



TRAINING MANUAL ON RUNNING AND USING ICPAC RCC CLIMATE MODELS THE GLOBAL SPECTRAL MODEL (GSM) AND THE REGIONAL SPECTRAL MODEL (RSM)

Operating with the Model GSM Step by Step

1. Linux LogIn

LogIn with registered ID and Password.

2. Receive GFS Data from provide of GFS. Current provider is SBIS server. Use Secure Copy command as:

```
scp -r -P 22151 root@tg.sbis.co.kr:/data/NCEP/$date /data/NCEP/
```

You must change \$date to today like 20140404.

Every day, this download can be run after 13 o'clock Kenya time.



3. Go to GSM installation folder and edit GSM with vi editor.

GS installation folder is /data/MODEL/GSM/GSM2/GSM/gsm_runs

vi gsm

```
#!/bin/sh
#
# no header file. Interactive submission only
#
#
set -ax
#
# this script makes 72 hour integration starting from an example initial
# condition. ideal for first testing the system on new computer system
#
# ----- user changeable parameters -----
#
# Change the following variable if you are running separate experiments
# from the same directory
#
RUNNAME=g_000          # Folder in which to be executed and to save the data
#
# Intervals of sfc execution, sigma output, sfc output and flx output
# Various options for running the model
#
ENDHOUR=504           # Required prediction time
INCHOUR=$ENDHOUR
INTSFCX=6 # set the time interval of the forecast (6 hour)
INTSIG=6 # same
INTSFC=6 # same
INTPOST=6 # same
INTRESTART=6         # Model restart time (when it stopped.)
#
FCST_RESTART=yes
#
# ----- below for expert user only -----
#
# If you wish, you may modify EXECDIR to /tmp directory and keep these
# scripts on your permanent disk.
#
EXECDIR=/home/data/MODEL/GSM/GSM2/GSM/gsm_runs/$RUNNAME
#
# ----- do not change below -----
#
mkdir -p $EXECDIR 2>/dev/null
#
INITIAL_SIGMA=/home/data/NCEP/20130605/sanl.2013060500.ieee # Initial SIGMA file
INITIAL_SFC=/home/data/NCEP/20130605/sfcanl.2013060500.ieee # Initial SURFACE file
INITIAL_SFC_FILE_TYPE=ncpl # Initial SURFACE file shape (NCEP)
#
# blank means use guess (in the sfc file).
#
```



```
SST_ANL_T0=          #SST
ICE_ANL_T0=          #ICE
SNO_ANL_T0=          #SNOW
SCV_ANL_T0=          #
#SST_ANL=/home/data/MODEL/GSM/GSM2/GSM/libs/con/sstanl.900309.grib //SST analysis
#ICE_ANL=/home/data/MODEL/GSM/GSM2/GSM/libs/con/clim.ice.grib //ICE analysis
SNO_ANL=
SCV_ANL=
#
INPUT_RESOLUTION=t382k64 //Resolution (100km x 100km)
#
FCST_NPES=1
#
# cd to run directory
#
scrnam=`echo $0 | sed 's?./??g'`
cp $0 $EXECDIR/0LOG.$scrnam
ls -l /home/data/MODEL/GSM/GSM2/GSM/gsm/bin >$EXECDIR/0LOG.bindates
cd $EXECDIR || exit 8
#
# renew log file
#
cat $0 > ERROR.out
echo '======' >>ERROR.out
#
# Automatic restart
#
if [ -s sigit -a -s sigitdt -a -s sfci -a "$FCST_RESTART" = yes ];then
