
b40.lgm21ka.1deg.003

Contents:

- [Run Specifications](#)
 - [Run Checklist](#)
 - [Comments](#)
 - Status: completed
-

Run Specifications

=====
General Information
=====

Purpose of Run: IPCC-TIER1 CCSM4 Last Glacial Maximum

Scientific Lead: Bette Otto-Bliesner

Software Engineering Lead: nanr

Assigned to: nanr

Date: 2011-04-01

Run Length: 1000y

=====
Case Creation Information (all fields are required)
=====

CCSM tag: cesm1_0_beta05

Case Name: b40.lgm21ka.1deg.003

Machine: bluefire

Compset: B1850CN

Resolution: f09_g16

=====
Pre-Configuration Information
=====

Runttype: hybrid

RUN_STARTDATE 1499-01-01

RUN_REFCASE b40.lgm21ka.1deg.002

RUN_REFDATE 1499-01-01

- yrs 1499 -

vmix_kpp.F90 = 6 levels (default = 2)

dt_count = 23 (default)

div24del2flag = 4 (default = 2)

! -----
! Code changes
! -----

env_conf.xml mods

```
xmlchange -file env_conf.xml -id RUN_STARTDATE -val 1499-01-01
xmlchange -file env_conf.xml -id RUN_REFDATE -val 1499-01-01
xmlchange -file env_conf.xml -id CCSM_CO2_PPMV -val 185.0
xmlchange -file env_conf.xml -id RUN_REFCASE -val b40.lgm21ka.1deg.1deg.002
xmlchange -file env_conf.xml -id MAP_A20F_FILE -val map_fv09_1.25_to_gx1p21k_aave_da_110315.nc
xmlchange -file env_conf.xml -id MAP_A20S_FILE -val map_fv09_1.25_to_gx1p21k_bilin_da_110315.nc
xmlchange -file env_conf.xml -id MAP_O2AF_FILE -val map_gx1p21k_to_fv09_1.25_aave_da_110315.nc
xmlchange -file env_conf.xml -id MAP_O2AS_FILE -val map_gx1p21k_to_fv09_1.25_aave_da_110315.nc
xmlchange -file env_conf.xml -id MAP_R20_FILE_R05 -val map_r05_to_gx1p21k_e1000r300_110315.nc
```

env_mach_pes.xml mods (per Tony Craig):

-- http://www.cesm.ucar.edu/models/cesm1.0/timing/timing_files/ccsm_timing.b40.850hf.1deg.001.tc1.100713-172112

```
xmlchange -file env_mach_pes.xml -id NTASKS_CPL -val 160
xmlchange -file env_mach_pes.xml -id NTASKS_GLC -val 1
xmlchange -file env_mach_pes.xml -id NTASKS_LND -val 64
xmlchange -file env_mach_pes.xml -id NTASKS_ICE -val 160
xmlchange -file env_mach_pes.xml -id NTASKS_ATM -val 224
```

```

xmlchange -file env_mach_pes.xml -id NTASKS_OCN -val 32
xmlchange -file env_mach_pes.xml -id ROOTPE_LND -val 160
xmlchange -file env_mach_pes.xml -id ROOTPE_OCN -val 224
xmlchange -file env_mach_pes.xml -id NTHRDS_ATM -val 2
xmlchange -file env_mach_pes.xml -id NTHRDS_LND -val 2
xmlchange -file env_mach_pes.xml -id NTHRDS_ICE -val 2
xmlchange -file env_mach_pes.xml -id NTHRDS_OCN -val 2

```

component	comp_pes	root_pe	tasks	x	threads	(stride)
cpl = cpl	160	0	160	x	1	(1)
glc = sglc	1	0	1	x	1	(1)
lnd = clm	128	160	64	x	2	(1)
ice = cice	320	0	160	x	2	(1)
atm = cam	448	0	224	x	2	(1)
ocn = pop2	64	224	32	x	2	(1)

=====
Post-Configuration Information
=====

Buildconf

-- clm.buildnml.csh

```

fatmgrid = '$DIN_LOC_ROOT/lnd/clm2/griddata/griddata_0.9x1.25_070212.nc'
fatmldfrc=
'/fis/cgd/ccr/nanr/pmip3/lgm21ka/mkgriddata/fracdata_0.9x1.25_lgm21ka.110315.nc'
finidat = 'b40.1850.lgmco2.1deg.001.clm2.r.1499-01-01-00000.IP.110331.nc'
fsurdat =
'/fis/cgd/ccr/nanr/pmip3/lgm21ka/mksurfddata/surfddata_0.9x1.25_lgm21ka.110315.nc'
urban_hac = 'OFF'

```

```

OLD: urban_hac = 'ON_WASTEHEAT'
NEW: urban_hac = 'OFF'

