

# Deeper dive into running CESM: xml files, namelist and code modifications

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Climate and Global Dynamics Division

# Outline

- review the “CESM flow” : The 4 CESM commands
- how to make xml files changes (ex: change run length)
- how to make namelist changes (ex: change output frequency)
- how to make code modifications (ex: change a parameter)

# Review: The 4 commands to run CESM

Set of commands to build and run the model on a supported machine: "cheyenne"

```
# go into scripts directory into the source code download
cd /glade/p/cgd/asp2017/CESM/cesm1_2_2_1/scripts

# (1) create a new case in the directory "cases" in your home directory
./create_newcase -case ~/cases/case01 -res f19_f19 -compset FC5 -mach cheyenne

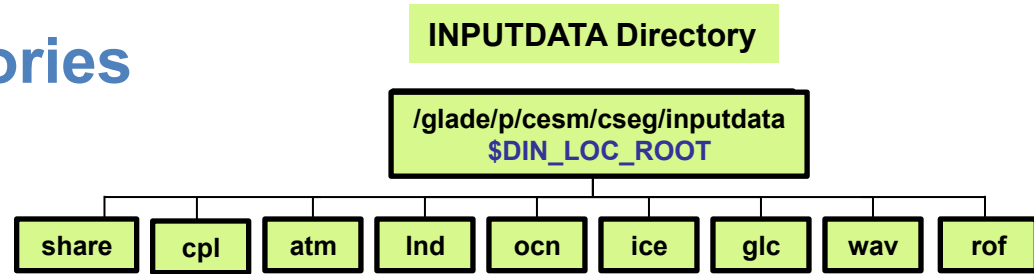
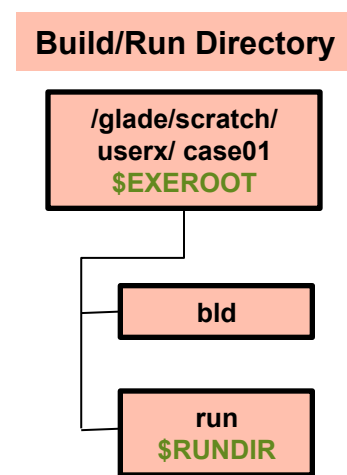
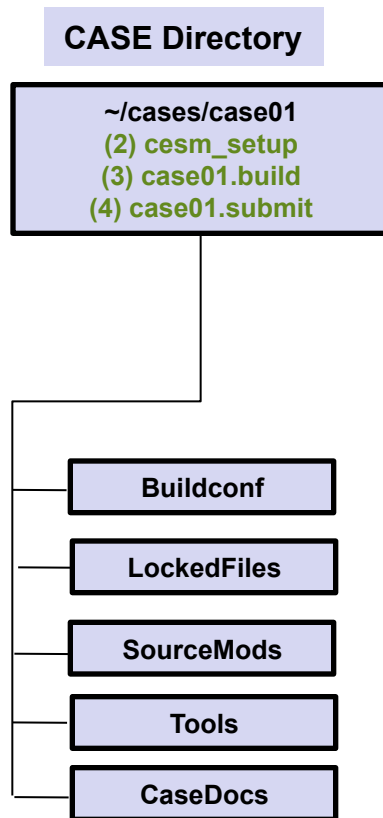
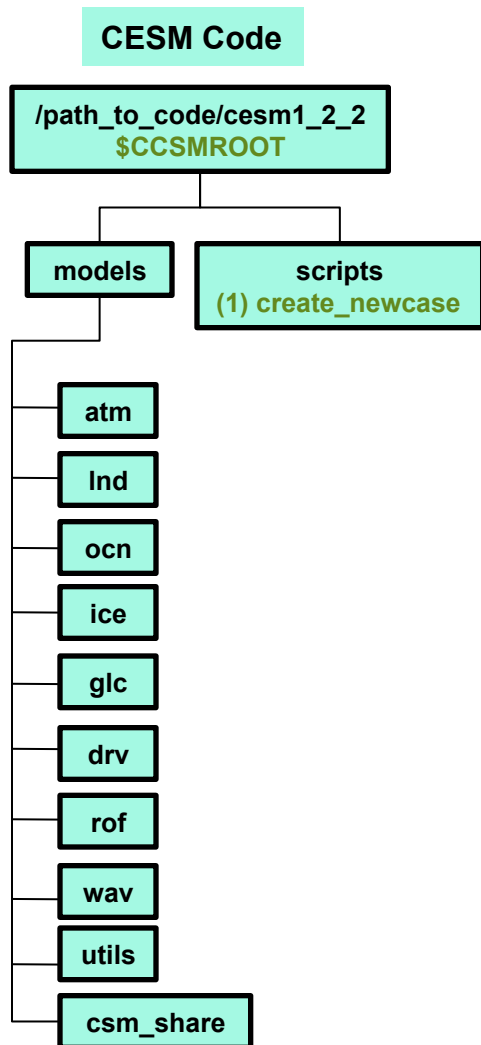
# go into the case you just created in the last step
cd ~/cases/case01/

# (2) invoke cesm_setup
./cesm_setup

# (3) build the executable
go_to_compute_node; ./case01.build; exit

# (4) submit your run to the batch queue
./case01.submit
```

