordination of communication of [WCRP Global Hackathon](#) outcomes & outreach
- Initiation of WCRP annual **Carbon Cycle** update briefings
- **Climate Emulators** Task Team: **taxonomy paper** in preparation
- Progress on development of **catalogue of climate datasets**
- Reviving the basis of **reanalysis.org portal**
- Reinforce ESMO engagement with the km-scale community
- Expand our connections with the Global South community for further engagement in ESMO panels & activities
- Funding prioritisation to concrete activities with clear outcome rather than administrative panel meetings.

# Future plans and priorities

## ESMO planned meetings & events

- **WGNE40** (Beijing, China, November 2025)
- **EPESC-DCPP science workshop** (Bologna, Italy, November 2025)
- **WGORC Kick-off** planned in Chile (Dec. 2025) alongside **ESMO-SSG#2** meeting
- WCRP School on **Prediction Across Timescales** (Buenos Aires, Argentina, February 2026)
- Co-organisation of **TCRE meetings** (foreseen for October 2025 & March 2026)
- **Third International Conference on sub-seasonal to decadal prediction** (S2S2D, in Reading, UK, 7-11 September) in collaboration with WWRP SAGE
- **WGNE workshop on Systematic errors** (potentially in India, in 2027)
- **Summer School on climate model development** (under discussion in WGNE)

**Governance:** get our **ESMO ToRs** approved!

# Future plans and priorities

## WGSIP (WG on Subseasonal to Interdecadal Prediction) foci

- Establishment of an **S2S Panel** within WGSIP
- Continued engagement with ET-OPCS (Expert Team on Operational Climate Prediction System) e.g., additional **guidance documents** (as per the one on Multi-Model Experiments - MMEs)
- Continue supporting concrete aspects of the WMO **Regional Climate Outlook Forums**: e.g. collaboration with ICPAC on Greater Horn of Africa Climate Outlook Forum (GHACOF), African Centre of Meteorological Application for Development (ACMAD), potential collaboration with Regional Climate Centers in South America.

## WGSIP research priorities for next 5-year cycle:

- ML/AI (including participation in WGNE WP-MIP)
- Sources of predictability
- Ensemble information across timescales
- Land-atmosphere interactions
- Climate information for decision-makers



# Future plans and priorities

## DCPP (Decadal Climate Prediction Project) foci

- Continue to develop **DCPP CMIP7 protocol**
  - Agreeing final details of DCPP-A (hindcasts) and DCPP-B (forecasts) by Summer 2025
  - Developing a protocol for DCPP-C (idealised simulations) by end of 2025 - *currently the focus of a task-team led by Pablo Ortega*
- Finalisation of DCPP CMIP7 protocol in 2025 => paper for the CMIP7 special issue (Robson et al.)

# Future plans and priorities

## WGNE (WG on Numerical Experimentation) foci

- [WP-MIP](#): the Weather Prediction Model Intercomparison Project (leads: Ron McTaggart and Linus Magnusson). Participation of JWFVR & WGSIP. **Paper to come**
- Extending EW4All survey to more centers and longer timescales
- Preparing for WGNE workshop on Systematic errors (interactions with DE-LHA and WGCM/CMIP & Summer School on climate model development)

