



PROJECT REPORT

Report of the fifth session of the
WCRP Modeling Advisory Council
(WMAC)

WMO, Geneva, Switzerland
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PRESENT: Christan Jakob (Co-Chair), Gerald Meehl (Co-Chair), George Boer, Sandrine Bony, Otis Brown, Peter Cox (remotely), Gokhan Danabasoglu, Francisco Doblas-Reyes, Veronika Eyring, Greg Flato, Pierre Friedlingstein, William Gutowski (remotely), Masahide Kimoto, Judith Perlwitz, Joe Santanello (remotely), Keith Williams (remotely), Ayrton Zadra (remotely)

WCRP JPS: Michel Rixen, Matthias Tuma

Part I

a. Welcome and adoption of agenda

Co-Chairs Christian Jakob and Gerald Meehl welcomed all participants and thanked them for attending the 5th session of the WCRP Modeling Advisory Council. They stressed the limited time available for this session in light of the particular design of the JSC37 agenda. They proposed to amend the agenda by adding a specific discussion on a proposed CMIP workshop on model evaluation proposed by Veronika Eyring and Greg Flato.

b. WGNE brief

Keith Williams and Ayrton Zadra recalled the purpose of WGNE, that it has responsibilities across all timescales for improving atmospheric models. A list of current WGNE projects was provided and more details were given regarding the MJO-Task Force, WGNE drag project and WGNE/WGCM climate metrics and diagnostics panel (CMDP). The desire for a closer collaboration between the CMDP and Joint Working Group for Forecast Verification Research was conveyed.

The WGNE Co-Chairs intend for WGNE to focus on its core task of diagnosing and fixing systematic errors, and as part of this intend for closer working with GEWEX GASS and GLASS. Concern was expressed regarding the current lack of GASS chairs. The next WGNE systematic errors workshop will take place 19th-23rd June 2017 in Montreal. It was commented that the Annual CESM workshop in Breckenridge would be held the same week. All WMAC members were asked to distribute the information and encourage participation. The WMAC Co-Chairs suggested a wide-ranging steering committee.

The WGNE Co-Chairs raised the issue that coupled models are now used across all timescales and wondered whether the remit of WGNE should be modified more towards the development of physical rather than atmosphere models. Members agreed to discuss this issue at the planned joint WGNE/WGCM/WGSIP meeting at the Met Office in October 2017.

Discussion noted the possible need to remove the explicit reference to atmospheric circulation from the WGNE Terms of Reference, and the need to consult on such matter with the WMO Commission for Atmospheric Sciences. Francisco Doblas-Reyes noted the IC3 interest to study the impact of aerosol on climate prediction skill. He would also welcome the involvement of WGSIP and its sub-project on model drift and initial shocks at the Systematic Error Workshop. He further suggested a better coordination between and integration of model verification across the weather and climate communities which could be an essential role of WGNE. Keith Williams indicated that WGNE-31 will discuss leadership matters on the WGNE aerosol project. Christian Jakob recalled that the Systematic Error Workshop usually focuses on model processes and the assessment of their systematic biases. This event would be a good opportunity to bring the ocean and atmospheric communities together to address issues in the Southern Ocean and upwelling regions. Sandrine Bony added that this event is also relevant to the Grand Challenge on Cloud, Circulation and Climate Sensitivity (errors on the ITCZ, storm tracks, etc.). She further noted that WGNE could increase its focus on coupling in NWP and that NAWDEX could be of interest to the Transpose-AMIP community. Ayrton Zadra noted that contributions addressing methods to identify those errors would be welcome. He also recalled the Drag Workshop to be held in September 2016 at ECMWF focusing on drag and momentum fluxes, and the relevance of drag issues for CMIP6 (in particular for HighResMIP and DynVarMIP). Judith Perlwitz highlighted the same relevance for SPARC and the workshop planned in Helsinki.

c. Modeling summit: objectives, venue, dates, survey

Christian Jakob summarized the idea and benefit of holding a 'Modeling Summit' over 4-5 days bringing all modeling working groups together, thereby also reducing overall travel and allowing them to hold their annual meeting over 2-3 days at the same time as meeting with other groups. Two offers were received, from Georgia Tech (May 2017) and UK Met Office respectively (with a preference for Oct 2017). Members welcomed the idea, as bilateral meetings are already organized regularly between working groups. It was agreed this event would focus on future directions of WCRP regarding all modeling issues. Preference was given to the UK Met Office offer. The meeting will need to engage with relevant stakeholders (Clivar OMDP, GASS, GLASS, DCP, S2S, WWRP, etc.) and modeling centers.

d. Prize, summer school

The current design of the WCRP-WWRP International Prize on Model Development was deemed adequate and does not require further adjustments for the moment. It was suggested to ensure wide distribution, including to NWP and climate research centers and to invite the unsuccessful top 4 nominees of the previous round to apply again.

