

How to compile and run the GFDL test cases

THIS PAGE IS NOW OBSOLETE: it is only here to document the code's evolution

The GFDL FVcubed dynamical core contains several self tests. These can be run in the CAM environment. Test cases -1 to 9 are for the shallow water case (npz==1 vertical level):

Case	Description
-1	Divergence conservation test
0	Idealized non-linear deformational flow
1	Cosine Bell advection
2	Zonal geostrophically balanced flow
3	non-rotating potential flow
4	Tropical cyclones (merger of Rankine vortices)
5	Zonal geostrophically balanced flow over an isolated mountain
6	Rossby Wave number 4
7	Barotropic instability
8	Potential flow (as in 5 but no rotation and initially at rest)
9	Polar vortex

The shallow water test cases are not currently supported, and have never been tested. The full 3D (npz > 1) are supported and several of them have been tested.

Case	Description
10	hydrostatically balanced 3D test with idealized mountain
11	Use this for cold starting the climate model with USGS terrain
12	Jablonowski & Williamson Baroclinic test case (Steady State)
13	Jablonowski & Williamson Baroclinic test case Perturbation
14	Use this for cold starting the Aqua-planet model
15	Small Earth convective bubble
16	3D hydrostatic non-rotating Gravity waves
17	3D hydrostatic rotating Inertial Gravity waves (case 6-3-0)
18	3D mountain-induced Rossby wave

Because these test case IDs do not overlap with the CAM test cases IDs (note that the SW test cases above are not supported), it is only necessary to specify the ID to distinguish between CAM and GFDL test cases. For example:

```
build-namelist -s -case $case -config $blddir/config_cache.xml \
-namelist "&camexp start_type='startup' stop_option='ndays' stop_n=1 \
nhfrq=-6 ndens=2 hfilename_spec='h%.t.nc' restart_option='end' \
fvc_case=12 fvc_npes_x=2 fvc_npes_y=2 empty_htapes=.true. inithist = 'NONE' \
fincl1='U:I ','V:I ','PS:I ','OMEGA:I ','Z3:I ','T850:I ',' \
'U850:I ','V850:I ','OMEGA850:I '
```

Runs GFDL test case 12 on 2x2=4 PEs per face (24 total).