```

-- cam.buildnml.csh

```

Note: GHG from http://pmip3.lsce.ipsl.fr/ (21kaLGM simulation)
bnd_topo = '/fis/cgd/ccr/nanr/pmip3/lgm21ka/topo/topo_lgm21ka_remap_09x25.mod.110106.nc'
OLD:
    ch4vmr      = 791.6e-9
    co2vmr      = 280.0e-6
    f11vmr      = 12.48e-12
    f12vmr      = 0.0

```

n2ovmr = 275.68e-9

NEW:

ch4vmr = 350.0e-9
 co2vmr = 185.0e-6
 f11vmr = 0.0
 f12vmr = 0.0
 n2ovmr = 200.0e-9

NEW: (to cam_inparm; per Tony Craig):

modc_sw_cdcore = 1
 modc_hs_cdcore = .false.
 modc_send_cdcore = .false.
 modc_mxreq_cdcore = -1
 modc_sw_dynrun = 1
 modc_hs_dynrun = .false.
 modc_send_dynrun = .false.
 modc_mxreq_dynrun = -1
 modc_sw_tracer = 1
 modc_hs_tracer = .false.
 modc_send_tracer = .false.
 modc_mxreq_tracer = -1
 modc_tracers = 3
 modc_onetwo = 2
 geopktrans=2
 geopkblocks = 3

---fincl changes for CCR diagnostics (fincl1 + fincl2) and HF IPCC cam output (fincl2)

OLD:

fincl1 = 'MSKtem', 'VTH2d', 'UV2d', 'UW2d', 'U2d', 'V2d', 'TH2d', 'W2d', 'UTGWORO'
 fincl2 = 'TREFHTMN', 'TREFHTMX', 'TREFHT', 'PRECC', 'PRECL', 'PSL'

NEW:

fincl1 = 'cb_ozone_c', 'cb_sulf_c', 'MSKtem', 'VTH2d', 'UV2d', 'UW2d', 'U2d', 'V2d', 'TH2d', 'W2d', 'UTGWORO'
 fincl2 = 'TREFHTMN', 'TREFHTMX', 'TREFHT', 'QREFHT', 'PRECC', 'PRECL', 'PSL'
 fexcl2 = 'TH'

NOTE: Daily TH has been saved as a default variable. It takes an enormous amt of the file space.

-- pop2.buildnml.csh

!! overflow, PSU and velocity changes (Esther Brady)

NEW:

regionmask_filename = \$CASEROOT/SourceMods/src.pop2/grid/region_mask_gx1v6_lgm21ka.110315.ieeei4
 topography_filename = \$CASEROOT/SourceMods/src.pop2/grid/kmt_gx1v6_lgm21ka.110315.ieeei4

```
setenv INIT_TS_FILE b40.lgm21ka.1deg.002.pop.r.1499-01-01-00000newcoast_zeroUV_PSURF_Q110330
setenv OVF_FILE      b40.1850.lgmco2.1deg.001.pop.ro.1499-01-01-00000101020
setenv TAVG_FILE     b40.1850.lgmco2.1deg.001.pop.rh.1499-01-01-00000.nc (doesn't exist)
```

```
-- cice.buildnml.csh
```

```
kmt_file =
'$CASEROOT/SourceMods/src.pop2/grid/kmt_gx1v6_lgm21ka.110315.ieeei4'
```

```
-- cpl.buildnml.csh
```

```
orb_iyear_ad = -19050
set map_a2of_file = $CASEROOT/SourceMods/src.drv/$map_a2of_file
set map_a2os_file = $CASEROOT/SourceMods/src.drv/$map_a2os_file
set map_o2af_file = $CASEROOT/SourceMods/src.drv/$map_o2af_file
set map_o2as_file = $CASEROOT/SourceMods/src.drv/$map_o2as_file
set map_r2o_file = $CASEROOT/SourceMods/src.drv/$map_r2o_file
```

```
-- b40.lgm21ka.1deg.001.bluefire.l_archive
```

Add these new lines:

copied from Adrienne's new case:

/glade/proj3/cseg/runs/ccsm4_0/b40.rcp2_6.1deg.005/b40.rcp2_6.1deg.005.bluefire.l_archive