Post-meeting note: there seems to be a perception in the community that the prize is neglecting the non-atmospheric modeling community largely due to the composition of the selection committee and the previous awardee(s). The community would like to see a transparent selection committee comprised of representatives of all model components.

The first summer school, held at MPI in 2015, selected 40 applications amongst 240 received. It was suggested to announce again the availability of videos. The next school will be held at CPTEC in Brazil in summer 2017 and will focus on the parameterization of atmospheric processes in the grey zone. WMAC members were invited to solicit interest and help identifying institutions to hold the next edition of the school, proposed for 2019.

e. WCRP Strategic Plan

Michel Rixen provided a brief introduction to the 1-pager JSC37 document outlining the development of the strategic plan developed by the JPS and the Chair in the context of the previous one, which has come to an end in 2015, and noted the need for WCRP to undergo a sponsors' review. He invited comments on how modeling and data issues could be addressed comprehensively in this process.

Christian Jakob informed members about the upcoming 'out-of-the-box' meeting to be held in Paris on 23-24 June. The key question to be addressed at the meeting was to identify topics WCRP should prepare for and ways WCRP should engage. Greg Flato noted that this item was not explicitly part of the JSC37 agenda. Matthias Tuma added that the meeting and the WCRP strategy might not be strongly connected on purpose. Otis Brown suggested separate strategic and implementation documents.

Members agreed to the idea of WMAC developing a short survey of modeling centers focused on 3-4 questions enquiring on their expectation from WCRP modeling activities, which could inform both the WCRP strategic planning and the upcoming joint WG meeting in 2017. It was suggested to forward the survey to all modeling centers via WG and CMIP mailing lists, but seeking consolidated inputs from each center, even if they run multiple models. WMAC suggested modeling issues to be addressed prominently in the next strategic plan.

f. WMAC Business: membership, next meeting

Co-Chairs highlighted the need to revert to the previous JSC and WMAC agenda structure by having Working Groups reporting directly to the JSC, as otherwise there is not enough time for the Council's meeting and deliberations. It was suggested to hold the WMAC6 session in conjunction with the 38th session of Joint Scientific Committee session.

2. Part II

a. Questions arising from JSC – core projects, Grand Challenges

Gerald Meehl noted the need to have a more systematic report on modeling issues by Grand Challenges and Core Projects during the JSC session.

The following questions arising from the JSC37 session were discussed:

- data assimilation being an integral part of model development, being addressed e.g. by WGSIP (in the initial shocks and drift sub-project) and the Grand Challenge on Near-Term Climate Predictions
- bias correction applied to climate predictions and projections
- GASS leadership and science priorities, which should continue to address land biases
- model physics problems and their implications for complex Earth System Model (e.g. representation of the carbon cycle as developed in the newly proposed Grand Challenge on Carbon)

b. WGCM update

Sandrine Bony recalled the CMIP lunch-time briefing delivered by Veronika Eyring on the same day and highlighted the WGCM Model Hierarchy workshop planned in October 2016 and the importance of such activity for continuous model evaluation. This is part of the CMIP DECK purpose, as subsequently noted by Otis Brown. Greg Flato indicated the potential benefit of such activity for IPCC, although timing issues would need to be considered. Francisco Doblas-Reyes commented that WGSIP is not part of CMIP. Members recommended planning for a series of workshop to that effect. Several sub-topics were suggested, such as feedback to model developers, reproducibility of models on different platforms, conservation of properties in coupled models.

c. WGSIP update

Francisco Doblas-Reyes highlighted the WGSIP sub-project on initial shocks and drifts, an activity similar to Transpose-CMIP, and the difficulty for research centers to contribute to and benefit from WMO Lead Centers. He further suggested that a formal request made to WMO CBS/CCI to address this issue, which has also implications for the Grand Challenge on Near-Term Climate Prediction. Gerald Meehl noted the analogy with similar issues related to the ENSO forecast products.

