

## **WCRP Modelling Advisory Council (WMAC) Report**

### **1. Highlights for JSC**

- WMAC coordinated the organization of the 2nd WCRP Summer School on Climate Model Development: Scale aware parameterization for representing sub-grid scale processes - Cachoeira Paulista - SP, Brazil, 22 - 31 January, 2018
- WMAC coordinated the award of the WCRP/WWRP International Prize for Model Development 2017 - awarded to Dr Martin Vancoppenolle from Institut Pierre-Simon Laplace, France
- WMAC organized and convened first-ever Pan-WCRP Modelling Groups Meeting in conjunction with the 6th Session of the WCRP Modelling Advisory Council, UK Met Office, Exeter, United Kingdom, 9-13 October 2017

### **2. Early success and/or planned activities in 2018/2019**

- Call for nominations for WCRP/WWRP International Prize for Model Development for 2018 will come out in July with a 1 October deadline
- Follow up discussions with NCAR for 3rd WCRP Summer School on Climate Model Development for some time in 2019

### **3. Issues and challenges**

The main objective of the Pan-WCRP Modelling Groups Meeting and WMAC meeting was to review progress and challenges on modelling issues across the programme. Breakout group discussions during the week also suggested a number of specific actions for WMAC to take forward in light of the WCRP sponsors' review and development of the new WCRP Strategic Plan. Main conclusions from the meeting:

- WMAC proposes to make model development a more central activity within the WMO as a whole. One option would be to form a Working Group on Model Development that spans all WWRP/GAW/WCRP (and maybe AIMES) model development activities. However, since model development is occurring in each of the modelling working groups for the specific applications of each working group, care must be taken not to pre-empt such model development in the working groups by shifting it into a new Model Development Working Group. One option could be that each modelling working group have a designated model development activity that could be coordinated by the Model Development Working Group

- WMAC recommends that each of the WCRP modelling efforts is formally affiliated with one of the three modelling working groups.
- WMAC is going to organize a meeting of the WGCM WIP with equivalent groups in the WWRP/GAW communities in spring, 2019, to begin a discussion on cross-community efforts in modelling infrastructure and model data archives
- WMAC and WGCM to facilitate an ongoing discussion on the future funding of CMIP activities. The first step should be a position paper by the relevant groups.
- WMAC recommends that CORDEX be formally re-affiliated with WGCM – WMAC to propose this to the JSC for consideration
- CORDEX will ensure that the next conference on modelling the regional climate (planned for 2019) will include a significant representation of the high-resolution and stretched grid global modelling communities.
- WMAC strongly supports the idea of WCRP-led assessment reports on key community issues. In the modelling realm, early candidates could be a report on the climate models' ability to simulate key phenomena (e.g., ENSO, precipitation) and/or the use of multimodel ensembles.
- WMAC expresses its concern about the plethora of activities in the Decadal prediction area. As a first step for simplifying the structures we strongly suggest merging the CLIVAR DCVP with the DCPD into a single body.
- WMAC recommends that WGCM, CORDEX and HighResMIP form a closer relationship possibly through a taskforce – WGCM and CORDEX co-chairs to draw up a proposal
- WMAC remains concerned about the slow progress in reducing systematic model errors in all spheres of climate modelling. More coordinated activities in this area are needed with the aim to propose a practical activity.
- The use of Exascale computing in our field will be a challenge to all modelling groups in WWRP/GAW/WCRP. WMAC feels that it is timely to consider related issues across the programmes.
- WMAC expressed its excitement about the very high-resolution (~ 1 km) climate modelling initiatives, such as the ExtremEarth European proposal that is under construction. WMAC feels that WCRP needs to stay abreast of such initiatives and support them. We recommend that the next JSC meeting invites a presentation by a representative of the very high resolution climate modelling community.
- WMAC recommends the joint meeting of the modelling working groups occur every 3 years.
- Results of the WMAC survey of modelling activities in WCRP:
  - There are 47 (67 counting CMIP) individual modelling projects in WCRP; this large number came as a surprise to everyone involved
  - Many of them are not run by the modelling working groups, which WMAC aims to coordinate, but directly through the core projects and/or Grand Challenges.

- They are all led by identifiable individuals and groups and have community
- With so many modelling activities scattered across WCRP, a coordination mechanism is necessary; otherwise duplication and lack of communication will hamper progress. At minimum, WMAC or the JPS should maintain a “WCRP Modelling Web Page” where all current modeling projects are listed with short descriptions of status and chair/leader contact information. However, given the central role that modelling plays in the WCRP objectives, the level of coordination needed for the typical incremental model improvements, the challenges posed by the disruptive evolution of both supercomputing and data analysis technologies, and the increasingly scattered funding mechanisms available to model development, a more ambitious solution might be needed. Such a solution will require precise terms of reference, commitment by those involved and adequate resources to coordinate and collect the best possible information
- There was general alarm regarding the reductions of funding of WCRP and impacts on the Modeling Working Groups as coordinated by WMAC. Discussions addressed how much/whether WCRP should become more self-funded by participants so as to maintain the current level of activities without having to depend on dwindling WCRP funds. Since there was no direction from JSC regarding status of future WCRP funding, there was a general desire for WCRP to secure adequate funds to maintain the current activities.

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