Research uses of ACCESS

In what ways do you use ACCESS at the km-scale?

What research are you planning or would like to do that uses ACCESS at this scale?

What research questions are you trying to answer with ACCESS at this scale?

- Developing and producing regional regional reanalysis – BARRA - CHS
- Developing and producing regional climate projections – BARPA - CHS
- Evaluation of RAL in RMED over the Australian region – CHS
- Post-processed products – storm attributes, diagnostics – Rob, Harald
- Scott – CLEX IT and infrastructure support
- DA testing of radar and satellite radiances - Craig
- Forecaster assessments of ACCESS outputs - Matt
- Marcus – Climate modelling with ACS
- ACCESS-CE, C3 – Shaun, Susan
- Satellite data into NWP and verification – Griffth
- Shaun – ensemble. CE – initial conditions perturbations opportunity for research (Rob – research in different lagging configurations)
- To explore machine learning approaches to represent the effect of poorly resolved processes on, say, a 10 km resolution model, I'd like a very high resolution model to be run in tandem with a coarse resolution model . The high res model would be coarse grained to the resolution of the high resolution model and we'd try and develop parameterizations (possibly machine learnt) for the coarse res model so that it would evolve more like the coarse-grained high resolution model.
- Greg – regional antarctica modelling, down to 500m, using NS. RAL3 - Difficulty with obs and ancillary. Implementation to ice-wave. (how easy for others to run the same system? – NS from 12km to 100m, getting suites maintained)
- Jason - WRF – process understanding, climate projections, atmos-land coupling
- TL: Process studies on convection, over Australia (tropics – extratropics). Extreme rain, wind, structure of convection.
- Harald: HR ensemble to study predictability of convection storm mode at hazard level.
- Jason E: Extremes over urban environments (atmosphere / urban): wind, heatwaves, short duration rain. Climate change
- Jason E: Coupling between fire, atmosphere and terrain. (short duration + climate change)
- Yi H: understanding precip over complex terrain (at km and sub-km scale) – looking at steep slopes etc.
- Yi H: cloud processes – transition from convective to stratiform rain
- Jin L: Investigating DA methods using all-sky approach rapid update cycle for TC initialisation using Geostationary satellite.
- Christian: How the atmospheric couples with tropospheric chemistry on urban scale (e.g., tropospheric Ozone, + other anthro)
- Tony H: Research that supports improvements in high-resolution short-duration modelling, including DA + model physics.

.	Idea or Barrier	Short (< 1 year) Medium (1-2 yr) Long (2-5 yr)	NRI team
1	Infrastructure and support around NS and NSE(ensemble) and other standard suites (including regional coupled suite) for high res experiments	Short	Atmosphere
2	Help academic begin with important runs and cases that BoM and CSIRO are already doing, to build on existing work and explore new schemes/methods. - Common case studies that are important to BoM/CSIRO (e.g., antarctica modelling). Common configurations for use by community. Training data set. - Assistance from NRI for students	Short term	Atmosphere
3	Fast track so that researchers are working on the most relevant versions in science or operations Fast track to get research outputs or tools shared For researchers, may not need the most updated versions when using twin experiments.	Short term	Software
4	Evaluation suites – RES (regional evaluation suite) to assess changes to existing systems	Short term	Atmosphere
5	Evaluation and visualisation codes sharing to allow code reuse and intercomparison/context – benchmarking. So that researchers know if they have done correctly.	Short term	Software
6	Community support group – new users. E.g., cylc discourse page, forum. For community to discuss problems. Curate, create and facilitate access to them.	Short term	User
7	Optimisation of the UM or components – more affordable computationally. Configuring the jobs so more efficient.	Short term and ongoing	Software

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1	**TRAINING, IMPROVED DOCUMENTATION – short term** Particularly the NS, NSE, RCS	Short	User
2	Ability to have idealized regional configurations with essentially same version of the code as full physics regional nests	Medium	Software
3	Maintain older version of code as per funding / publication obligations.	Short	Software
4	Ability to do experiments with a small number of physics schemes, including experimental versions.	Medium	Atmosphere
5	Ability to nest within any (global or regional) dataset and	Short	Atmosphere
6	Ability to manipulate those boundary conditions	Medium	Atmosphere