d. WCRP decadal activities: recommendation to JSC

Francisco Doblas-Reyes noted that the relevance of decadal predictions goes beyond IPCC reports and are being transitioned into operations. He further

stressed that WGSIP's mandate was to be expanded more explicitly to cover decadal predictions. The desirability of clarifying the focus of the Grand Challenge on Near-Term Prediction (if approved by the JSC37) and the efforts of the DCPD and DCVP, all of which deal with decadal climate variation and prediction, was highlighted by George Boer who argued for a new grouping representing a convergence of efforts on "Decadal Climate". WMAC suggested proposing two options for consideration to the JSC with a preference for the second choice: 1) New Working Group at WGNE/WGSIP/WGCM level or 2) Extending the WGSIP mandate to cover subseasonal to decadal prediction but without affecting the activities of the Grand challenge and the DCVP. The DCPD, which formerly reported to both WGCM and WGSIP, would henceforth report to WGSIP.

e. CORDEX and possible regional contribution to AR6

William Gutowski briefed Members on possible contributions of CORDEX to IPCC AR6. Michel Rixen noted the strategic need for CORDEX to address the added-value question and to coordinate with other CMIP efforts such as HighResMIPs. Judith Perlwitz noted that HighResMIP cannot run ensembles. It was recalled that CORDEX is represented in WMAC. It was reporting to WGRC but should ideally report to the JSC as other core projects. Gerald Meehl noted the need to develop best practices for regional modeling and the difficulty to secure funding for such activity. Greg Flato welcomed the CORDEX CORE initiative but noted the difficulty to work with only few modeling groups and domains.

f. WMAC support for cross-WCRP workshops

Three workshops were discussed in particular:

- 1) Workshop on Connecting Climate Model Evaluation to Assessing Fitness-for-Purpose, to be held in Hamburg, Germany, likely February, 2017, promoted by Greg Flato, Jochem Marotzke, Veronika Eyring,
- 2) Workshop entitled "Towards an Improved and More Routine Evaluation of Earth System Models in CMIP" promoted by Veronika Eyring and Peter Gleckler, as an AGCI session in Aspen in summer 2017
- 3) Workshop on "The Future of Cumulus Parameterization", promoted by Christian Jakob and Pier Siebesma and to be held 3-7 July 2017 at Delft University

WMAC indicated its support for the 3 events and recommended a close coordination between promoters of the workshop (1) and (2) to further refine the focus and to avoid duplications.

g. Review of draft actions

Draft actions were reviewed and are provided in Annex A.

ANNEX A – ACTION LIST

Working groups and core projects

1. WGNE to involve CLIVAR and other groups, GCs (e.g. clouds), TPOS2020, and seasonal time scale in the Systematic Error Workshop (WGNE Co-Chairs)
2. WGNE and SPARC to coordinate on possible NAWDEX contribution and possibly Transpose-AMIP (WGNE and SPARC Co-Chairs)
3. JSC to clarify CORDEX reporting line (JSC)
4. WGCM to increase interaction with weather and climate (WGCM Co-Chairs)
5. WCRP to liaise with CBS/CCI to facilitate access to LC data so that research can contribute to and benefit from this platform (JPS)

School, Prize

6. WMAC to solicit next school on model development, every 2 years and to explore ICTP funding support (WMAC members)
7. Advertise again video (JPS)
8. Encourage former Prize top nominees to re-apply (WMAC Co-Chairs)

WCRP strategy

9. Invite JSC to feature Model development in new strategic plan (WMAC Co-Chairs)

Workshops

10. Coordinate on respective workshops in planned in 2017 (WGCM and CMIP Co-Chairs)

Next session

11. Design 3-4 survey questions by end 2016 and send to modeling centers (WMAC Co-Chairs)
12. Next WMAC session to be held in conjunction with the 38th session of the Joint Scientific Committee, 3-5 April in Paris
13. Joint Working Group session to be held at UKMO 9-13 Oct 2017, with invitation to relevant Co-Chairs such as OMDP, GASS and GLASS, DCP, S2S, WWRP, etc.

ANNEX B – List of contacts

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