



WCRP Workshop on Future of Climate Modelling

21 – 24 March, 2022

Draft Workshop Program

March 21 (Day 1)

Day 1, Sessions 1 to 4: 20:00 to 23:00 UTC

13:00-16:00* Pacific | 14:00-17:00* Mountain | 16:00-19:00* Eastern US | 20:00-23:00 UTC/GMT | 21:00-0:00 Central Europe | 22:00-1:00 Eastern Europe | 1:30-4:30 India | 4:00-7:00 China | 5:00-8:00 Japan | 7:00-10:00 Australia Eastern Time

Session 1 – Plenary: Welcome, Introduction and Workshop Goals [15 mins total]

Chair/Moderator: Helen Cleugh

- a. Welcome and Housekeeping (Vaishali Naik, Workshop Co-Lead)
- b. Introduction and Scene Setting (Detlef Stammer, JSC Chair)
- c. Workshop Aims; Incl. written input from survey (Piers Forster, Workshop Co-Lead)

Session 2 – Plenary: Challenges of Climate Modelling [70 mins total]

Co-Chairs: Helen Cleugh and Vaishali Naik. Rapporteur – TBD

2.1. Science perspectives (drawing on written input prior to Workshop). (10 mins each)

- a. Ultra-high resolution modelling - Ruby Leung (USA)
- b. Next generation climate modelling - Tim Palmer (UK)
- c. Challenges in Earth System Modelling - Elena Shevliakova (USA)
- d. Hydrological /regional modelling - Sabine Attinger (Germany)
- e. IPCC AR6 - June-Yi Lee (South Korea) and Baylor Fox Kemper (USA)
- f. CMIP - successes and where to next? - Jean-Francois Lamarque (USA) and Matthew Mizielinski (UK)
- g. Greening of climate modelling. Pierre Friedlingstein (UK)

2.2. Discussion (10 mins)

5 min break

Session 3 – Plenary: Societal Needs for Climate Information [60 mins total]

Co-Chairs: Silvina Solman and Rondrotiana Barimalala. Rapporteur – TBD

3.1. Stakeholder needs and perspectives – what are the community needs? (10 mins each)

(Reflecting the impacts, adaptation and mitigation communities; representing IPCC, governments, media and the public)

- a. Health impacts - Kristi Ebi (USA)
- b. Carbon budgets and communications - Rob McSweeney (UK)
- c. Mitigation (IPCC Working Group III) - Joeri Rogelj (UK) and Malte Meinshausen (Australia)
- d. Impacts and adaptation (IPCC Working Group II) - Chris Lennard (South Africa)
- e. Policymakers and Negotiators (UNFCCC) - Adelle Thomas (Climate Analytics, Bahamas)
- f. Communities in the Global South - Mandira Shrestha (Nepal)

3.2. Discussion (10 mins)

Session 4 – Plenary: Discussion and Reflections on Day 1 [10 mins]

Co-Chairs: Detlef Stammer and Vaishali Naik

March 22 (Day 2)

Day 2, Sessions 1 to 5: 20:00 to 23:00 UTC

13:00-16:00* Pacific | 14:00-17:00* Mountain | 16:00-19:00* Eastern US | 20:00-23:00 UTC/GMT | 21:00-0:00 Central Europe | 22:00-1:00 Eastern Europe | 1:30-4:30 India | 4:00-7:00 China | 5:00-8:00 Japan | 7:00-10:00 Australia Eastern Time

Session 1 – Plenary: Welcome, Reflections on Day 1 and Guidance for Day 2 – Vaishali Naik and Piers Forster, Workshop Co-Leads [5 mins]

Session 2 – Plenary: Science and Technology – exciting and relevant science that can be done using Earth System Models [45 mins total; 5 mins each]

Chair/Moderator: Angeline Pendergrass. Rapporteur – TBD

- a. High resolution models - Daniel Klocke (Germany)
- b. Composition-climate models - Stephanie Fiedler (Germany)
- c. Model emulation/simple models/reduced complexity model - Zeb Nicholls (Australia)
- d. Societal decision making and model integration - Claudia Tebaldi (USA)
- e. From climate change to socio-economic impacts - Katja Frieler (Germany)
- f. Model improvement - Tomoki Miyakawa (Japan)
- g. Model Evaluation - Paul Durack (USA)
- h. Large Ensembles - Nicola Maher (USA)
- i. Processes that are currently missing in the models - Nick Golledge (New Zealand)

Discussion (15 mins)

5 min break

Session 3 – Plenary: Technology and Accessibility [30 mins total; 5 mins each]