# Overview of CESM directories + 4 CESM commands



```

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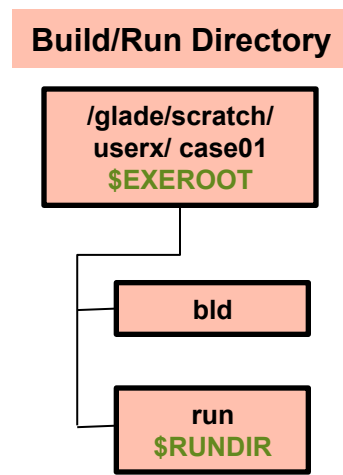
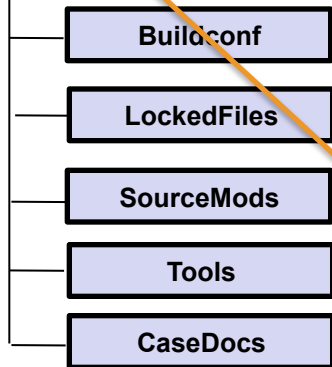
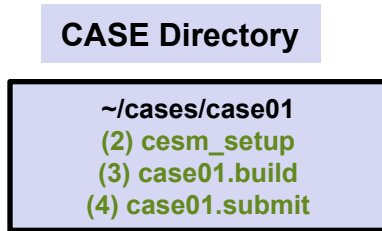
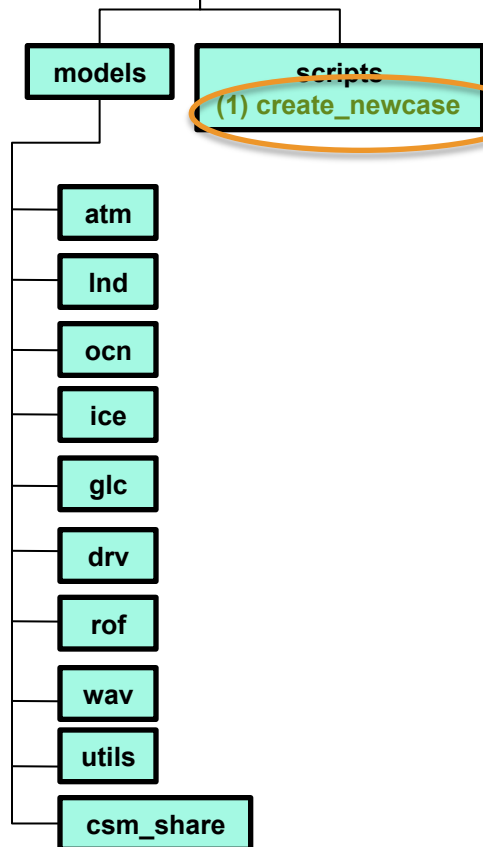
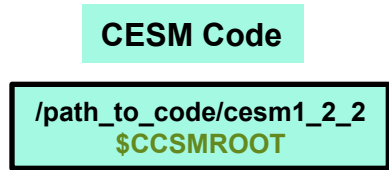
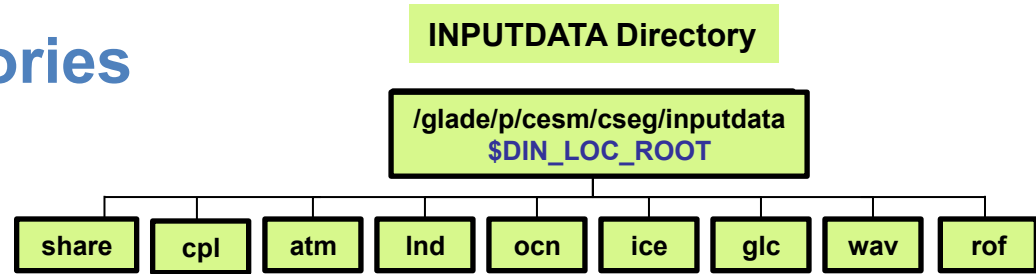
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# Overview of CESM directories + 4 CESM commands



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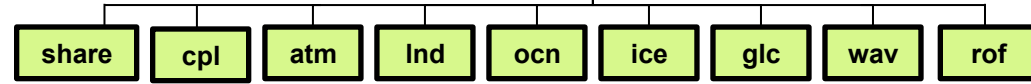
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```

# Overview of CESM directories + 4 CESM commands

## INPUTDATA Directory

/glade/p/cesm/cseg/inputdata  
\$DIN\_LOC\_ROOT



## CESM Code

/path\_to\_code/cesm1\_2\_2  
\$CCSMROOT

models

scripts

(1) create\_newcase

atm

lnd

ocn

ice

glc

drv

rof

wav

utils

csm\_share

## CASE Directory

~/cases/case01  
(2) cesm\_setup  
(3) case01.build  
(4) case01.submit

Buildconf

LockedFiles

SourceMods

Tools

CaseDocs

## Build/Run Directory

/glade/scratch/  
userx/ case01  
\$EXERROOT

bld

run

\$RUNDIR

```

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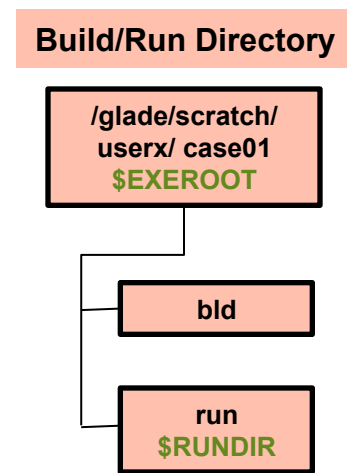
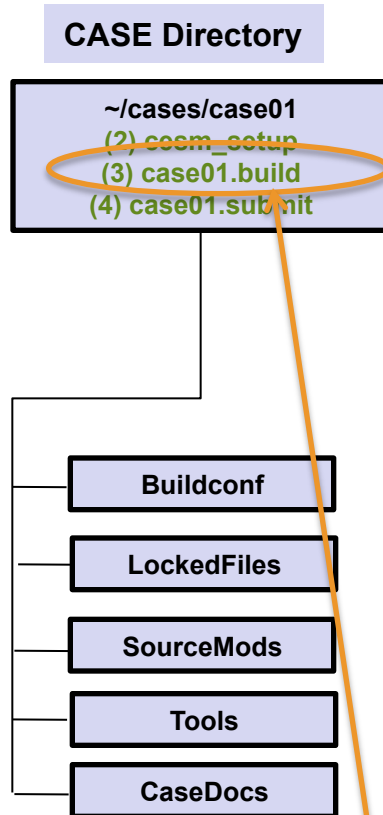
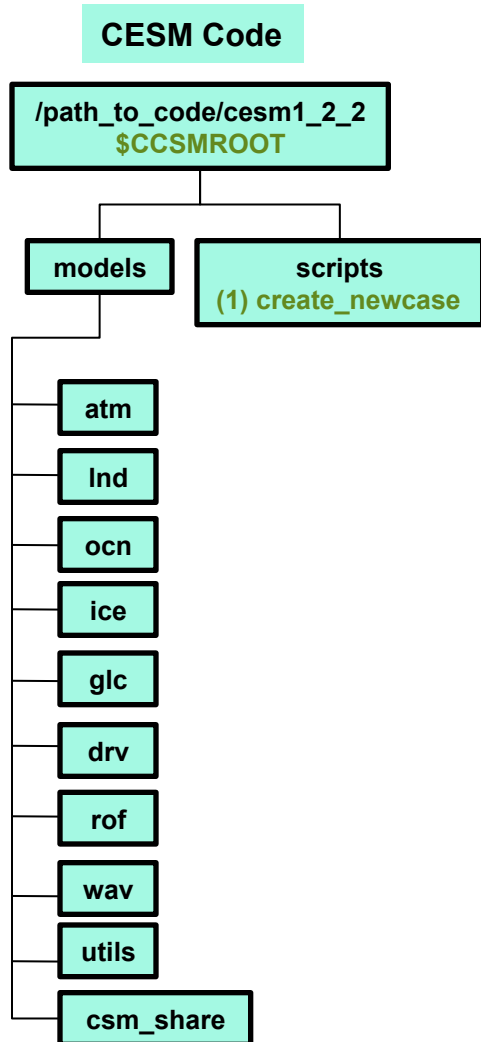
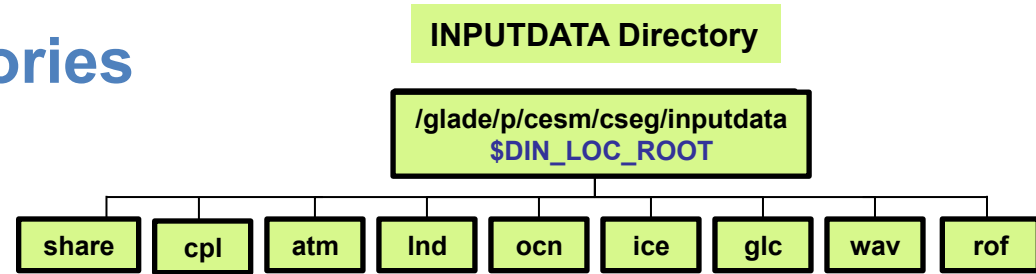
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# Overview of CESM directories + 4 CESM commands



```

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-mach cheyenne

# go into the case you just created in the last step
cd ~/cases/case01/

# (2) invoke cesm_setup
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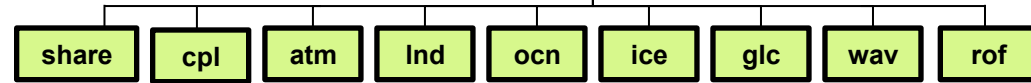
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# (4) submit your run to the batch queue
./case01.submit
  
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# Overview of CESM directories + 4 CESM commands

## INPUTDATA Directory

/glade/p/cesm/cseg/inputdata  
\$DIN\_LOC\_ROOT



## CESM Code

/path\_to\_code/cesm1\_2\_2  
\$CCSMROOT

models

scripts

(1) create\_newcase

atm

lnd

ocn

ice

glc

drv

rof

wav

utils

csm\_share

## CASE Directory

~/cases/case01  
(2) cesm\_setup  
(3) case01\_build  
(4) case01.submit

Buildconf

LockedFiles

SourceMods

Tools

CaseDocs

## Build/Run Directory

/glade/scratch/  
userx/ case01  
\$EXERROOT

bld

run

\$RUNDIR