!! Start new lines -----

```
# Run the long term archiver and the diagnostic scripts
cd $DOUT_S_ROOT/atm/hist
source ~adrienne/diag4/setdir
mkdir $DIAGROOT $DIAGDIR $DIAGDIR/annual $WKDIR $HISTDIR
# copy CAM h0 files to a work directory. DO NOT link. They will be modified.
cp *h0* $HISTDIR
if (! -e $DIAGDIR/startyear) then
# Find the first year of the run and put it into a file, startyear
cd $HISTDIR
set year = `ls -1 *h0* | head -1 | sed -e 's/^.*h0\./g' | sed -e
's/-.*//g`
cd $DIAGDIR
echo $year >& startyear
endif

# Run the long term archiver
cd $CASEROOT
$CSETTOOLS/ccsm_l_archive.csh
```

```
# Run the diagnostic scripts
# sdiag $CASE ! commenting out for now.
```

```
!! End new lines -----
```

```
=====
SourceMods Information
=====
```

```
-- SourceMods/src.drv/
  map_gx1p21k_to_fv09_1.25_aave_da_110106.nc
  map_fv09_1.25_to_gx1p21k_aave_da_110106.nc
  map_gx1p21k_to_fv09_1.25_bilin_da_110106.nc
  map_fv09_1.25_to_gx1p21k_bilin_da_110106.nc
  map_r05_to_gx1p21k_e1000r300_110106.nc

-- SourceMods/src.pop2/
  gx1v6_lgm21ka_overflow.101029
  gx1v6_lgm21ka_region_ids.101028
  gx1v6_lgm21ka_inputdata.101029

  gx1v6_region_ids@ -> gx1v6_lgm21ka_region_ids.101028
  gx1v6_overflow@ -> gx1v6_lgm21ka_overflow.101029
  gx1v6_inputdata@ -> gx1v6_lgm21ka_inputdata.101029
```

```
=====
Performance/Cost Estimates
=====
```

```
Overall Metrics:
  Model Cost:           428.21   pe-hrs/simulated_year (scale= 1.00)
  Model Throughput:     14.35   simulated_years/day
```

```
=====
Special Instructions
=====
```

```
b40.lgm21ka.1deg.5day.002c: 5 day simulation to create a clm.r file from
  b40.lgm21ka.1deg.002 that conforms to the modified LGM landmask along
  the Western Atlantic
  - finidat = ' '
  The clm.r file output from this simulation was
```

```

be1105en.ucar.edu-/fis/cgd/ccr/nanr/cesm1_0_beta08/models/lnd/clm/tools/interpinic %
./interpinic
-i b40.lgm21ka.1deg.002.clm2.r.1499-01-01-00000.nc
-o b40.lgm21ka.1deg.5day.002c.clm2.r.0001-01-06-00000.nc

mv b40.lgm21ka.1deg.5day.002c.clm2.r.0001-01-06-00000.nc
   b40.lgm21ka.1deg.002.clm2.r.1499-01-01-00000.IP.110315.nc

```

```

! -----
! Notes:
! -----

```

Stability problems:

Problem 1: Ocean instability in Denmark Strait

Contact: Gokhan

Solution: Change code that sets tidal mixing levels (number of lowest kmt levels that are made constant). Rebuild and run. Once you are past the problem point, reset to default.

Default number of levels: 2

\$CASEROOT/SourceMods/src.pop2/vmix_kpp.F90.tm6 ! (6 levels)

\$CASEROOT/SourceMods/src.pop2/vmix_kpp.F90.tm6-4levels ! (4 levels)

Problem 2: Atmospheric instability caused by ice sheets over N. America

Contact: Cecile

Solution: changed divergence damping in cam.buildnml.csh.

default: div24del2flag = 2

option1: div24del2flag = 4

Pre-Run Instructions

```
* create_production_test:
```

```
* debug smoke test:
```

Run Instructions

Run Length: 1000yrs

Account key: 93300416

Priority/Targeted queue: regular

Other:

=====
Diagnostics Plan
=====

run for 10yrs and check model output for all components.

=====
Additional Information
=====

[Graphic of run history](#)

[Smoothing over Eastern Laurentide Ice sheet and Greenland Ice sheet; smth9_x
1000 iterations](#)

[PMIP3 Ice Shelves in Lab Sea](#)

[current LabSea Mask](#)

[65degN LabSea Mask](#)

[70degN LabSea Mask](#)

[Logfile for creating Initial Conditions.](#)

[logfile.lgm21ka.001](#)

[logfile.lgm21ka.002](#)

[logfile.lgm21ka.003](#)

[Logfile for creating 5day Run.](#)

[Return to Top](#)

Run Checklist

Complete the following checklist prior to beginning the production run:

1. Update status file: /web/web-data/cseg/ccsm4_0_runs/b40.lgm21ka.1deg.003/status.html:
 assigned
 pending
 running
 completed
 stopped
2. Document NCAR software levels at beginning of run (use the spinfo command on bluefire)
3. Complete the following table, as necessary, showing the component liaison's name and the date the setup was approved.

Component	Liaison/ Reviewer	Date Approved
atm	[hannay,eaton,other]	----
cpl	[kauff,mvertens,tcraig,other]	----
ice	dbailey	----
lnd	[erik,slevis]	----
ocn	[njn01,bates,gokhan]	----
env_file settings	[mvertens,other]	----
data	[strand,other]	----

4. Create_production_test completed [who,when]
5. Debug smoke test completed [who,when]
6. Performance review completed [who,when]

[Return to Top](#)

Comments

[Return to Top](#)