#
# Restart
#
h=`/home/data/MODEL/GSM/GSM2/GSM/libs/etc/fhour sigit`
echo fhour in the sigit file = $h
else
#
# Initial start.
#
h=00
#
# Conversion from ascii to native format
#
fmt=`echo $INITIAL_SIGMA | sed 's/.*\./g'`
/home/data/MODEL/GSM/GSM2/GSM/libs/etc/scnvrt gsm $INITIAL_SFC_FILE_TYPE
\
382:1760:880:64 \
-1:-1:-1:-1:-1 \
$fmt:bin $INITIAL_SIGMA:$INITIAL_SFC \
cnvrt_initial_sig:cnvrt_initial_sfc || exit 8
#
# Find initial date and hour
#
/home/data/MODEL/GSM/GSM2/GSM/libs/etc/date cnvrt_initial_sig
>date.$$ || exit 8
read HH MM DD yyyy FH <date.$$ ; rm date.$$
echo $yyyy $MM $DD $HH $FH
#
# Change input resolution to model resolution
#
/home/data/MODEL/GSM/GSM2/GSM/gsm_runs/runscr/chgr \
cnvrt_initial_sig cnvrt_initial_sfc \
sigit sfci \
```



```

                                $INITIAL_SFC_FILE_TYPE || exit 8
#
# convert initial sfc file type to model sfc file type
#
SST_GRB_T0=`eval echo $$SST_ANL_T0`
SNO_GRB_T0=`eval echo $$SNO_ANL_T0`
SCV_GRB_T0=`eval echo $$SCV_ANL_T0`
ICE_GRB_T0=`eval echo $$ICE_ANL_T0`
export SST_GRB_T0 SNO_GRB_T0 SCV_GRB_T0 ICE_GRB_T0
/home/data/MODEL/GSM/GSM2/GSM/gsm_runs/runscr/sfc0 sfc0 sfc0
$INITIAL_SFC_FILE_TYPE || exit 8
#
cp sfc0 sfc0 || exit 8
cp sigit sigitdt || exit 8
cp sigit sig.ft$h || exit 8
cp sfc0 sfc.ft$h || exit 8
#
/home/data/MODEL/GSM/GSM2/GSM/libs/etc/date sigit >date.$$ || exit 8
read HH MM DD yyyy FH <date.$$ ; rm date.$$
echo $yyyy $MM $DD $HH $FH
#
# pgb of the initial
#
if [ "" = DEFINED ] ; then
    /home/data/MODEL/GSM/GSM2/GSM/gsm_runs/runscr/pgb $h $h
$INTSFCX || exit 8
    elif [ " " = DEFINED ] ; then
        /home/data/MODEL/GSM/GSM2/GSM/libs/etc/catpgb
    fi
fi
#
# forecast hour loop
#
xc=0
while [ $h -lt $ENDHOUR ] ; do
    #
    hx=`expr $h + $INCHOUR`
    if [ $hx -gt $ENDHOUR ] ; then
        hx=$ENDHOUR
    fi
    if [ $hx -lt 10 ] ; then hx=0$hx ; fi
    #
    SST_GRB=`eval echo $$SST_ANL`
    SNO_GRB=`eval echo $$SNO_ANL`
    SCV_GRB=`eval echo $$SCV_ANL`
    ICE_GRB=`eval echo $$ICE_ANL`
    export SST_GRB SNO_GRB SCV_GRB ICE_GRB
    /home/data/MODEL/GSM/GSM2/GSM/gsm_runs/runscr/fcstparm $INCHOUR $ENDHOUR
$INTSFCX \
                                $INTSIG:$INTSFC:$INTPOST:$INTRESTART || exit 8
#
# Execute forecast
#
/home/data/MODEL/GSM/GSM2/GSM/gsm_runs/runscr/fcst || exit 8
#
# pgb of the forecast
#
if [ "" = DEFINED ] ; then
    /home/data/MODEL/GSM/GSM2/GSM/gsm_runs/runscr/pgb $h $hx
$INTSIG || exit 8
    elif [ " " = DEFINED ] ; then
        /home/data/MODEL/GSM/GSM2/GSM/libs/etc/catpgb

```



```

fi
#
# find archive files
#
cp sig.ft$hx sigit || exit 8
mv sigp.ft$hx sigitdt || exit 8
cp sfc.ft$hx sfc_i || exit 8

#
h=$hx
done
if [ linux = mac -a thread = mpi ] ; then
    lamclean
    lamhalt
fi