```

# go into scripts directory into the source code download
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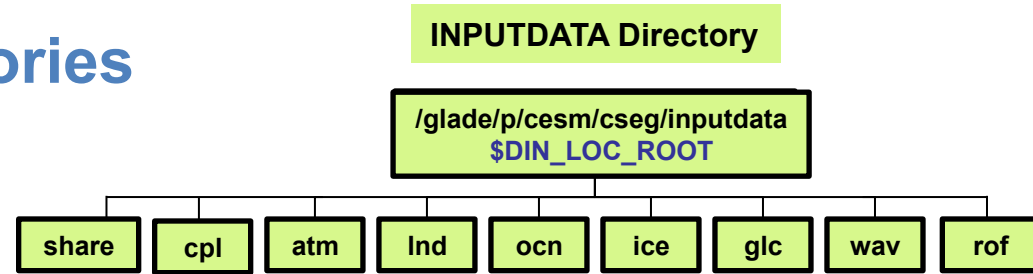
# (4) submit your run to the batch queue
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```



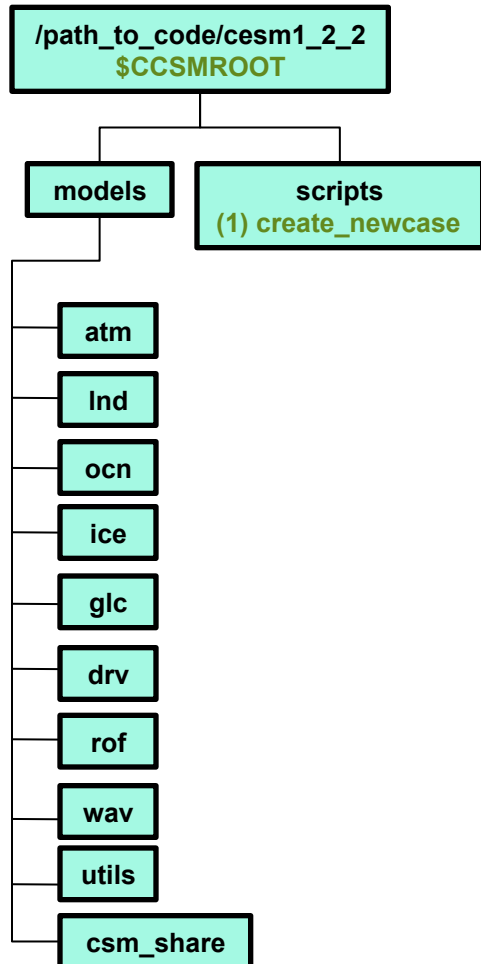
# Outline

- review the “CESM flow” : The 4 CESM commands
- **how to make xml files changes (ex: change run length)**
- **how to make namelist changes (ex: change output frequency)**
- **how to make code modifications (ex: change a parameter)**

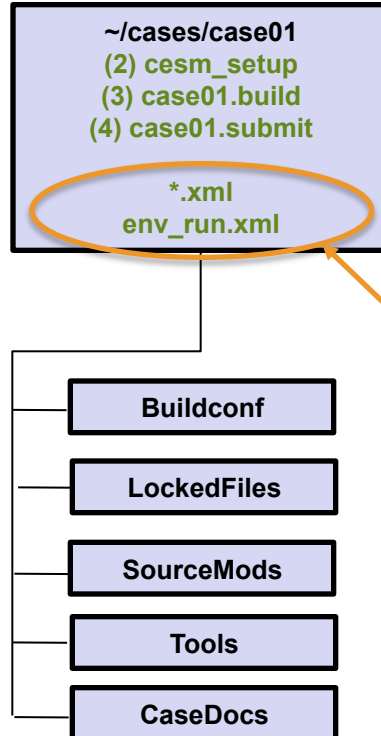
# Overview of CESM directories + 4 CESM commands



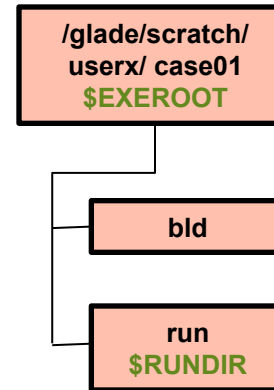
## CESM Code



## CASE Directory



## Build/Run Directory



# go into scripts directory into the source code download  
`cd /glade/p/cgd/asp2017/CESM/cesm1_2_2_1/scripts`

# (1) create a new case in the directory "cases" in your home directory  
`./create_newcase -case ~/cases/case01 -res f19_f19 -compset FC5 -mach cheyenne`  
**This is when xml files are created**

# go into the case you just created in the last step  
`cd ~/cases/case01/`

# (2) invoke cesm\_setup  
`./cesm_setup`

# (3) build the executable  
`go_to_compute_node; ./case01.build; exit`

# (4) submit your run to the batch queue  
`./case01.submit`

# env\_run.xml

- **env\_run.xml**

This is the xml file the user interacts the most with

Sets run time information (such as length of run, frequency of restarts, ...)

Can be modified anytime

- **Changing run length**

The run length can be set with the variables STOP\_N and STOP\_OPTION

STOP\_OPTION = nstep, nhours, ndays, nmonths, nyears

STOP\_N = integer

```
<!--"sets the run length in conjunction with STOP_N and STOP_DATE, valid values: none,never,nst  
eps,nstep,nseconds,nsecond,nminutes,nminute,nhours,nhour,ndays,nday,nmonths,nmonth,nyears,nyea  
r,date,ifdays0,end (char) " -->  
<entry id="STOP_OPTION" value="ndays" />  
  
<!--"sets the run length in conjunction with STOP_OPTION and STOP_DATE (integer) " -->  
<entry id="STOP_N" value="5" />
```

