



CCSM3 on Tianhe2

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环境变量设置 for CESM1/CCSM3

```
cd /HOME/pku_junyang_*/
```

```
ssh ln0, ln1, ln2, ln3  #(choose a login node)
```

```
cat .bashrc # (very important)
```

```
-----  
# From Cheng Jingkun for CESM  
source /WORK/app/toolshs/cnmodule.sh  
source /WORK/app/osenv/ln1/set-icc13.sh  
module load intel-compilers/13.0.0  
module load MPI/Intel/MPICH/3.1-icc13-dyn  
module load netcdf/4.3.2/02-CF-13  
module load cmake/3.0.2  
module load cesm/1.2.2
```

环境变量设置 for NETCDF, ...

```
# From Jun Yang for CCSM3
```

```
export NetCDF="/WORK/app/netcdf/4.3.2/02-CF-13"
```

```
export NETCDF_PATH="/WORK/app/netcdf/4.3.2/02-CF-13"
```

```
export NETCDF="/WORK/app/netcdf/4.3.2/02-CF-13"
```

```
export INC_NETCDF="$NETCDF/include"
```

```
export LIB_NETCDF="$NETCDF/lib"
```

```
export NETCDF_MOD="$NETCDF/include"
```

```
export PATH="$PATH:$NETCDF/bin"
```

```
export LD_LIBRARY_PATH="$NETCDF/lib:$LD_LIBRARY_PATH"
```

```
## From Jun Yang for CCSM3
```

```
module load LAPACK/3.5.0-icc
```

环境变量设置 for NCL/NCO, ...

```
## From Jun Yang
```

```
module load NCL/6.3.0
```

```
module load nco/4.6.0-icc13 # CARE: Cannot be nco/  
4.6.0, which uses intel14
```

```
module load ncview/2.1.5
```

CCSM3

/WORK/app/share/ccsm3

1. Source code: `ccsm3_0_1_beta31_copy.tar`

2. Input data in: `inputdata_ccsm3`

`Buildnml_Prestage_aquaplanet.tar`

`inputdata.tar`

`inputdata_user_LY630.tar.gz`

`inputdata_user_aquaplanet.tar`

`near_modern.tar`

3. 环境变量: `bashrc`

移植模式的关键文件

/HOME/pku_junyang_1/ccsm3_0_1_beta31/scripts/ccsm_utils/Machines/

batch.linux.Tianhe2

env.linux.Tianhe2

run.linux.Tianhe2

batch.linux.Tianhe2

set mach = Tianhe2

@ cpu_per_node = 24

set qname = yhq

set tlimit = "4800:00:00"

env.linux.Tianhe2

```
set ntasks_atm = 48; set nthrds_atm = 1
```

```
set ntasks_Ind = 6; set nthrds_Ind = 1
```

```
set ntasks_ice = 5; set nthrds_ice = 1
```

```
set ntasks_ocn = 8; set nthrds_ocn = 1
```

```
set ntasks_cpl = 5; set nthrds_cpl = 1
```

```
setenv LIB_NETCDF /WORK/app/netcdf/4.3.2/02-CF-13/lib
```

```
setenv INC_NETCDF /WORK/app/netcdf/4.3.2/02-CF-13/include
```

```
setenv NETCDF_MOD /WORK/app/netcdf/4.3.2/02-CF-13/include
```

```
setenv INC_MPI /usr/local/mpi3-icc13-dynamic/include
```

```
setenv SCRATCH /WORK/pku_junyang_1/ccsm3_run
```


env.linux.Tianhe2

```
setenv EXERROOT          $SCRATCH/exerun/ocean_rotation/$CASE
setenv RUNROOT           $EXERROOT
setenv GMAKE_J           4

setenv DIN_LOC_ROOT     /HOME/pku_junyang_1/inputdata_ccsm3/
inputdata
setenv DIN_LOC_ROOT_USER /HOME/pku_junyang_1/
inputdata_ccsm3/inputdata_user_aquaplanet
setenv DIN_LOC_MSROOT   /HOME/pku_junyang_1/
inputdata_ccsm3/inputdata
```