```

4. GSM Execution

```
./gsm
```

5. After execution, make sure to check the created file on g_000 folder

```

[model@s3cs01 gsm_runs]$ cd g_20130605
[model@s3cs01 g_20130605]$ ls
0L06.bindates      flx.ft162  flx.ft306  flx.ft456  pab.ft112  pab.ft264  pab.ft414  scrvrt.out  sfc.ft216  sfc.ft360  sfc.ft54  sig.ft180  sig.ft330  sig.ft48
0L06.gsm          flx.ft168  flx.ft312  flx.ft462  pab.ft120  pab.ft270  pab.ft42  sfc0.out  sfc.ft222  sfc.ft366  sfc.ft00  sig.ft186  sig.ft336  sig.ft480
albaar_sn1       flx.ft174  flx.ft318  flx.ft468  pab.ft126  pab.ft276  pab.ft420  sfc0_parm  sfc.ft228  sfc.ft372  sfc.ft66  sig.ft192  sig.ft342  sig.ft486
chgr.out         flx.ft18  flx.ft324  flx.ft474  pab.ft132  pab.ft282  pab.ft426  sfc0_x  sfc.ft234  sfc.ft378  sfc.ft72  sig.ft198  sig.ft348  sig.ft492
chgr_parm       flx.ft180  flx.ft330  flx.ft48  pab.ft138  pab.ft288  pab.ft432  sfc.ft00  sfc.ft24  sfc.ft384  sfc.ft78  sig.ft204  sig.ft354  sig.ft498
chgr_x          flx.ft186  flx.ft336  flx.ft480  pab.ft144  pab.ft294  pab.ft438  sfc.ft06  sfc.ft240  sfc.ft390  sfc.ft84  sig.ft210  sig.ft36  sig.ft504
cnvrt_initial_sfc flx.ft192  flx.ft342  flx.ft486  pab.ft150  pab.ft30  pab.ft444  sfc.ft102  sfc.ft246  sfc.ft396  sfc.ft90  sig.ft216  sig.ft360  sig.ft54
cnvrt_initial_sig flx.ft198  flx.ft348  flx.ft492  pab.ft156  pab.ft300  pab.ft450  sfc.ft108  sfc.ft252  sfc.ft402  sfc.ft96  sig.ft222  sig.ft366  sig.ft60
g2geom          flx.ft204  flx.ft354  flx.ft498  pab.ft162  pab.ft306  pab.ft456  sfc.ft114  sfc.ft258  sfc.ft408  sfc0  sig.ft228  sig.ft372  sig.ft66
ERROR.out       flx.ft210  flx.ft36  flx.ft504  pab.ft168  pab.ft312  pab.ft462  sfc.ft12  sfc.ft264  sfc.ft414  sfc0  sig.ft234  sig.ft378  sig.ft72
fcstout.ft00    flx.ft216  flx.ft360  flx.ft54  pab.ft174  pab.ft318  pab.ft468  sfc.ft120  sfc.ft270  sfc.ft42  sig.ft00  sig.ft24  sig.ft384  sig.ft78
fcst_parm       flx.ft222  flx.ft366  flx.ft60  pab.ft18  pab.ft324  pab.ft474  sfc.ft126  sfc.ft276  sfc.ft420  sig.ft06  sig.ft240  sig.ft390  sig.ft84
fcst_x          flx.ft228  flx.ft372  flx.ft66  pab.ft180  pab.ft330  pab.ft48  sfc.ft132  sfc.ft282  sfc.ft426  sig.ft102  sig.ft246  sig.ft396  sig.ft90
flw             flx.ft234  flx.ft378  flx.ft72  pab.ft186  pab.ft336  pab.ft480  sfc.ft138  sfc.ft288  sfc.ft432  sig.ft108  sig.ft252  sig.ft402  sig.ft96
flx.ft00        flx.ft24  flx.ft384  flx.ft78  pab.ft192  pab.ft342  pab.ft486  sfc.ft144  sfc.ft294  sfc.ft438  sig.ft114  sig.ft258  sig.ft408  sig0
flx.ft06        flx.ft240  flx.ft390  flx.ft84  pab.ft198  pab.ft348  pab.ft492  sfc.ft150  sfc.ft30  sfc.ft444  sig.ft12  sig.ft264  sig.ft414  sigitdt
flx.ft102       flx.ft246  flx.ft396  flx.ft90  pab.ft204  pab.ft354  pab.ft498  sfc.ft156  sfc.ft300  sfc.ft450  sig.ft120  sig.ft270  sig.ft42  tune
flx.ft108       flx.ft252  flx.ft402  flx.ft96  pab.ft210  pab.ft36  pab.ft504  sfc.ft162  sfc.ft306  sfc.ft456  sig.ft126  sig.ft276  sig.ft420
flx.ft114       flx.ft258  flx.ft408  gco3  pab.ft216  pab.ft360  pab.ft54  sfc.ft168  sfc.ft312  sfc.ft462  sig.ft132  sig.ft282  sig.ft426
flx.ft12        flx.ft264  flx.ft414  mtnvar  pab.ft222  pab.ft366  pab.ft60  sfc.ft174  sfc.ft318  sfc.ft468  sig.ft138  sig.ft288  sig.ft432
flx.ft120       flx.ft270  flx.ft42  o3loss  pab.ft228  pab.ft372  pab.ft66  sfc.ft18  sfc.ft324  sfc.ft474  sig.ft144  sig.ft294  sig.ft438
flx.ft126       flx.ft276  flx.ft420  o3prod  pab.ft234  pab.ft378  pab.ft72  sfc.ft180  sfc.ft330  sfc.ft48  sig.ft150  sig.ft30  sig.ft444
flx.ft132       flx.ft282  flx.ft426  pab.ft00  pab.ft24  pab.ft384  pab.ft78  sfc.ft186  sfc.ft336  sfc.ft480  sig.ft156  sig.ft300  sig.ft450
flx.ft138       flx.ft288  flx.ft432  pab.ft06  pab.ft240  pab.ft390  pab.ft84  sfc.ft192  sfc.ft342  sfc.ft486  sig.ft162  sig.ft306  sig.ft456
flx.ft144       flx.ft294  flx.ft438  pab.ft102  pab.ft246  pab.ft396  pab.ft90  sfc.ft198  sfc.ft348  sfc.ft492  sig.ft168  sig.ft312  sig.ft462
flx.ft150       flx.ft30  flx.ft444  pab.ft108  pab.ft252  pab.ft402  pab.ft96  sfc.ft204  sfc.ft354  sfc.ft498  sig.ft174  sig.ft318  sig.ft468
flx.ft156       flx.ft300  flx.ft450  pab.ft114  pab.ft258  pab.ft408  scrvrt.data  sfc.ft210  sfc.ft36  sfc.ft504  sig.ft18  sig.ft324  sig.ft474