By default, CESM will run for 5 days

- **Modify a xml variable**

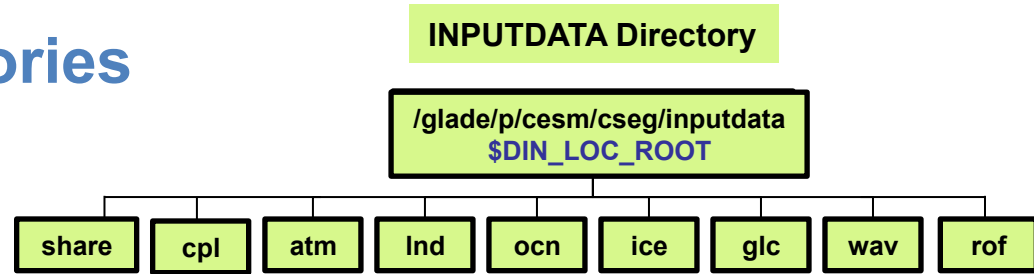
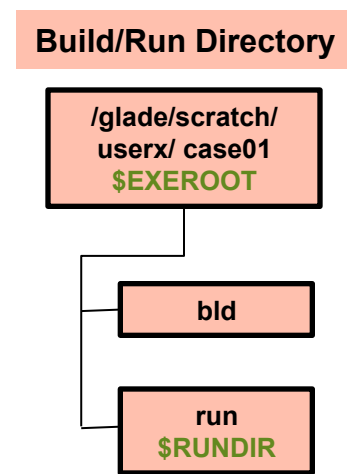
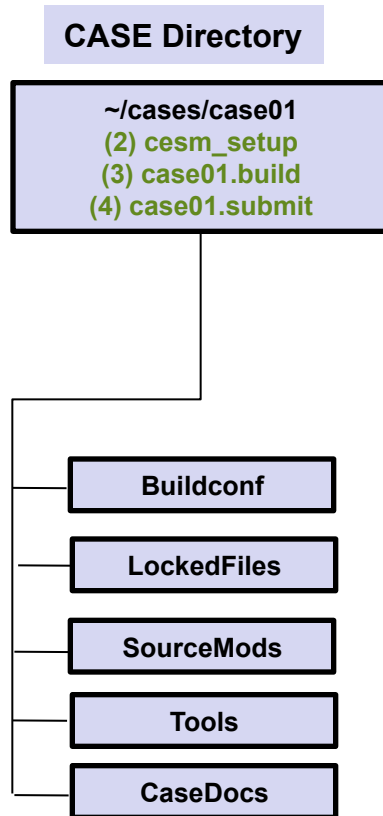
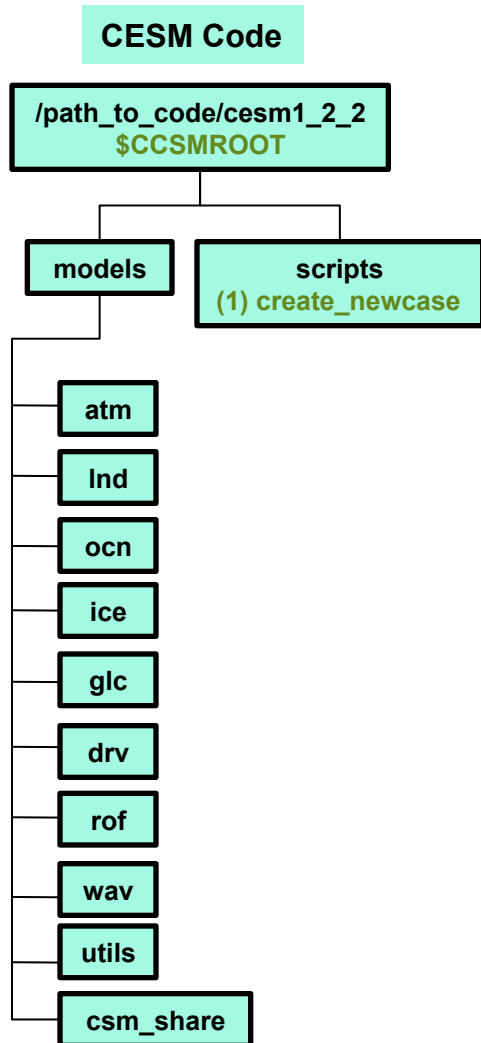
Use the command **xmlchange**

Example: **xmlchange STOP\_N=20**

# Outline

- review the “CESM flow” : The 4 CESM commands
- how to make xml files changes (ex: change run length)
- **how to make namelist changes (ex: change output frequency)**
- how to make code modifications (ex: change a parameter)

# Overview of CESM directories + 4 CESM commands



```

# go into scripts directory into the source code download
cd /glade/p/cgd/asp2017/CESM/cesm1_2_2_1/scripts

# (1) create a new case in the directory "cases" in your home directory
./create_newcase -case ~/cases/case01 -res f19_f19 -compset FC5
-mach cheyenne

# go into the case you just created in the last step
cd ~/cases/case01/

# (2) invoke cesm_setup
./cesm_setup
← This is when you modify the namelists

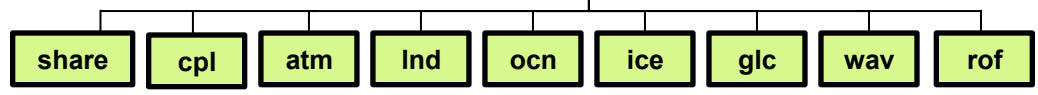
# (3) build the executable
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./case01.submit
    
```

# Overview of CESM directories + namelist files

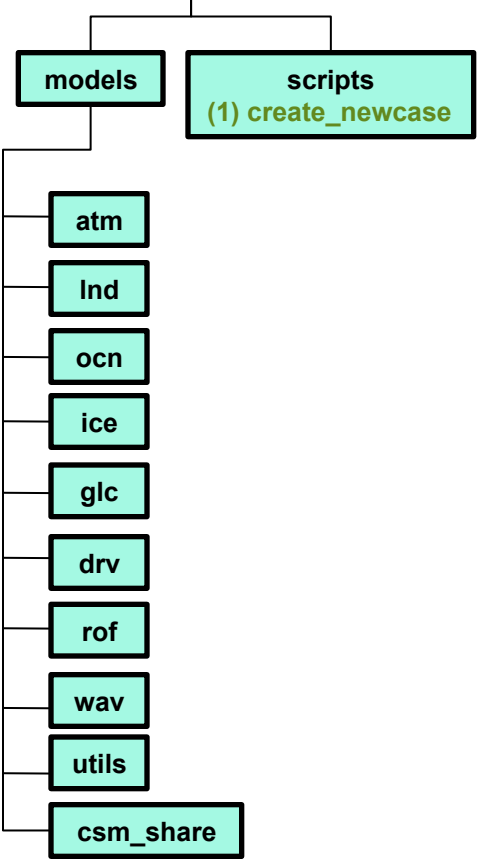
## INPUTDATA Directory

```
/glade/p/cesm/cseg/inputdata
$DIN_LOC_ROOT
```



## CESM Code

```
/path_to_code/cesm1_2_2
$CCSMROOT
```



## CASE Directory

```
~/cases/case01
(2) cesm_setup
(3) case01.build
(4) case01.submit
user_nl_cam
user_nl_ice
user_nl_clm
user_nl_cpl
user_nl_pop2
user_nl_rtm
```

cesm\_setup creates namelist modification files `user_nl_XXX` this is **where you modify your namelists**



