ACCESS-NRI Scientific Advisory Committee Meeting

Thursday 15th February 2024 / 2.00 PM – 3.30 PM

Attendance

Chair: Kelsey Druken
Rapporteur: Lauren Vieira
Members: Rachel Law, Claire Vincent, Ben Evans, Laurie Menviel, Paul Spence, Tilo Ziehn, Charmaine Franklin, Simon Alexander, Oscar Alves, Ariaan Purich, Adele Morrison
Observers: Martin Dix, Victoria Allen, Claire Carouge, Natalia Bateman, Aidan Heerdegen
Apologies: Andy Hogg, Ed Doddridge

Item 1 – Welcome and Acknowledgement of Country

Item 2 – Previous Minutes

The previous minutes of the meeting have been approved and uploaded on the ACCESS-NRI website.

Item 3 – Matters Arising

None

Item 4 – ACCESS-NRI Updates

4.1 CMIP7 update

- A session held at the AMOS conference was successful in reaching the wider community and was well attended.
- Discussions were held with UK counterparts for CMIP7 planning - progress is being made towards an Atmosphere configuration which has reasonably enough climate sensitivity, which is clear, and could be relevant for ACCES-NRI to use.
- The "Model Evaluation Hackathon" is being held 12 – 14 March in Aspendale, Vic.
    - Focusing on how we evaluate Access in both the development phase and production runs.
    - After an initial first day online, the remaining days will be hands on, giving users the opportunity to test the evaluation tools, such as ESMValTool
- Discussions and planning have commenced on CMIP7 data management.

- Consultation around the Fast-track proposal – those running community MIPS and WCRP projects will have input into which experiments will be prioritised for the next IPCC assessment report.
    - Version 2 of the consultation is now available.
    - Information is available on the HIVE Forum: https://forum.access-hive.org.au/t/fast-track/1625/5

Comments

Once a template is created, leaders will reach out to those with specialist skills for involvement, and to ensure all international contributors are aligned with the planning stages.

4.2 Presentation from ACCESS-NRI Model Release Team

The team focus is on providing reliability, reproducibility, and replicability for models.

- Reliability;
    - Defined support timeline and nature of support.
    - Released models performance, compatibility, and bug fixes maintained.
    - Thorough documentation, full provenance of code, build, configuration and inputs – essential for understanding why a model runs a certain way.
    - Extensive and discoverable model evaluation which is easily accessible.
    - Tested and evaluated model versions which are deployed correctly and corresponds with code versions on Gadi.

- Reproducibility;
    - The same model build configuration and inputs running on the same hardware should produce exactly the same answers, bit by bit – known as bitwise reproducibility.
    - Bitwise reproducibility testing is being developed to run automatically when configurations are changed, which allows the user to know their change has altered answers.
    - Systems which allow for scheduled testing of nominated versions are in development.

- Replicability;
    - Configurations and inputs on different hardware will give different specific answers, however the representation of the climate will be statistically indistinguishable.
    - Allows researchers to replicate results on different hardware.
    - "Spack" is the build from source package manager which has allowed us to build the CI testing on GitHub, and also run the exact same builds on Gadi, as well as other systems.
    - Spack is being adopted in many high performance compute (HPC) facilities worldwide.
    - Two overseas researchers have made contact wanting to build and run ACCESS-OM2.

Work overview of Model Release Team

Work	Status	Reliability	Reproducibility	Replicability
spack porting	Done	✓	✓	✓
build-ci	Done	✓	✓	✓
build-cd	Done	✓		✓
repro-ci	Almost complete	✓	✓	
scheduled-repro	Almost complete	✓	✓	✓
provenance	In progress	✓	✓	✓
staged deployment	Almost complete	✓		

- New releases are deployed to a "pre-release" area, giving the community a chance to test it out and run any diagnostics or evaluation
- For provenance the goal is that when an experiment is created, the run tool generates a unique ID. This ID remains the same for the whole experiment and is embedded in all outputs. Any user receiving outputs from a model will be able to transfer that ID into the system we're developing – providing them a web interface into a complete provenance of that experiment, including all model parameters used in that experiment.

Flagship releases of Model Release Team

Model	Status	Target Completion Date
ACCESS-OM2	Partial, in-progress	29-02-2024
ACCESS-ESM1.5	In-progress	31-03-2024
ACCESS-CM2	Not started	30-04-2024
Aus2200	Not started	31-05-2024
ACCESS-AM3	Not Started	30-06-2024

Comments

The plan is to implement similar testing as the atmospheric rose-stem testing once there is an ACCESS-CM2 model.

The configurations and model packages are being shared across teams at ACCESS-NRI, but also with the Bureau and NCI – allowing common framework to build upon. The intention is that the correct parts are shared properly, keeping the dependencies low, preventing any breakages. The flexibility of spack allows us to change and build models with ease.

Item 5 – Update from Working Groups

Forecasting & Prediction

- Meetings are planned with the ESM working group to discuss more community exposure to ACCESS-S2 (seasonal forecast model version 2) experiments.
- Ambition is to be more active this year.

Atmospheric Modelling

- A member from the Met Office will be visiting the Bureau for a month, and giving a science presentation at the working groups meeting next week.
- A technical talk is planned for teaching the basics of "stash" – the input/output system that the UM uses.

Action: A.1 – Members would prefer email calendar invites to keep track of meetings as HIVE links are difficult to track. ACCESS-NRI to respond by next meeting.

Coupled and Earth System Modelling

- Have held the first meeting of the year, and aiming to keep fortnightly meetings.
- Added a new agenda item to allow members to raise any topics to directly report to the SAC.
- May need to request more storage – will most likely exceed 50TB allocation, partly due to joint project with Forecasting and Predictions working group.
- Next meeting will be shared will Forecasting and Prediction, focusing on experiments.

Ocean-Sea Ice Modelling

- First meeting of the year today.
- Switching all communications to ACCESS-HIVE.
- This year will not have a stand-alone workshop, instead joining with IMOS, held in July in Canberra.
- ACCESS-OM3 development on track – aiming to have configurations ready mid-year, which will feed into CMIP7.
- Have recently given updates to Defence – a partner on the consumer linkage project.
- Defence showed specific interest surrounding progress of MOM3, MOM6 regional modelling and tidal parameterisation development.
- Cosima will provide updates on current projects at the Blue Link meeting next month.

Land Surface

- First meeting to be held next week.
- Attendance is good, with another three people asking to join at AMOS conference.
- Currently discussing data sets and configurations between Jules and CABLE, to have better comparisons between the two.

Cryosphere

- First meeting in March, with monthly meetings planned.
- Ice sheet selection progress is in the feedback stage, after having agreed on criteria for models last year.
- Working group members can contribute feedback on short listed models – information will be released in the next few weeks.

  A final model will be selected by a panel in April, in time for endorsement by the ACCESS-NRI Board in June.

Item 6 – Any Other Business

- General access to access-dev have been closed (only minimal specific workflows remain) - if any problems, contact NCI.
- SAC Meeting 5th September to be held at 7.30am during ACCESS-NRI workshop week.
- ACCESS-NRI have three active job positions advertised Jobs - ACCESS-NRI.

Item 7 – Next Meeting

- 21st March 2024 2.00pm - 3.30pm.

End of meeting.

Action: A.1 – Members would prefer email calendar invites to keep track of meetings as HIVE links are difficult to track. ACCESS-NRI to respond by next meeting.