

## **MINUTES OF THE ARRCU SIG EXECUTIVE AND ADVISORY BOARD MEETING**

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Date: September 18, 2020  
via videoconference

### MEMBERS OF THE EXECUTIVE AND ADVISORY BOARD:

Paul Kushner (chair), Adam Monahan (vice-chair), Pierre Gauthier (secretary-treasurer),  
Hind Al-Abadleh, Yanping Li, Paul Myers, Roland Stull, Neil Tandon, Aldona Wiacek

### SPEAKER:

#### 1. EARTH SYSTEM MODELING (ESM)

During the summer, a limited scope activity with ECCC called ECCC/ARRCU committee on Modeling of the Earth System (EAMES) was initiated. The small group have met twice and Paul Kushber has us provided documents to discuss about the current status of this initiative. Currently, the group includes representatives from ECCC, NSERC, and universities (see Annex A for the minutes of this meeting).

Objectives of this effort: lowering barriers to collaborative development and application of ESMs from ECCC, creating opportunities through partnership funding. This hinges on formal management level support for our efforts.

There will be a third meeting involving ECCC management on September 30. In the short-term, EAMES activities (2020-2021) will be

- Present new applications of CanESM5 to Compute Canada
- Make an ARRCU sponsored community survey on ESM work this fall.
- Seek NSERC partnership funding to support this work
- ARRCU sponsored workshop in 202 and a follow on session at CMOS

What is needed from the ARRCU Executive and advisory board is

- Endorsement and support
- Help putting together a presentation/briefing for ECCC management September 30
- Help with survey development, deployment, analysis (Julie Theriault is leading this).
- Longer term: exploration of proposal funding opportunities with NSERC Alliance and Compute Canada proposal (RPP) for CanESM5 project.

The discussion that followed emphasized that there are other activities in ECCC and DFO that relates to the Earth System. Mention was made of the CONCEPTS projects involving many scientists from MEOPAR which led to the development of a coupled atmosphere-ocean-ice model used operationally by the Meteorological Service of Canada. Although the meteorological research division was invited to take part to the first meeting of EAMES, they politely declined. Shawn Marshall (ECCC scientific advisor) talked with all the division directors to convince them that it would be beneficial to have more collaboration with universities. This was a disappointment but we should not give up. At this stage, it should be said that this is to discuss about the roadblocks to closer collaborations.

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There are several examples in the past of the benefit of having collaborations between ECCC and universities. The first step is to have a genuine interest to have a collaboration between the two groups. EAMES is focusing on having the CanESM available to university research. If successful, this could be a good example for other broader initiatives.

Finally, there are different needs on the use of an ESM. Some are interested in the development to make changes to it, others just want to use it to experiment the impact of changes to some of its parameters. Finally, only want access to results from the ESM to evaluate specific impacts related to impact and adaptation studies for example.

## 2. EARTH OBSERVATIONS (EO)

CSA is part of a multi-government agency group to define space based earth observation priorities. It has advisory science committees including the *Atmospheric Science Advisory Committee (ASAC)* and the *Earth System Science Advisory Committee (ESSAC)* “responsible for providing independent advice to the Canadian Space Agency (CSA) on the planning, validation, and updating of long-term roadmaps and program strategies”. They have recently established a collaboration with NASA on the Aerosols Clouds Convection and Precipitations (A-CCP) mission. This is based on a decadal survey carried out by NASA of scientists regarding what they view as the most important atmospheric variables for which observations were needed.

CSA is planning to contribute three instruments that would provide measurements of cloud variables. They seek to consult with selected groups and have identified ARRCU as representing a suitable community to host one of their panels. ARRCU was contacted by CSA to do this and it was proposed that ARRCU supports and organize a three-hour community workshop with two panels (~1 hour each):

- CSA SBEO visioning documents and Atmospheric Science Advisory Committee roadmap document.
- EO beyond ASAC including cryosphere/marine, plus earth observations beyond space-based.

Timeline is short term as CSA will have a new president, Ms. Lisa Campbell, on September 30, 2020. and will be briefed on this. Assuming there is interest on our part, we were requested to hold our workshop ASAP to influence funding process. The week ending on October 23 was proposed.

Currently, CSA focuses on the development of instruments that CSA intends to propose to be onboard the A-CCP satellite. However, CSA would like to know more about the potential users of those data for process studies or model improvement. What is needed from ARRCU executive and advisory board is

- Endorsement/support
- Help to organize this workshop.

