

Running CABLE in ACCESS-SCM (standalone)

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Outline

- Why run CABLE within ACCESS-SCM standalone?
- How to use it ?
- Some current issues
- The GENESIS tool

Why run CABLE within ACCESS-SCM?

- Others are using it:
 - The convection group within CoE uses the SCM
 - Franklin et al. (2012) used ACCESS SCM to study convection
 - No land/LSM
- A valuable tool for model development:
 - Run on command line, no need for UMUI, quick outputs
- Obvious caveats with any SCM:
 - Prescribed advection
 - But valuable tool for first-order approximation
 - How do my code changes affect UM?

How to run ACCESS-SCM?

- Getting the code:
 - https://trac.nci.org.au/trac/access/wiki/SCM_testcases
 - Standalone version provided by Martin Dix
 - With help from COE CMS, the CABLE build was separated from SCM build
 - Link CABLE as external lib during SCM build
 - User can decide what version of CABLE to use
 - Compile and run on command line

How to run ACCESS-SCM?

- The input namelist.scm file is rather long
 - Which options matter for CABLE?
 - We've worked out most of them:
 - How to “activate” the land
 - Define land/sea fraction
 - Define veg type(s)
 - Define canopy height
 - Define LAI
 - Initial soil moisture and temperature profile
 - etc.....
- Will detail on Wiki soon

Current Issues

- Initial soil moisture profile has non-sense values
 - Subroutine soil_snow never gets called
 - Soil moisture and temperature remain constant

- This issue does Not seem to happen with Martin's original stand-alone code
 - Soil moisture and temperature outputs look “Ok”

- Something seems to have gone wrong in separating the CABLE build
 - Work in progress

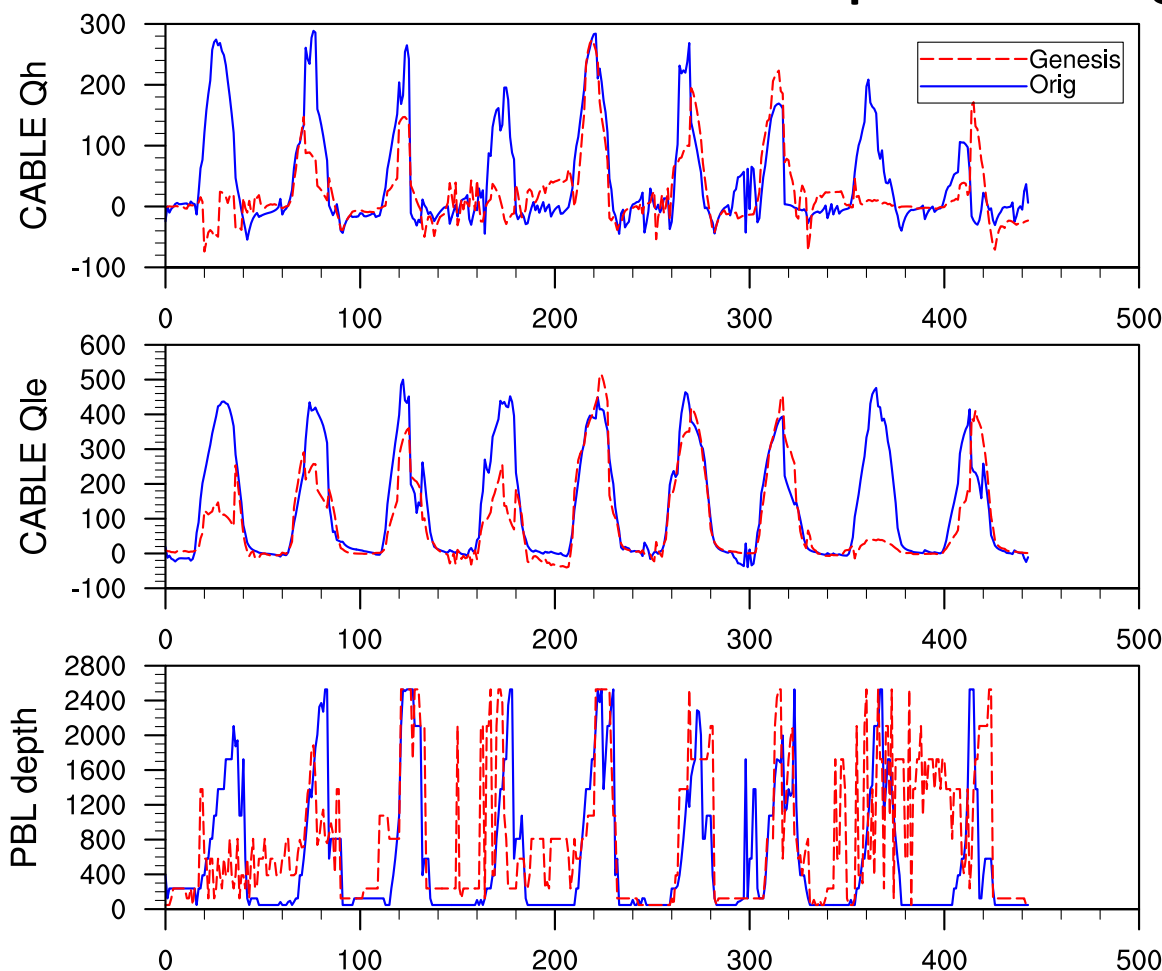
GENESIS

- Major challenge in running any SCM:
 - Derive the input forcing
 - These are “spelt-out” in the input namelist file for ACCESS SCM!
 - VERY VERY long namelist (many thousands of lines)
 - Easy to make mistakes
- GENESIS is a tool developed at BoM to address this issue!
 - Originally designed to read ERA40 as input
 - User defined lat,lon and time period
 - Provide a “template” namlist.scm (with right physics options)
 - GENESIS writes the input forcing for you

GENESIS

- But we have 0.75 deg ERA-INT data already at NCI
 - Tool developed to convert ERA-INT in a format genesis will read:
 - <https://github.com/coecms/era2genesis>
 - GENESIS source code:
 - <https://github.com/coecms/genesis2>
 - Provide a namelist.scn which “works”
 - Run GENESIS -> creates new namelist with forcing
 - Run the SCM
 - Few issues with “long comments”
- Documentation will be provided soon on wiki

GENESIS – Results look promising



SUMMARY

- SCM versions of GCMs are generally very useful tools to have
- With GENESIS we can:
 - Run anywhere (almost)
 - Any period over which ERA-INT is available
- Need to fix the soil moisture and temperature issue