```

RSM manual operation

1. Linux LogIn

LogIn with registered ID and Password.

Check the GSM result data



ls /data/MODEL/GSM/GSM2/GSM/gsm_runs/g_000

1. Go to RSM installation folder and edit with vi Editor.

Your RS installation folder is /data/MODEL/RSM/RSM/rsm_runs

vi rsm

```
#!/bin/sh
#
# no header file. Interactive submission only
#
set -ax
#
# rsm integration from ready made initial condition
#
# ----- User changeable parameters -----
#
# run directory name
#
RUNNAME=r_000          # Folder in which to be executed and to save the data
#
USEERA=0 # 1:use era40 forcing
#
# rsm domain specification
#
#
# china_8187_30km_merc
#
RPROJ=0.
RTRUTH=25.
RORIENT=50.
RDELX=20000.
RDELY=20000.
RCENLAT=25.
RCENLON=50.
RLFTGRD=251.
RBTMGRD=250.
#
# model parameters
#
#ENDHOUR=504
ENDHOUR=240          # Required prediction time
DELTAT_REG=120
NESTING_HOUR=6      # Time interval of the forecast
SWHR_REG=1
LWHR_REG=1
INTSFCX=24
INCHOUR=$ENDHOUR
INTPOST=3
INTPGB=$INTPOST
INTRESTART=6
#
# ----- change below for expert only -----
#
FCST_RESTART=yes
```



```
#
DELETE_SIGGLOB=yes
#
if [ $INCHOUR -lt $INTSFCX ] ; then
    echo "INCHOUR < INTSFCX"
    echo "INCHOUR set to INTSFCX to make sure sfc is called."
fi

#
# You may modify EXECDIR to /tmp directory and keep this
# scripts on your permanent disk.
#
EXECDIR=/data/MODEL/RSM/RSM/rsm_runs/$RUNNAME
#
SST_ANL_T0=
SST_ANL=
SNO_ANL_T0=
SNO_ANL=
ICE_ANL_T0=
ICE_ANL=
#
# ----- do not change below -----
#
# ready-made initial condition and base field
#
FCST_NPES=8
#
GLOBAL_SIG_INITIAL=/data/MODEL/GSM/GSM2/GSM/gsm_runs/g_000/sig.ft00
GLOBAL_SFC_INITIAL=/data/MODEL/GSM/GSM2/GSM/gsm_runs/g_000/sfc.ft00
INITIAL_SFC_FILE_TYPE=noal
BASE_SIG=/data/MODEL/GSM/GSM2/GSM/gsm_runs/g_000/sig.ft\${FH}
#
YYYYS=2013
MMS=06
DDS=06
HHS=00
#
# coarse rsm domain specification
#
CPROJ=0.0
CTRUTH=0.0
CORIENT=0.0
CDELX=0.0
CDELY=0.0
CCENLAT=0.0
CCENLON=0.0
CLFTGRD=0.0
CBTMGRD=0.0
#
mkdir -p $EXECDIR 2>/dev/null
scrnam=`echo $0 | sed 's?./??g'`
cp $0 $EXECDIR/0LOG.$scrnam
ls -l /data/MODEL/RSM/RSM/rsm/bin >$EXECDIR/0LOG.bindates
cd $EXECDIR
#
### prepare era40 forcing ###
#
if [ $USEERA -eq 1 ] ; then
    ERADATA=/data/MODEL/RSM/RSM/libs/con/era40_19900309.grib
    if [ ! -r $ERADATA ] ; then
        echo No $ERADATA Abort
        exit 8
    fi
fi
```



```
fi
#
TIME=0
