

Team Meeting Sep. 24, 2009

1) Current status of the FVCubed Integration (Will & Brian)

- Tests 1, 2 and 5 seem to be running, albeit Test 5 with revised nsplit
- current branch tag: fvcubed03_cam3_6_57, based on fvcubed from June 2009
- Bill: there have been more recent updates to fvcubed; Will and Bill will iterate off line to get newest version.

2) Open issues (Will, Brian, Jim)

- A strong wave-4 signal is introduced by the A-2-D and D-2-A interpolations. Will believes this is a 'feature' of the interpolation, not a bug in the interface to the underlying FVCubed code. Now the J&W tests U/V-winds are initializing at D-grid locations, but the subsequent D-2-A interpolation in p_d_coupling is unavoidable. Key case: V winds in Test 1 which should be zero. Peter digs through the colloquium results C48 and finds errors 0.1,1,3,20 m/s at Jan 2-5,8,10,14. These seem to corroborate results found in our tests. Will and Bill will iterate off-line to determine the correct running parameters for FVCubed.
- The group opinion is that it is necessary to write out staggered winds to the history file. Will should get to this in a couple of weeks.
- The order of dynamics and physics should be reversed. From a discussion with Brian at NCAR, it seems that the issues requiring the order FV performs it (related to using the model for data assimilation ?) are no longer present, and it should be a straightforward change. Brian will attack this as his schedule permits.
- Brian points out that PIO read from initial file is not working. He and Jim will look into the code as their schedule permits.
- There is still a bug in the restart I/O, unresolved in earlier versions. Will will get to this in about a month.
- There is still a problem accessing the ESMF clock, but since it is really not used for anything it is a non-issue. The group consensus was to remove the ESMF clock entirely.
- There is still a matter of diag_dynvar_ic, namely writing out dynamics state IC. But if the order of dynamics and physics is swapped, it may not be necessary.
- open issues discussed on 6/10/09 and in May, web page: <https://wiki.ucar.edu/display/ccsm/CAM+FVCubed+Open+Software+Engineering+Issues>
- plans how to tackle them, priorities
- physics coupling
- priorities: (1) run all J&W tests, (2) get initial data PIO read working, (3) initial runs, (4) aquaplanet runs.

3) Performance or porting bottlenecks (Art, Will, Pat)

- Will: the memory bottleneck is largely solved. He has run code at very high resolutions (C384).
- hybrid parallelization: currently we run with -smpd -nosmp. Bill points out that Balaji and his team have successfully run in hybrid parallel mode.
- plans for performance analysis: Art mentions they are waiting for a grant approval to work on this.

4) Plan for future model tests:

- All J&W tests at C96
- dry dycore tests
- physics coupling, aqua-planet

- Mark's experience with NCAR's tri-grid coupling strategy

5) Documentation on web page: Will is updating

<https://wiki.ucar.edu/display/ccsm/Implement+FVCUBED+Dycore>