## Build/Run Directory

```
/glade/scratch/
user/ case01
$EXERROOT
```

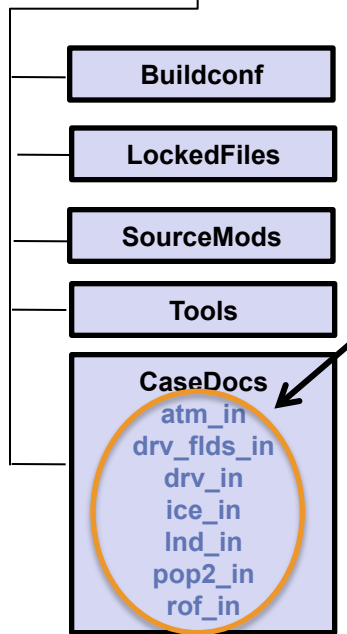
```
bld
```

```
run
$RUNDIR
atm_in
drv_flds_in
drv_in
ice_in
lnd_in
pop2_in
rof_in
```

The build script creates **namelists** in the run directory

This is used by the model at runtime

(should not be edited)



CaseDocs contains **copy of the namelists** for reference only

(should not be edited)



# Where to find info about namelist variables ?

<http://www.cesm.ucar.edu/models/cesm1.2/>

**CESM Models** Home » CESM Models » CESM1.2 Series Public Release

## CESM1.2 SERIES PUBLIC RELEASE

### ABOUT THIS RELEASE SERIES

The CESM1.2 release has numerous new key features among which are the addition of CLM4.5, new science changes to CAM5 running with the CAM-SE dynamical core, and new scripting infrastructure for the generation of component sets, grids and model testing.

### CESM1.2 SERIES RELEASE NOTES

Please read the [CESM1.2 Series Release Notes](#) which includes What's New - Science, What's New - Software, Answer-Changing Features, Supported Machines, and Known Problems. The new scripting infrastructure is described in detail in the [CESM1.2 User's Guide](#).

### SCIENTIFIC VALIDATION

Scientific validation consists of a multi-decadal model run of the given component set at the target resolution, followed by scientific review of the model output diagnostics. All scientifically supported component sets are also accompanied by diagnostic and model output data. Validated CESM1.2 model results and diagnostics will be added to the CESM1.2 website as they become available.

### What version of the model should I use?

For a scientifically supported target component set and resolution, please refer to the [Scientifically Validated Configurations](#) for that target configuration. For component sets and resolutions that are not scientifically validated in any supported release (e.g. cesm1.0.5 and cesm1.1.1), CSEG strongly urges you to use the latest model release (in this case cesm1.2.0).

### DIAGNOSTIC PACKAGES AND NAMING CONVENTIONS

- [Post Processing Utilities](#)
- [Model File Naming Conventions](#)
- [Experiment Case Naming Conventions](#)

### MODEL DOCUMENTATION

- [User's Guide](#)
- [Machines, Resolutions, Component sets](#)
- [Model Component Namelists](#)
- [\\$CASEROOT xml files](#)

### Atmosphere Models

### Land Models

### Sea Ice Models

### CESM PROJECT

The **Community Earth System Model (CESM)** is a fully-coupled, global climate model that provides state-of-the-art computer simulations of the Earth's past, present, and future climate states.

CESM is sponsored by the National Science Foundation (NSF) and the U.S. Department of Energy (DOE). Administration of the CESM is maintained by the Climate and Global Dynamics Division (CGD) at the National Center for Atmospheric Research (NCAR).

### MODEL SOURCE CODE

#### Copyright and Terms of Use

All CESM source code is subject to the following [Copyright Notice and Disclaimer](#).

#### Acquiring the Release Code

The source code for CESM releases is distributed through a public Subversion code repository. This code can be checked out using Subversion client software, such as the command tool svn, or simply [view the latest version with a web browser](#).

A short [registration](#) is required to access the repository. After registering, you will receive an email containing a user name and password that is necessary to gain access to the repository.

Acquisition of the code is more fully described in the most recent version of the [CESM1.2 User's Guide](#).

### REPORTING A PROBLEM

If you have any problems, please first read the User's Guide including the sections on FAQs and Use Cases. Please also refer to the [CESM](#)

Information about namelist variables

# Where to find info about namelists ?

<http://www.cesm.ucar.edu/models/cesm1.2/>

**CESM Models**

**CESM1.2 SERIES PUBLIC RELEASE**

**ABOUT THIS RELEASE SERIES**

The CESM1.2 release has numerous new key features among which science changes to CAM5 running with the CAM-SE dynamical core for the generation of component sets, grids and model testing.

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**SCIENTIFIC VALIDATION**

Scientific validation consists of a multi-decadal model run of the resolution, followed by scientific review of the model output diagnostics. Component sets are also accompanied by diagnostic and model results and diagnostics will be added to the CESM1.2 website.

**What version of the model should I use?**

For a scientifically supported target component set and resolution, see the [Validated Configurations](#) for that target configuration. For configurations not scientifically validated in any supported release (e.g. cesm1.0), we urge you to use the latest model release (in this case cesm1.2.0).

**DIAGNOSTIC PACKAGES AND NAMING CONVENTIONS**

- [Post Processing Utilities](#)
- [Model File Naming Conventions](#)
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**MODEL DOCUMENTATION**

- [CESM1.2 User's Guide](#)
- [Machines, Resolutions, Component sets](#)
- [Model Component Namelists](#)
- [\\$CASEROOT xml files](#)

**CESM Models**

**CESM1.2 MODEL COMPONENT NAMELISTS**

**CREATE\_NEWCASE FILES (SUPPORTED MACHINES, GRIDS, COMPSETS)**

- [Available Machines \(config\\_machines.xml\)](#)
- [Available Grids \(config\\_grid.xml\)](#)
- [Available Component Sets \(config\\_compsets.xml\)](#)

**\$CASEROOT XML FILES**

- [env\\_case.xml](#)
- [env\\_mach\\_pes.xml](#)
- [env\\_build.xml](#)
- [env\\_run.xml](#)

**DRIVER NAMELIST DEFINITIONS**

- [DRV Namelists](#)

**PROGNOSTIC COMPONENTS NAMELIST DEFINITIONS**

- [CAM5.3 Namelists](#)
- [CLM4.0 Namelists](#)
- [CLM4.5 Namelists](#)
- [RTM Namelists](#)
- [CICE Namelists](#)
- [POP2 Namelists](#)
- [CISM Namelists](#)

**DATA COMPONENTS NAMELIST DEFINITIONS**

- [DATM Namelists](#)
- [DLND Namelists](#)
- [DROF Namelists](#)
- [DICE Namelists](#)
- [DOCN Namelists](#)

**Information about namelist variables**

Please also refer to the [CESM](#)



# Where to find info about namelists ?

<http://www.cesm.ucar.edu/models/cesm1.2/>

The image shows a composite of several screenshots from the CESM Models website. On the left, a sidebar contains navigation links: 'CESM Models', 'CESM1.2 SERIES PUBLIC RELEASE', 'ABOUT THIS RELEASE SERIES', 'CESM1.2 SERIES RELEASE NOTES', 'SCIENTIFIC VALIDATION', 'What version of the model should I use?', 'DIAGNOSTIC PACKAGES AND NAMING CONVENTIONS', and 'MODEL DOCUMENTATION'. The main content area is titled 'CESM1.2 MODEL COMPONENTS' and lists various categories: 'CREATE\_NEWCASE FILES (SUPPORTED MACHINES)', '\$CASEROOT XML FILES', 'DRIVER NAMELIST DEFINITIONS', 'PROGNOSTIC COMPONENTS NAMELIST DEFINITIONS', and 'DATA COMPONENTS NAMELIST DEFINITIONS'. An orange arrow points from the 'CAMS5.3 Namelists' link in the 'PROGNOSTIC COMPONENTS' section to a search results page. This search page is titled 'Search or Browse CAM Component Model Namelist Variables' and includes a search box, radio buttons for 'AND' and 'OR', and a 'Show All' button. Below the search options are three tables of results, each with a cyan header: 'CAM: VOC Emissions', 'CAM: Species - Aerosol - Prescribed (CAM3 version)', and 'CAM: Chemistry - CAM-CHEM and WACCM'. Each table has columns for 'Namelist Variable', 'Type', and 'Group'. A callout box with an orange border and black text says 'Search or browse variables names'.