while [ $TIME -le $ENDHOUR ] ; do
  if [ $TIME -lt 10 ] ; then
    TIME=0$TIME
  fi
  /data/MODEL/RSM/RSM/libs/etc/incdte \
  $YYYYS $MMS $DDS $HHS $TIME >dteout$$ || exit 8
  read YYYYF MMF DDF HHF <dteout$$ ; rm dteout$$
#
  if [ ! -r ./era40_$YYYYF$MMF$DDF$HHF.p2sig ] ; then
    /data/MODEL/RSM/RSM/rsm_runs/runscr/p2sig_era
$ERADATA ./era40_$YYYYF$MMF$DDF$HHF.p2sig $YYYYF:$MMF:$DDF:$HHF:0 || exit 8
  fi
  if [ ! -r era40_ft${TIME}.p2sig.asc ] ; then
    /data/MODEL/RSM/RSM/libs/etc/scnvrt gsm $INITIAL_SFC_FILE_TYPE \
    62:192:94:28 \
    $YYYYS:$MMS:$DDS:$HHS:$TIME \
    bin:asc \
    era40_$YYYYF$MMF$DDF$HHF.p2sig:dummy \
    era40_ft${TIME}.p2sig.asc:dummy1 || exit 8
  fi
  TIME=`expr ${TIME} + ${NESTING_HOUR}`
done
# redefine initial and base
GLOBAL_SIG_INITIAL=era40_ft00.p2sig.asc
BASE_SIG=era40_ft\${FH}.p2sig.asc
fi
#
rm ERROR.out 2>/dev/null
echo "`date` $0: started" >>ERROR.out
#
# create namelist regional domain data
#
cat >rsm.parm <<EOF
&NAMLOC
RPROJ = $RPROJ,
RTRUTH = $RTRUTH,
RORIENT = $RORIENT,
RDELX = $RDELX,
RDELY = $RDELY,
RCENLAT = $RCENLAT,
RCENLON = $RCENLON,
RLFTGRD = $RLFTGRD,
RBTMGRD = $RBTMGRD,
CPROJ = $CPROJ,
CTRUTH = $CTRUTH,
CORIENT = $CORIENT,
CDELX = $CDELX,
CDELY = $CDELY,
CCENLAT = $CCENLAT,
CCENLON = $CCENLON,
CLFTGRD = $CLFTGRD,
CBTMGRD = $CBTMGRD,
/
EOF
#
# automatic restart
#
if [ -s r_sigit -a -s r_sigitdt -a -s r_sfci -a $FCST_RESTART = yes ] ; then
#
```




```
# restart
#
ft=`ls -lt r_sigit.ft* | head -1 | awk '{print $9}' | sed 's/.*\.ft//g'`
cp r_sigit.ft$ft r_sigit || exit 8
cp r_sigitdt.ft$ft r_sigitdt || exit 8
cp r_sfc.ft$ft r_sfci || exit 8
h=`/data/MODEL/RSM/RSM/libs/etc/fhour r_sigit`
echo fhour in the r_sigit file = $h
else
#
# cold start
#
# Initial condition. Convert to native format
#
INPUT_RESOLUTION=t126k28
export INPUT_RESOLUTION
#
# generate rsm initial condition from global files
#
if [ ! -s r_sigit.ft00 -o ! -s r_sfc.ft00 ] ; then
#
# convert input global files to binary
#
/data/MODEL/RSM/RSM/libs/etc/scnvrt gsm $INITIAL_SFC_FILE_TYPE \
126:360:180:28 \
$YYYYS:-1:-1:-1:-1 \
bin:bin \
$GLOBAL_SIG_INITIAL:$GLOBAL_SFC_INITIAL \
sig.ft00:sfc.ft00 || exit 8
#
# horizontal transform/interpolation
#
/data/MODEL/RSM/RSM/rsm_runs/runscr/r_inpg $INITIAL_SFC_FILE_TYPE \
sig.ft00:sfc.ft00 \
r_sigit.ft00:r_sfc.ft00 || exit 8
fi