env.linux.Tianhe2

setenv DOUT_S TRUE

setenv DOUT_S_ROOT /WORK/pku_junyang_1/ccsm3_run/archive/\$CASE

setenv ARCH LINUX

setenv OS Linux

setenv SITE ATMOSP

setenv BATCH yhbatch

An Example

```
ssh -i pku_junyang_jyan_new.id pku_junyang_jyan@172.16.22.11
```

```
cp /WORK/app/share/ccsm3/ccsm3_0_1_beta31_copy.tar ./
```

```
cp -rf /WORK/app/share/ccsm3/inputdata_ccsm3/ ./
```

```
tar -xvf ccsm3_0_1_beta31_copy.tar
```

```
cd inputdata_ccsm3
```

```
tar -xvf inputdata.tar
```

```
tar -xvf Buildnml_Prestage_aquaplanet.tar
```

```
cd /HOME/pku_junyang_jyan/ccsm3_0_1_beta31/scripts/
```

```
cd ccsm_utils/Machines
```

An Example

vi env.linux.Tianhe2

```
setenv SCRATCH /WORK/pku_junyang_jyan/ccsm3_run
```

```
setenv DIN_LOC_ROOT /HOME/pku_junyang_jyan/inputdata_ccsm3/inputdata
```

```
setenv DIN_LOC_ROOT_USER /HOME/pku_junyang_jyan/inputdata_ccsm3/  
inputdata_user_aquaplanet
```

```
setenv DIN_LOC_MSROOT /HOME/pku_junyang_jyan/inputdata_ccsm3/  
inputdata
```

```
setenv DOUT_S_ROOT /WORK/pku_junyang_jyan/ccsm3_run/archive/$CASE
```

create_newcase and build

```
cd /HOME/pku_junyang_jyan/ccsm3_0_1_beta31/scripts
```

```
./create_newcase -mach Tianhe2 -res T31_gx3v5 -compset B -case /  
WORK/pku_junyang_jyan/ccsm3_run/exerun/a1test
```

```
cd /WORK/pku_junyang_jyan/ccsm3_run/exerun/a1test/
```

```
./configure -mach Tianhe2
```

```
./a1test.Tianhe2.build #(it requires about 20 mins)
```

```
yhbatch -N 3 -n 72 -p work ./a1test.Tianhe2.run (for CESM1)
```

```
yhbatch -N 3 -c 24 -p work ./a1test.Tianhe2.run (for CCSM3)
```

Continue run

```
vi env_conf
```

```
Change the value of: setenv STOP_N 1200  
setenv RESUBMIT 4
```

```
./a1test.Tianhe2.build
```

```
yhbatch -N 3 -c 24 -p work ./a1test.Tianhe2.run
```

常见问题

1. 有时间模式会陷入死循环，建议每天查看一次运行情况。及时yhcancel掉死循环的runs, 在\$case目录里面直接**build**一次，然后提交。
2. 不同节点间的通信有时候会使模式自动终止。恢复：在\$case目录里面直接**build**一次，然后提交。
3. 模式安装的最常见问题是环境变量和路径。需要耐心的检查。

常见问题

5. 查看模式运行出问题的地方：1) 当前case下的slurm file, such as slurm-1400656.out; 2) 模式每个component下面的logout文件，如cpl/cpl.log.170626-084041, atm/atm.log.170626-084041, lnd/lnd.log.170626-084041, ice/ice.log.170626-084041, ocn/ocn.log.170626-084041
模式运行的错误一般显示在最后几十行里面

常见问题

6. CFL条件：步长越小，模式越稳定，运行时间也越长，费用越高。当模式blowup的时间，可以采用适当减少模式计算步长的方法。在namelists里面改：cam.buildnml_prestage.csh里面的dtime（单位秒）；clm.buildnml_prestage.csh里面的dtime；pop.buildnml_prestage.csh里面的#DT_COUNT#12#（单位每天多少次）。

注意：大气和陆地的时间步长必须相同；海洋和海冰的时间步长必须相同。

查看作业情况

yhq, (or yhq -all)

PD: pending,

R: running,

CD: completed

F: failed

CA: cancelled

TO: timeout

NF: node-fail

S: suspended

yhi: 查看节点情况

CCSM3阅读资料

1. NCAR CCSM3 官网，google。
2. 早些年NCAR有CCSM3的专门培训网站，可以下载到一些很有用的PPTs。