Prof. Kaley Walker (UofT) and Prof. Yi Huang (McGill) and Taryn Tomlinson from CSA are involved in the organization of this workshop. If there is interest on our part, someone from or on behalf of ARRCU should be involved as well. The proposed timeline is however very short. The role of ARRCU would be to promote this event to gather participants and provide information of a possible opportunity to be part

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of a project that has international interest. The discussion should also be about the funding mechanism through which these activities supported.

### 3. NEXT ARRCU OPEN MEETING

This would depend on when the EO workshop takes place. The week of November 16, 2020 seems appropriate. The agenda would cover the following topics:

1. Earth System Modeling activity
  - a. EAMES
  - b. Survey results
  - c. Plans
2. Earth Observation activity
  - a. Report on workshop if any.
3. Other issues (e.g. commercialization of data, see email from Eric Deweaver).

### 4. RENEWAL OF EXECUTIVE AND ADVISORY BOARD

Paul, Pierre, and Adam are all finishing up their terms of service in June 2021. We have been involved in leadership for about 7 years. Furthermore, Hind, Paul, and Roland's terms are all ending but can be renewed. We also need a new representative from McGill: an action has been open for Pierre to contact McGill to find a replacement for Peter Bartello: the names of Bruno Tremblay (Dept. of Atmos. And Ocean. Science) and Laxmi Sushama (Civil Engineering) were mentioned as potential candidates.

In the future, what process should we use to get new nominations and/or commitments to renew? A nominating committee could be tasked with making sure nominations happen. For continuity, it would be desirable to have a member of the advisory board to become a new member of the executive as vice-chair or secretary-treasurer and move up as chair a year later. The CMOS model is to become vice-president first, then president and finally past-president. The secretary-treasurer would have a three-year term.

To make the process more open, an announcement could be made to call for interested candidates to be member of the advisory board. To make ARRCU attractive, the website should state up front what ARRCU does. At the moment, the reader will find interesting and visionary documents about what ARRCU is. We should also include what ARRCU is doing, with reports of our activities. At the moment, this can be found in the minutes up to a point but we should do better.

On top of the ESM and EO projects, we could initiate others more related to education for instance.

### 5. LIST OF ACTIONS

ACTION 1.1 : Express the need for changes in the CMOS UPEC committee which focuses on ECCC operational needs to reflect those of other sectors This is to be brought to the attention of the UPEC committee and the CMOS council. New terms of reference for UPEC will have to be drafted

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This action was for Adam Monahan who is a member of UPEC. Other issues were raised for SPEC regarding the relevance of funding project MAURI for which very few apply. This project is expensive and it would be important to evaluate how it serves our interests

ACTION 1.2: organise and promote workshops on Earth System modeling and Earth Observations. These 1-day workshop would be more about the needs for ESM facility to foster collaboration between the ARRCU community and government research.

Earth System Modeling workshop has already took place and this project is on its rails.

ACTION 1.3: identify a representative from York University to replace Peter Taylor.

Neil Tandon is replacing Peter Taylor.

ACTION 1.4: draft an announcement to seek new members for the ARRCU Executive and advisory board in 2021.

The terms of the three members of the executive end in 2021 and those of three members of the advisory board also end in 2021. These positions could be interesting if ARRCU is more active this year and its purpose better known.

New actions:

ACTION 2.1: Pierre Gauthier to contact Peter Bartello about his interest on being on the ARRCU AB.

ACTION 2.2: Pierre Gauthier to contact the director and scientists of ECCC-DRM about EAMES to have them to participate.

**6. ANNEX A: MINUTES OF ARRCU-ECCC AD-HOC COMMITTEE ON EARTH SYSTEM MODELING  
(JULY 29, 2020, VIA ZOOM)**

ATTENDING: Paul Kushner (chair, University of Toronto), Ellie Farahani (ECCC/CCCma), Nathan Gillett (ECCC/CCCma), Shawn Marshall (University of Calgary/ECCC science advisor), Neil Swart (ECCC/CCCma), Julie Thériault (UQÀM)

REGRETS: Kirsten Zickfeld (SFU)

In this introductory meeting, we took some time to provide some background and motivation for our work on this committee. The group identified some unique opportunities at the current time in the area of earth system model development and application in Canada.

- The CMOS ARRCU SIG identifying a focus for 2020-2021 on earth system modeling.
- An interest within ECCC for stronger engagement with the academic community, recognizing limitations of current activities which are proceeding more or less independently within the federal government and the academic sectors.
- The work of Shawn Marshall as science advisor to ECCC with a focus on strategic planning around the Climate 2050 report.
- Recent development of a relatively easily portable version of CanESM5 by Neil Swart.
- Ongoing development of strategic planning around earth system modeling within Climate Research Division (CRD) and Meteorological Research Division (MRD) ECCC.