#
# renew r_sfc files using grib data input
#
SST_GRB=`eval echo $$SST_ANL`
SNO_GRB=`eval echo $$SNO_ANL`
ICE_GRB=`eval echo $$ICE_ANL`
export SST_GRB SNO_GRB ICE_GRB
/data/MODEL/RSM/RSM/rsm_runs/runscr/rsfc0          r_sfc.ft00          r_sfci
$INITIAL_SFC_FILE_TYPE || exit 8
cp r_sfci r_sfc.ft00
cp r_sigit.ft00 r_sigit
cp r_sigit r_sigitdt
#
h=0
fi
#
# forecast loop
#
while [ $h -lt $ENDHOUR ];do
h=`expr $h + 0`
hx=`expr $h + $INCHOUR`
if [ $hx -lt 10 ]; then hx=0$hx; fi
#
# link base field to properly named file
#
fhend=`expr $INCHOUR + $NESTING_HOUR`
```



```

modf=`expr $fhend \/ $NESTING_HOUR`
if [ `expr $modf \* $NESTING_HOUR` -ne $fhend ] ; then
    fhend=`expr \(` $modf + 1 \) \* $NESTING_HOUR`
fi
fh=0
while [ $fh -le $fhend ] ; do
    FH=`expr $fh + $h`
    FH=`expr \(` $FH \/ $NESTING_HOUR \) \* $NESTING_HOUR`
    if [ $FH -gt $ENDHOUR ] ; then
        break
    fi
    if [ $FH -lt 10 ] ; then FH=0$FH; fi
    if [ ! -s base_sig.ft$FH ] ; then
        fname=`eval echo $BASE_SIG`
        /data/MODEL/RSM/RSM/libs/etc/scnvrt gsm $INITIAL_SFC_FILE_TYPE
        \
            126:360:180:28 \
            $YYYYS:-1:-1:-1:-1 \
            bin:bin \
            $fname:dummy \
            base_sig.ft$FH:dumy1 || exit 8
        /data/MODEL/RSM/RSM/rsm_runs/runscr/basefnam
base_sig.ft$FH
        fi
        fh=`expr $fh + $NESTING_HOUR`
    done
    #
    # generate forecast namelist data
    #
    SST_GRB=`eval echo $SST_ANL`
    SNO_GRB=`eval echo $SNO_ANL`
    ICE_GRB=`eval echo $ICE_ANL`
    export SST_GRB SNO_GRB ICE_GRB
    /data/MODEL/RSM/RSM/rsm_runs/runscr/r_fcstparm $INCHOUR $ENDHOUR $DELTAT_REG
    \
        $NESTING_HOUR $INTPOST $INTPGB
$INTSFCX $INTRESTART || exit 8
    #
    # Execute forecast
    #
    export MP_SET NUMTHREADS
    /data/MODEL/RSM/RSM/rsm_runs/runscr/r_fcst $h $hx $INCHOUR $INTPOST || exit
8
    #
    # copy files for next forecast segment
    #
    cp r_sigit.ft$h $hx r_sigit || exit 8
    mv r_sigitdt.ft$h $hx r_sigitdt || exit 8
cp r_sfc.ft$h $hx r_sfci || exit 8
    #
    # post processing
    #
    if [ "" = DEFINED ] ; then
        /data/MODEL/RSM/RSM/rsm_runs/runscr/r_post $h $hx $INTPOST || exit 8
    elif [ " " = DEFINED ] ; then
        /data/MODEL/RSM/RSM/libs/etc/catpgb
    fi
    #
    h=$hx
done
if [ linux = mac -a thread = mpi ] ; then
    lamclean