**CESM Models**

**CESM1.2 MODEL COMPONENTS**

**CREATE\_NEWCASE FILES (SUPPORTED MACHINES)**

- Available Machines (config\_machines.xml)
- Available Grids (config\_grid.xml)
- Available Component Sets (config\_comps)

**\$CASEROOT XML FILES**

- env\_case.xml
- env\_mach\_pes.xml
- env\_build.xml
- env\_run.xml

**DRIVER NAMELIST DEFINITIONS**

- DRV Namelists

**PROGNOSTIC COMPONENTS NAMELIST DEFINITIONS**

- CAMS5.3 Namelists**
- CLM4.0 Namelists
- CLM4.5 Namelists
- RTM Namelists
- CICE Namelists
- POP2 Namelists
- CISM Namelists

**DATA COMPONENTS NAMELIST DEFINITIONS**

- DATM Namelists
- DLND Namelists
- DROF Namelists
- DICE Namelists
- DOCN Namelists

**Search or Browse CAM Component Model Namelist Variables**

This page contains the complete list of CAM namelist variables. They are grouped by categories designed to aid browsing. Clicking on the name of a variable will display descriptive information. If search terms are entered in the text box below, the list will be condensed to contain only matched variables.

Search Variable Names Show All Variable Names

AND  OR (separate search terms with spaces)

Also search help text

Show All

**Search or browse variables names**

**CAM: VOC Emissions**

Namelist Variable	Type	Group
▶ megan_factors_file	char*256	megan_emis_nl
▶ megan_mapped_emisfctrs	logical	megan_emis_nl
▶ megan_specifier	char*1024(100)	megan_emis_nl

**CAM: Species - Aerosol - Prescribed (CAM3 version)**

Namelist Variable	Type	Group
▶ bndtvaer	char*256	cam3_aero_data_nl
▶ cam3_aero_data_on	logical	cam3_aero_data_nl

**CAM: Chemistry - CAM-CHEM and WACCM**

Namelist Variable	Type	Group
▶ aer_drydep_list	char*16(1000)	chem_inparm
▶ aer_wetdep_list	char*16(1000)	chem_inparm
▶ aerodep_flx_cycle_yr	integer	aerodep_fix_nl
▶ aerodep_flx_datapath	char*256	aerodep_fix_nl
▶ aerodep_flx_file	char*256	aerodep_fix_nl
▶ aerodep_flx_filelist	char*256	aerodep_fix_nl
▶ aerodep_flx_fixed_tod	integer	aerodep_fix_nl
▶ aerodep_flx_fixed_ynd	integer	aerodep_fix_nl
▶ aerodep_flx_rmfile	logical	aerodep_fix_nl
▶ aerodep_flx_specifier	char*32(22)	aerodep_fix_nl
▶ aerodep_flx_type	char*32	aerodep_fix_nl
▶ aircraft_specifier	char*256(100)	aircraft_emit_nl

# Let's change the output frequency in CAM

By default, CESM outputs **monthly average** history files.

We can change the output frequency with the namelist variable ***nhtfrq***

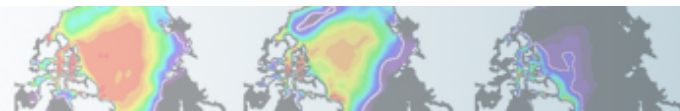
If ***nhtfrq*=0**, the file will be a **monthly** average

If ***nhtfrq*>0**, frequency is input as number of **timesteps**.

If ***nhtfrq*<0**, frequency is input as number of **hours**.

For instance to change the history file from **monthly** average to **daily** average, we set the namelist variable:

***nhtfrq* = -24**



# Search CAM namelist documentation

## Search or Browse CAM Component Model Namelist Variables

This page contains the complete list of CAM namelist variables. They are grouped by categories designed to aid browsing. Clicking on the name of a variable will display descriptive information. If search terms are entered in the text box below, the list will be condensed to contain only matched variables.

- AND  OR (separate search terms with spaces)  
 Also search help text

Found 1 standard names matching query: nhtfrq

Search for nhtfrq

## CAM: History and Initial Conditions Output

Namelist Variable	Type	Group
<p>▼ nhtfrq</p> <p>Array of write frequencies for each history file series. If <code>nhtfrq(1) = 0</code>, the file will be a monthly average. Only the first file series may be a monthly average. If <code>nhtfrq(i) &gt; 0</code>, frequency is specified as number of timesteps. If <code>nhtfrq(i) &lt; 0</code>, frequency is specified as number of hours.</p> <p>Default: 0, -24, -24, -24, -24, -24</p>	integer(6) ↑ type	cam_inparm ↑ Namelist group

How to set it

daily average: `nhtfrq=-24`

# Outline

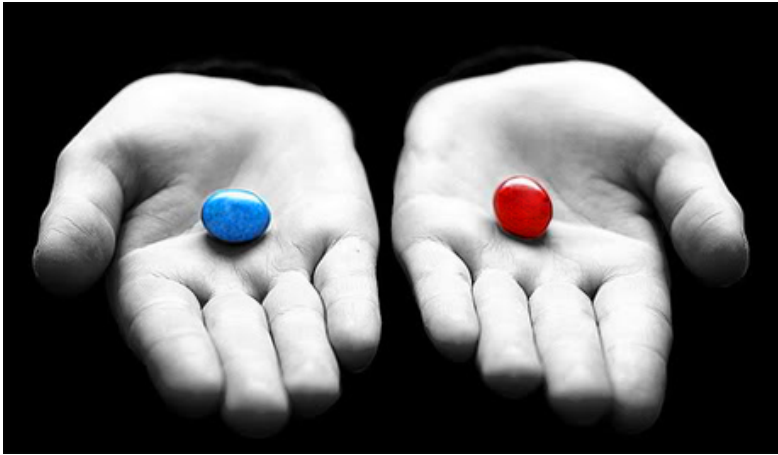
- review the “CESM flow” : The 4 CESM commands
- how to make xml files changes (ex: change run length)
- how to make namelist changes (ex: change output frequency)
- **how to make code modifications (ex: change a parameter)**



U.S. DEPARTMENT OF  
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Office of  
Science

# Your choice: The Red Pill or the Blue Pill



*The Matrix (1999):* Neo, the main character is offered the choice between a red pill and a blue pill.

-The **blue pill** would allow him to remain in the Matrix (a fictional computer-generated world)



-The **red pill** would lead to his "escape" from the Matrix into the real world and embracing the sometimes painful truth of reality.

