RegCM4-CB6C Tutorial

James Ciarlo`

jciarlo@ictp.it

Required Packages

- MPI
- autotools
- gfortran
  - or intel fortran
- cdo
- NetCDF
  1. Zlib
  2. HDF5
  3. netCDF

RegCM4-CB6

- Download zip file:
  - https://github.com/ciarloj/RegCM4.5-CB6C
  - Click on ‘Code’
  - Choose ‘Download ZIP’
- Move to your work directory
- Extract
  - `unzip RegCM4.5-CB6C-master.zip`

Installation

1. `cd RegCM4.5-CB6C-master/regcm-cb6/`
2. `bash bootstrap.sh`
3. `../configure`
   - `./configure CC=gcc FC=gfortran --with-netcdf=$INTELROOT`
4. `make install`

Driving Data

- Data available on:

http://clima-dods.ictp.it/Data/RegCM_Data/

- Data needed (~1.2 TB)
  - AEROGLOB
  - EMISSION_INVENTORY
  - NNRP1
  - OXIGLOB
  - SURFACE
  - SST

Workspace prep

1. `ln -s RegCM4.5-CB6C-master/regcm-cb6/bin`
2. `ln -s /home/esp-shared-b/RegCM_Data RCMDATA`
3. `mkdir -p test_was/icbc`
4. `cp RegCM4.5-CB6C-master/regcm-cb6/Testing/CHEM_DATA/TUVGRID2 .`
5. `cp RegCM4.5-CB6C-master/regcm-cb6/Testing/test_001.in test_was.in`
6. `vi test_was.in`
   - `[insert]` to change writing options
   - `[esc]+:wq` to save and quit
   - `[esc]+:q!` to quit without saving

Namelist: Small WAS `domain`

```
&dimparam
  iy      =  80,
  jx      =  80,
  kz      = 18,
&geoparam
  iproj = 'ROTMER',
  ds = 50.0,
  ptop = 5.0,
  clat = 20.0,
  clon = 79.00,
  plat = 13.0,
  plon = 70.00,
```

Namelist: Terrain and ICBC

```
&terrainparam
  domname = 'test_was',
  dirter = 'test_was/icbc’,
  inpter = 'RCMDATA’,
&globdatparam
  ssttyp = 'OI_WK’,
  dattyp = 'NNRP1’,
  chemtyp = 'MZCLM’,
  gdate1 = 2002010100,
  gdate2 = 2002020100,
  dirglob = 'test_was/icbc’,
  inpglob = 'RCMDATA’,
```

Namelist: Run details & chemistry

```
&restartparam
   ifrest  = .false. ,
   mdate0  = 2002010100,
   mdate1  = 2002010100,
   mdate2  = 2002010200,
&outparam
   ifchem  = .true.,
   dirout  = 'test_was',
&physicsparam
   ichem   =          1,
```

Add new section:

```
&chemparam
   chemsimtype = 'CB6C',
/
```

Preproc

- `./bin/terrain test_was.in`
- `./bin/sst test_was.in`
- `./bin/icbc test_was.in`
- `./bin/emcre_grid test_was.in`
- `bash bin/interp_emissions test_was.in (*)`
- `./bin/chem_icbc test_was.in (*)`

Run

- `mpirun bin/regcmMPI test_was.in`

- `mpirun -np 12 bin/regcmMPI test_was.in`

Output

- `cd test_was`
- `ls`
- 60 files per month
  - species ‘switch off’ currently unavailable (work in progress)

Changing Emissions & Boundary Conditions

- `cd ../RegCM4.5-CB6C-master/regcm-cb6/`
- Boundary Conditions input code:
  - `cd PreProc/ICBC/`
  - `vi mod_ch_icbc.F90` (or _clim.F90)
  - `subroutine get_c6_icbc_clim`
- Emissions input code:
  - `cd Main/chemlib/`
  - `vi mod_che_ncio.F90`
  - `subroutine read_emission`
- reinstall
  - `make distclean`
  - Repeat from slide 4