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Although there are important exceptions, generally, Canadian university scientists do not make significant use of ECCC earth system model capabilities. This is a situation we would like to see changed. We were united by a desire to enhance Canadian activity in this area and to move towards a situation where the Canadian research community would place more emphasis on Canadian models.

We identified a series of four projects to undertake this year as a working group:

1. Production and promotion of open-source version of CanESM5 with Compute Canada, in full consultation with ECCC management.
2. ARRCU activity: ARRCU-sponsored community survey on global climate modeling/earth system modeling in light of Climate 2050. Workshop on this theme in February. Follow up sessions at CMOS
3. Prepare report on the activities of this working group, again, in consultation and with support of ECCC management.
4. Explore opportunities for students and other HQP to engage in some of this technical work.

We agreed on a need to come up with terms of reference for this ad-hoc committee, which would be basis for ECCC endorsement. Action: PK will draft first cut, and SM will investigate possibility of ECCC endorsement. This is in support of items 2 and 3 above.

NS will continue development and deployment of CanESM5, ported to Compute Canada platforms, for eventual production run capability. Action: NS will provide update at our next meeting (see below). This is in support of item 1 above.

JT will take a lead on drafting community survey, given input from NS on CCCma survey. Action: JT will provide update at next meeting.

We proposed to meet a couple more times this summer. Action: PK will schedule follow on meetings. Since our meeting, we've determined that there is only availability for August 12, 2020 and September 9, 2020.

We also held a wide-ranging broader discussion, some of which is summarized below:

- Recognizing current constraints and limitations on what kind of commitments ECCC can enter into, we concluded that a tiered approach focused on specific projects would be preferred at this time. At the same time, the need for recognition of this activity by ECCC is also important in order to ensure that all involved are using their time effectively.
- At the current time, a specific focus on the open-source and portable version of CanESM5 is an effective starting point for the work of this group. This will tend to focus the initial activities of this committee in the domain of climate modeling (e.g. the domain of CanESM5 and CanSIPS), and less in numerical weather prediction. It is vital that in the near future an enhanced focus on the activities of NWP (the domain of MRD), which also carries considerable partnership within Canada, is emphasized.
- NS, citing internal CCCma surveying, emphasized that there is strong desire from within CCCma to engage more strongly with academic community, but that this was more research focused and that there was less consensus on the need for community modeling as a focus, at least in the traditional sense. One of the main concerns with traditional community modeling is the additional support entailed. Nonetheless, adopting open standards and a more interoperable,

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modern and flexible modelling system for CanESM is strongly endorsed, and widely reflected in the upcoming CCCma strategic plan.

- Due to advances in technology such as software containers, it is now much easier to port and run models like CanESM on community platforms like WestGrid, or indeed any computing system. The level of support effort required is much lower than previously imagined, reducing some aspects of the concern for support. However, there are still structural changes in CanESM and diagnostics required to enable effective external usage. University users will also likely require dedicated system support, and possibly model configuration advice. Promoting this effort and entraining new colleagues into it should be a priority of this committee. Demonstrating success in this area will provide motivation for more community interactions.
- There was agreement that it was important to show success with small projects. Then to seek support for community-based liaisons, inside or outside federal government, who would serve to assist with running and troubleshooting these codes.
- It was emphasized that ECCC representatives will need to consult with senior management to ascertain the level of support for these activities.

## 7. ANNEX B

The ARRCU-SIG executive meets with the advisory board every two months. The meetings are open to all every four months to collect input from the community. Changes to the advisory board will take place this year to renew one third of the board every year. The nomination of new members will be announced at the next executive meeting. Table 1 and 2 gives the terms of the members of the executive and advisory board.

Executive	Start of appointment	End of appointment
Paul Kushner (University of Toronto, Chair)	2018-2019	2020-2021
Adam Monahan (University of Victoria, Vice-Chair)	2018-2019	2020-2021
Pierre Gauthier UQAM, Secretary/Treasurer	2018-2019	2020-2021

Table 1: Terms of the members of the executive

Advisory Board	Start of appointment	End of appointment
Hind Al-Abadleh (Wilfred Laurier)	2018-2019	2020-2021
Paul Myers (University of Alberta)	2018-2019	2020-2021
Neil Tandon (York university)	2018-2019	2019-2020

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Roland Stull (University of British Columbia)	2018-2019	2020-2021
Yanping Li (University of Saskatchewan)	2019-2020	2021-2022
(McGill University)	2019-2020	2021-2022
Aldona Wiacek (Saint Mary's University)	2019-2020	2021-2022

Table 2: Terms of the members of the advisory board.