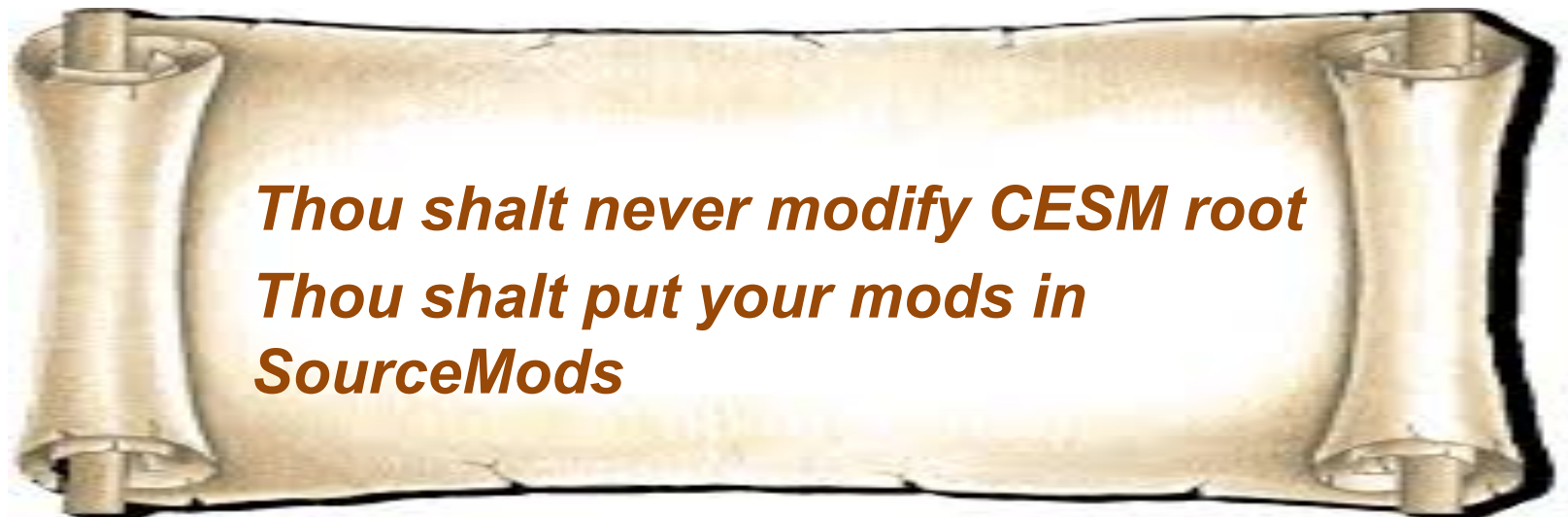


Courtesy: Andrew Gettelman

# Principles for modifying the code

**Never** modify the CESM root itself.

Your modifications to the code should go into: *SourceMods*

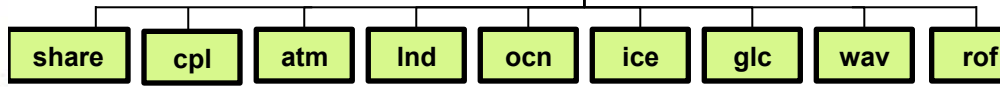


# Principles for modifying the code

*Thou shalt never modify CESM root  
Thou shalt put your mods in  
SourceMods*

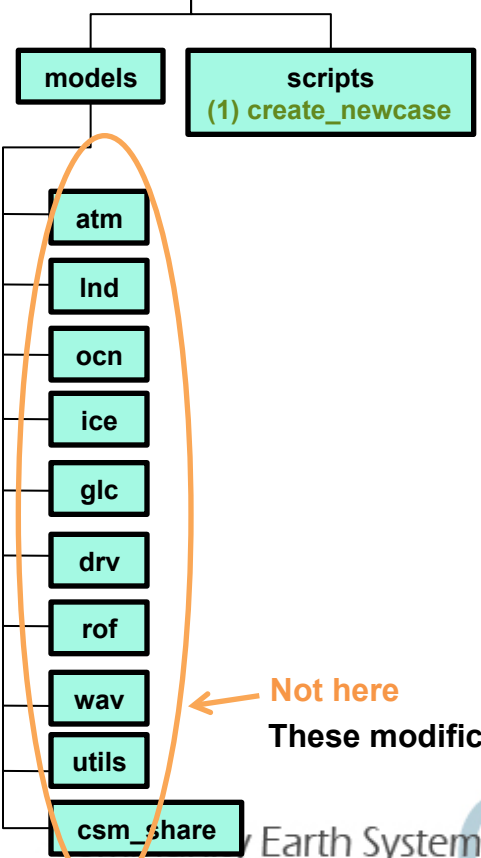
## INPUTDATA Directory

/glade/p/cesm/cseg/inputdata  
\$DIN\_LOC\_ROOT



## CESM Code

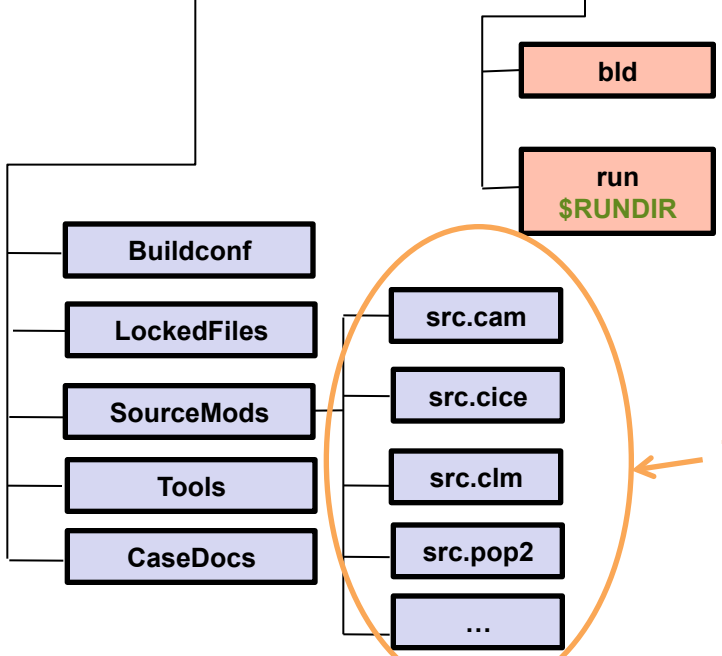
/path\_to\_code/cesm1\_2\_2  
\$CCSMROOT



Not here  
These modifications affect all the cases

## CASE Directory

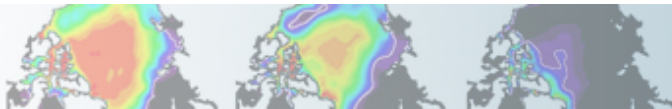
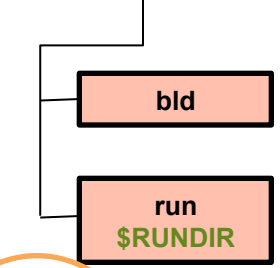
~/cases/case01  
(2) cesm\_setup  
(3) case01.build  
(4) case01.submit



This is where you put your modifications  
These modifications only affect the current case

## Build/Run Directory

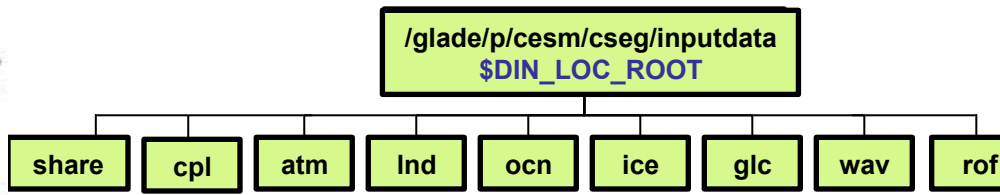
/glade/scratch/  
userx/ case01  
\$EXERROOT



