Summary of 'Consortium of Ocean Modelling in Australia' (COMA) Workshop

15 September 2014

The goal of this workshop were to share recent progress on ocean and coupled ocean-atmosphere modelling within Australia, with a view to enhancing future collaborations between University, CAWCR and NCI.

Attendees (* indicates speakers):

Andy Hogg, Aidan Heerdegen (ANU)
Matthew England, *Paul Spence, *Nic Hannah (UNSW)
* Simon Marsland, * Dave Bi, Siobhan O'Farrell, Hailin Yan, Arnold Sullivan, Martin Dix, Rachel Law (CSIRO Aspendale)
*Richard Matear, Terry O'Kane, Matt Chamberlain, Russ Fiedler, *Peter Oke (CSIRO, Hobart)
Oscar Alves, Justin Freeman, Prasanth Divakaran, *Xiaobing Zhou, Jing-Jia Luo (BoM)
*Ben Galton-Fenzi, Max Nikurashin (UTas)
*Mark Cheeseman, *Marshall Ward (NCI)

Apologies:

Kial Stewart (UNSW)
Tony Hirst (CSIRO, Aspendale)
Gary Brassington, Kamal Puri (BoM)

Notes:

The program included a series of talks to update participants on recent progress, and to outline future plans. The final session included discussion around (a) collaborative science projects that are too large for single groups; and (b) technical initiatives that will contribute to national capacity for ocean modeling.

Science Initiatives:

The following items were identified as key priorities that could engage interest from multiple research groups:

- **0.1° Global Model:** We hope to shortly take delivery of the GFDL 0.1° configuration, including bathymetry, grids and restart files. This configuration is of interest to both OFAM (including the BoM Bluelink team) and CoE Research groups, while the ACE CRC may have an interest in the sea ice component of this model. The initial target will be to get the existing code running, and then for interested parties to discuss whether we should move towards a CICE-OASIS version, whether we need to improve the grid/topography and how to share the code across different projects.

  Action Item: The CoE with support from NCI will run a control simulation of the GFDL 0.1° configuration.

- **0.25° Coupled version of ACCESS:** This is a high priority for both CoE and CMT groups. CoE will work to finalise Nic Hannah's version of the model and begin to work on output. Making the most of this model output will depend upon the whole community. We will work towards an official release of ACCESS which uses this model.

  Action Item: The CoE will continue to optimize and validate the model, prior to its initial community release.

- **BGC at 0.25° resolution:** This model will form the basis of a collaboration between the OFAM group and CoE researchers (including Pete Strutton, UTas). Key questions we will examine include the carbon cycle response to Southern Ocean change, and the resolution dependence of the BGC model.

Action Item: The CoE will provide the MOM025-CICE-OASIS simulations for OFAM to initiate the BGC coupling.

- **Ice Sheets and Sea ice modelling:** Not discussed extensively, but we agree that this is a critical questions for the community and we should all keep in touch with the ACE CRC efforts in this area.

Technical Issues:

The discussion today included a mix of science and technical issues. It was widely recognised by the group that technical support is critical to our research effort. Items discussed included:

- **Technical Collaboration Forum:** We need continued dialogue between the different groups at the technical level to ensure that we avoid duplication, share the tools that we develop and have visibility. We proposed an annual meeting (1-2 days) to discuss technical issues, but a more regular (bi-monthly?) video hook-up may also be fruitful. We also need to continue to encourage & fund regular one-on-one visits of technical staff between groups.

  Action Item: The CoE CMS team will initiate a regular video conference.

- **Divergent Branches**: There was some concern about the number of models, tools, etc, which in some cases may inhibit sharing of our advances. There seemed to be a general consensus that, where possible, we should synchronise our efforts, but there is no clear mechanism that will allow us to achieve this. Suggestions were that we work early to minimise differences, and that we might maintain a live document of technical/research directions that helps to keep us on track. Otherwise, we need to maintain frequent and effective communication between groups.

- **Versions of ACCESS:** There seems to be no clear policy on how different versions of the ACCESS coupled model are named or released, nor how definitions of different releases are shared publicly. There is support for a common ACCESS webpage that would define the releases and potentially house the code.

  Action Item: All parties to continue discussions of how best to release information on ACCESS.

- **Benchmarks:** NCI needs access to our most relevant configurations if they are to provide useful input into how codes should be optimised. There also needs to be a mechanism by which advances in the code by NCI are communicated to the community; this will be done via the mom-ocean.org webpage (Do NCI specific optimizations below on this site?). The NCI team (~6 people) are committed to climate/weather code optimizations for the next 2 years; a resource that could make a significant difference to research output if their efforts are supported. The new 0.1° configuration should replace the 1/12° benchmark.

- **Workflows:** Not discussed, but workflows and data strategies should be discussed via the technical forum.

Regular meetings:

The group supported a regular schedule of meetings. This might include 1 representative of each group talking periodically, a regular (quarterly?) video meeting of interested parties and/or annual one-day meetings, perhaps in association with AMOS conferences?

Action Item: The CoE will schedule a video conference meeting within the next six months to discuss progress on the above initiatives.