```



```
fi lamhalt
```

2. Rsm Execute

```
./rsm
```

3. After execution, check the created file

RSM result folder is /data/MODEL/RSM/RSM/rsm_runs/r_000



WRF MODEL Manual

Execution of the entire program

filepath : /data/MODEL/WRF/WPS/run_wrf.php

you can execute by "php run_wrf.php" on /data/MODEL/WRF/WPS/ like below

```
cd /data/MODEL/WRF/WPS/  
php run_wrf.php
```

Namelist.wps

Real filepath : /data/MODEL/WRF/WPS/namelist.wps → Real operating namelist

Substitute filepath : /data/MODEL/WRF/WPS/namelist.wps_tmpl → namelist substitute file (Edit)

You can change namelist.wps by vim editor below command

```
cd /data/MODEL/WRF/WPS/  
vi namelist.wps
```

* Must know variables *

e_we = 200 → East – West GridPoint 200

e_sn = 180 → South – North GridPoint 180

dx = .5 → Distance of GridPoints in xDirection(East – West) (50km)

dy = .5 → Distance of GridPoints yqDirection(South – North) (50km)

ref_lat = 00.00 → Latitude of the CenterPoint of the grid

ref_lon = 25.00 → Longitude of the CenterPoint of the grid

**! The number of grid points and the distance of the grid points are more than common sense or more,
It happens to show the Error !**

Run Geogrid

filepath : /data/MODEL/WRF/WPS/geogrid.exe → run_wrf.php automatic operation

```
cd /data/MODEL/WRF/WPS/
```



`./geogrid.exe`

Link pgb.* flx.* File

Be linked filepath : `/data/MODEL/WRF/WPS/link_grib.csh`

Execute Argument : `/data/MODEL/GSM/GSM2/GSM/gsm_runs/g_000/flx.*` (and `pgb.*`)

Linking for converting flx file and pgb file(, made with gsm) to wrf.