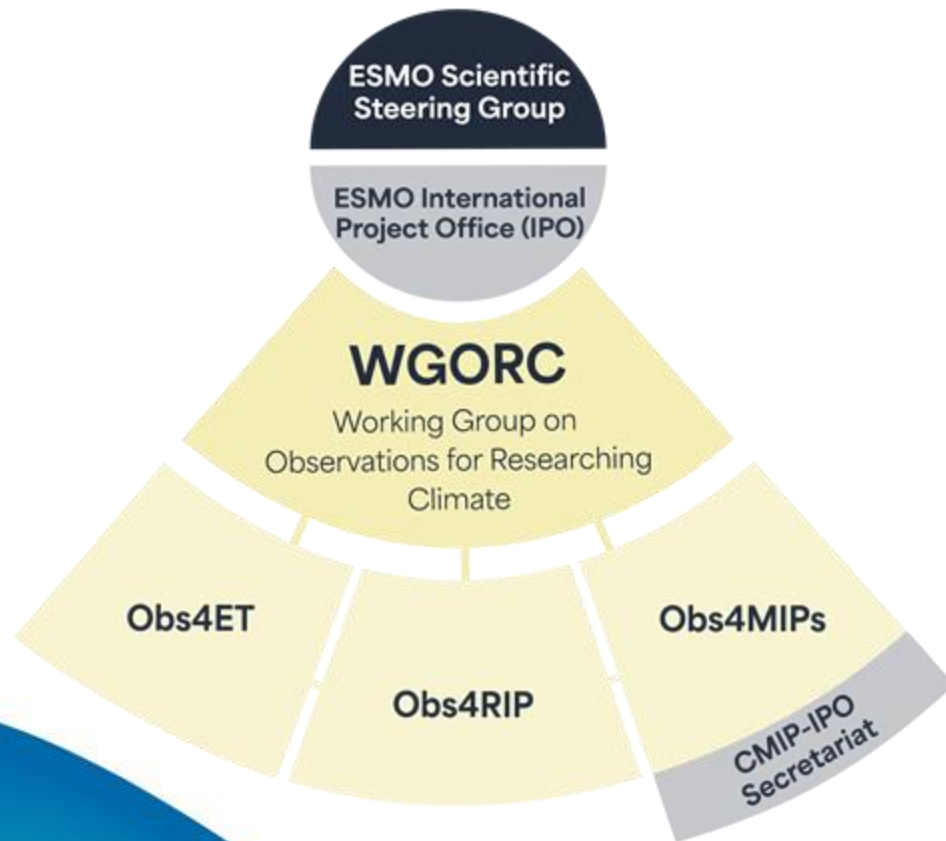
# Future plans and priorities

## WGCM (WG on Coupled Modelling) foci

- Revise and reframe WGCM objectives and purpose
- Welcome new panel members

# Short highlight on WGORC

## New **W**orking **G**roup on **O**bservations for **R**esearching **C**limate



- Identify and address **research gaps in climate observation data** and act as a facilitator for **collaboration across diverse research and industry sectors**.
- Focus on advancing use and development of **reanalysis, initialization and prediction (RIP)** data to improve climate models and enhance forecasting capabilities.
- Explore how **emerging technologies (ET)**, such ML, AI and km-scale models & observations, can enhance the use and application of climate data.
- **obs4MIPS** as WGORC panel enhances accessibility to observational data for climate model evaluation, development, and research by aligning datasets with CMIP standards.

# Future plans and priorities

## WGORC priorities

- Appointment of WG members
  - Application deadline: 28th March (82 applications received)
  - Geographical, gender and career stage diversity
  - Representation across key areas of expertise
- Establish connections with key partners
  - CEOS-GCOS WGClimate
  - GCOS, GAW, GOOS
  - Core project observational panels
- Prepare Kick-off meeting



# Suggestions for the JSC

## Governance processes

- Guidelines on ToRs are strongly needed to foster transparency and prevent current inconsistencies across CPs and LHAs.
- WGNE governance needs clarification: ESMO as formal parent body + annual reporting to WMO RB seem a good option.

## General workflow

- Guidelines or template for formal documentation (e.g. Science Plan) as well as monitoring of iterations is needed to increase efficiency and prevent time waste (for JSC members, panel scientists, IPO and secretariat staff).

# Challenges

## Partnership with WCRP & external activities

- Deepening contacts widely across many units with shared interests (e.g., LHA, other CPs, and CORDEX): progressing but continues to be a challenge.
- Building up meaningful and productive connections to partners (e.g., Future Earth, GCOS, ...): current interaction more reporting-style than really a collaborative one.

## US situation

- Changing roles and funding of US scientists: likely many of our panelists' and working group members' careers will be affected
- Data rescue: WCRP-coordination of initiatives to prevent gaps in data acquisition linked to the situation in the US should be discussed.

# Thank You



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