Chair/Moderator: Izidine Pinto. Rapporteur – TBD

- a) AI in Climate Science - Libby Barnes (USA)
- b) Computing hardware:
 - Computing hardware development - Hisashi Yashiro (Japan)
 - Perspective from Amazon (**Speaker TBC**)
- c) Model development in South Africa and Southern Hemisphere - Francois Engelbrecht (South Africa)
- d) Towards minimising carbon footprint of climate modelling: Modelling centre perspective - Mario Acosta (Spain)
- e) Novel climate modelling approaches - Tapio Schneider (USA)

Session 4 – Breakout Groups [60-mins total, including brief break as needed]

All participants to be allocated to a Breakout Group, with Leaders and Rapporteurs appointed

- a) Group 1: What can be learned (collectively) with Earth system models that we don't already know?
Chair: Olivier Boucher. Rapporteur TBD.
- b) Group 2: What is the right balance between model resolution, model complexity and ensemble size? **Chair: Ted Shepherd. Rapporteur TBD.**
- c) Group 3: How to improve models? **Chair: Masa Kageyama. Rapporteur TBD.**

Session 5 – Plenary: Report-back from Breakout Groups and Wrap-up of Day 2 [15 mins total]

Co-Chairs: Helen Cleugh and Piers Forster

- a) Brief report back from Breakout Group Rapporteurs (5 mins each)



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March 23 (Day 3)

Day 3, Sessions 1 to 3: 20:00 to 23:00 UTC

13:00-16:00* Pacific | 14:00-17:00* Mountain | 16:00-19:00* Eastern US | 20:00-23:00 UTC/GMT | 21:00-0:00 Central Europe | 22:00-1:00 Eastern Europe | 1:30-4:30 India | 4:00-7:00 China | 5:00-8:00 Japan | 7:00-10:00 Australia Eastern Time

Session 1 – Plenary: Recap of what we heard in Days 1 and 2 [80 mins total]

Chair/Moderator: Detlef Stammer

1.1 Welcome back and Guidance for Day 3 – Vaishali Naik and Piers Forster, Workshop Co-Leads (up to 10 mins)

1.2 Summary Reports from Session Rapporteurs (10 mins each)

- a) Day 1 (D1), Session 2 (S2) Plenary - “Challenges of Climate Modelling”. D1-S2 Rapporteurs
- b) Day 1 (D1), Session 3 (S3) Plenary - “Societal Needs for Climate Information”. D1-S3 Rapporteurs.
- c) Day 2 (D2), Session 2 (S2) Plenary - “Science and Technology”. D2-S2 Rapporteurs.
- d) Day 2 (D2), Session 3 (S3) Plenary - “Technology and Accessibility”. D2-S3 Rapporteurs.
- e) Recap of Key Points from Day 2 Breakout Groups 1 - 3

1.3 Discussion (20 mins)

5 min break

Session 2 – Breakout Groups [70 mins total, including brief break as needed]

All participants to be allocated to a Breakout Group, with Leaders and Rapporteurs appointed

- a) Group 4: Roles of different models, resolution, complexity, ensembles beyond CMIP6. **Chair – Greg Flato. Rapporteur TBD.**
- b) Group 5: A vision of the climate and Earth system modelling landscape in 2030. **Chair – Masa Watanabe. Rapporteur TBD.**
- c) Group 6: Operationalizing climate modelling vs research? **Chair – Cath Senior. Rapporteur TBD.**
- d) Group 7: Improving models. **Chair – Kirsten Findell. Rapporteur TBD.**

Session 3 – Plenary: Report-back from Breakout Groups and Wrap-up of Day 3, look ahead to Day 4 [25 mins].

Co-Chairs: Helen Cleugh and Piers Foster

- a) Brief report back from Breakout Group Rapporteurs (5 mins each)



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March 24 (Day 4)

Day 4, Sessions 1 to 4: 20:00 to 23:00 UTC

13:00-16:00* Pacific | 14:00-17:00* Mountain | 16:00-19:00* Eastern US | 20:00-23:00 UTC/GMT | 21:00-0:00
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Australia Eastern Time

Session 1 – Plenary: Summary from days 1-3 [50 mins total]

Chair/Moderator: Helen Cleugh

- 1.1 Recap from days 1-3 - Piers Forster and Vaishali Naik (20 mins)
- 1.2 Discussion regarding the way forward (30 mins)

10 min break

Session 2 – Plenary: White paper writing tasks [60 mins total]

Chair/Moderator: Detlef Stammer

Session 3 - Summary and wrap up (Vaishali Naik and Piers Forster) [15 mins total]