You can execute after GSM running.

```
cd /data/MODEL/WRF/WPS/
```

```
./link_grib.csh /data/MODEL/GSM/GSM2/GSM/gsm_runs/g_000/pgb.*  
/data/MODEL/GSM/GSM2/GSM/gsm_runs/g_000/flx.*
```

Run Ungrib

filepath : `/data/MODEL/WRF/WPS/ungrib.exe` → `run_wrf.php` automatic operation

```
cd /data/MODEL/WRF/WPS/
```

```
./ungrib.exe
```

Run Metgrid

filepath : `/data/MODEL/WRF/WPS/metgrid.exe` → `run_wrf.php` automatic operation

```
cd /data/MODEL/WRF/WPS/
```

```
./metgrid.exe
```

Run Link met_nmm file

Link path : `/data/MODEL/WRF/WRFV3/run/`

Execute path : `ln -s /data/MODEL/WRF/WPS/met_nmm* ./`

Link the output file to run the Metgrid.exe in the folder WRFV3/run

```
cd /data/MODEL/WRF/WRFV3/run/
```

```
ln -s /data/MODEL/WRF/WPS/met_nmm* ./
```

Namelist.input

Real filepath : `/data/MODEL/WRF/WRFV3/run/namelist.input`

Substitute filepath : `/data/MODEL/WRF/WRFV3/run/namelist.input_tmpl`

You can edit by vim



```
cd /data/MODEL/WRF/WRFV3/run/  
vi namelist.input
```

* Must know variables *

```
e_we = 180    → Grid number of east and west  
e_sn = 200    → Grid number of south and north  
dx = .5       → Distance of xDirection(East-West) (50km)  
dy = .5       → Distance of yDirection(South-North) (50km)
```

**! The number of grid points and the distance of the grid points are more than common sense or more,
It happens to show the Error !**

Run real_nmm.exe

```
filepath : /data/MODEL/WRF/WRFV3/run/real_nmm.exe    → run_wrf.php automatic operation  
cd /data/MODEL/WRF/WRFV3/run/  
./real_nmm.exe
```

Run wrf.exe

```
filepath : /data/MODEL/WRF/WRFV3/run/wrf.exe        → run_wrf.php automatic operation
```

```
cd /data/MODEL/WRF/WRFV3/run/  
./wrf.exe
```

Check Your Result

```
cd /data/MODEL/WRF/WRFV3/run
```



Booting

If server was shut down, follow this script on master node by root account.

```
cd /app/common/bin
```

First of all, execute bottom script.

```
./all.sh "/etc/init.d/nfs restart;/etc/init.d/nfslock restart;"
```

Second, execute bottom script.

```
./nomaster.sh "umount /home; mount -t nfs 192.168.1.1:/home /home;umount /app;mount -t nfs  
192.168.1.1:/app /app;/etc/init.d/ypbind restart"
```

Third, execute bottom script.

```
./nodisknode.sh "umount /data;mount -t nfs 192.168.1.31:/data /data"
```

Last, execute bottom script.

```
mount -t nfs 197.254.13.227:/data /webdata
```



PHP Installation

For running the model, the php should be installed.

In this model, the installation is simple why the program is not the extension of database but the original php program.

```
[model@s3cs01 rsm_runs]$ yum install php
```

* Make sure that PHP is installed.

```
[model@s3cs01 rsm_runs]$ which php  
/usr/bin/php
```