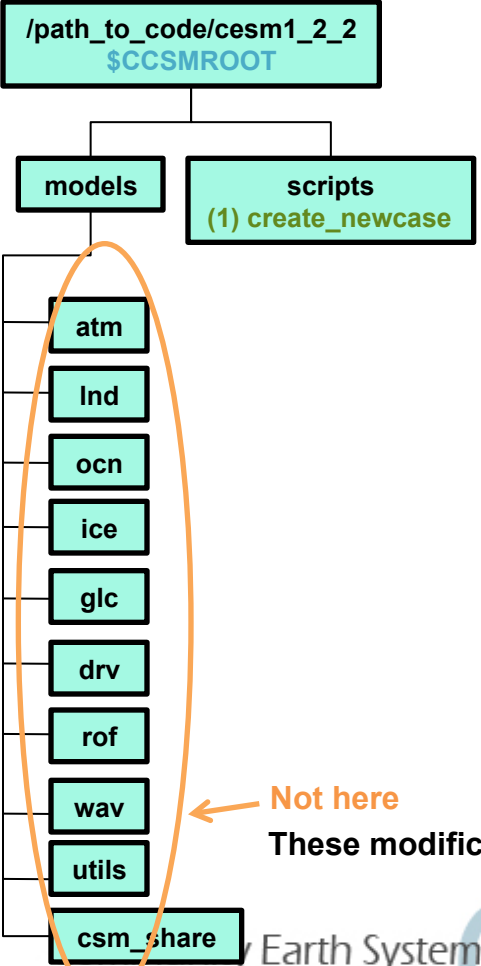
# Principles for modifying the code

*Thou shalt never modify CESM root  
Thou shalt put your mods in SourceMods*

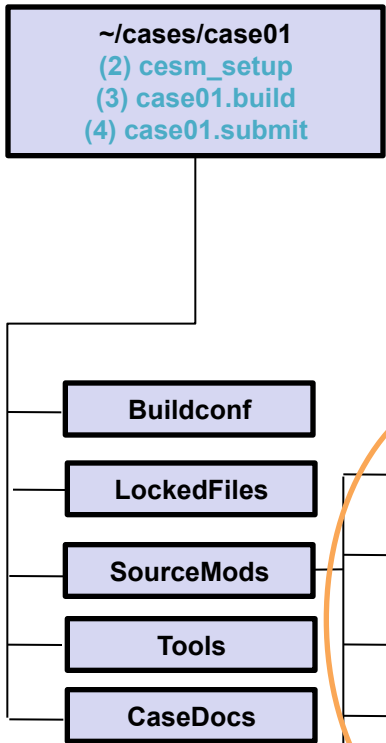
## INPUTDATA Directory



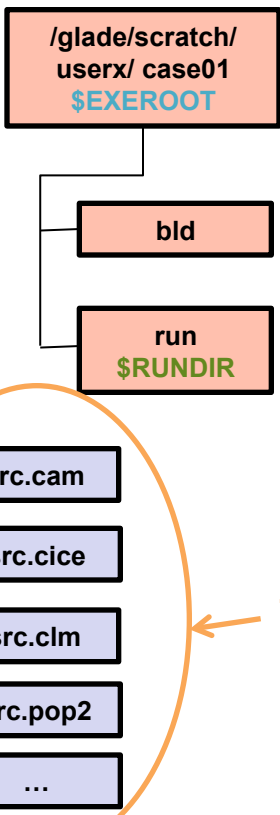
## CESM Code



## CASE Directory



## Build/Run Directory



```

# go into scripts directory
cd /glade/p/cgd/asp2017/CESM/cesm1_2_2_1/scripts

# (1) create a new case
./create_newcase -case ~/cases/case01 -res f19_f19 -
compset FC5 -mach cheyenne

# go into the case you just created in the last step
cd ~/cases/case01/

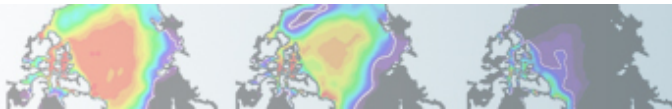
# (2) invoke cesm_setup
./cesm_setup

# (3) build the executable
go_to_compute_node; ./case01.build; exit

# (4) submit your run to the batch queue
./case01.submit
  
```

Not here  
These modifications affect all the cases

This is where you put your modifications  
These modifications only affect the current case





# Modifying a subroutine

## Steps to modify the code:

- Find the subroutine you want to modify
- Copy this subroutine in SourceMods
- Make your mods
- Compile and run the model

# Example: Modify a parameter: tau

Let's modify a **parameter** in the CAM code

tau = convective timescale

*“tuning parameter”*

*- parameter weakly constrained by observation*

*- can be adjusted to achieve agreement with observations*

1. Find the subroutine you want.

Go in the CESM code and look for tau

For instance, you can use: **grep -r tau \***)

2. Copy this subroutine in SourceMods

Go your case directory and copy **zm\_conv.F90** into **SourceMods/src.cam**

3. Make your modifications

Edit the value of tau in **SourceMods/src.cam/zm\_conv.F90**

4. Compile and run the model

# Where to find help ?

<http://www.cesm.ucar.edu/models/cesm1.2/>

**CESM Models** Home » CESM Models » CESM1.2 Series Public Release

## CESM1.2 SERIES PUBLIC RELEASE

**ABOUT THIS RELEASE SERIES**

The CESM1.2 release has numerous new key features among which are the addition of CLM4.5, new science changes to CAM5 running with the CAM-SE dynamical core, and new scripting infrastructure for the generation of component sets, grids and model testing.

**CESM1.2 SERIES RELEASE NOTES**

Please read the [CESM1.2 Series Release Notes](#) which includes What's New - Science, What's New - Software, Answer-Changing Features, Supported Machines, and Known Problems. The new scripting infrastructure is described in detail in the [CESM1.2 User's Guide](#).

**SCIENTIFIC VALIDATION**

Scientific validation consists of a multi-decadal model run of the given component set at the target resolution, followed by scientific review of the model output diagnostics. All scientifically supported component sets are also accompanied by diagnostic and model output data. Validated CESM1.2 model results and diagnostics will be added to the CESM1.2 website as they become available.

**What version of the model should I use?**

For a scientifically supported target component set and resolution, please refer to the [Scientifically Validated Configurations](#) for that target configuration. For component sets and resolutions that are not scientifically validated in any supported release (e.g. cesm1.0.5 and cesm1.1.1), CSEG strongly urges you to use the latest model release (in this case cesm1.2.0).

**DIAGNOSTIC PACKAGES AND NAMING CONVENTIONS**

- Post Processing Utilities
- Model File Naming Conventions
- Experiment Case Naming Conventions

**MODEL DOCUMENTATION**

- CESM1.2**
  - ▶ User's Guide
  - ▶ Machines, Resolutions, Component sets
  - ▶ Model Component NameLists
  - ▶ \$CASEROOT vml files
- Atmosphere Models**
  - ▶ Community Atmosphere Model (CAM, CAM3, CAM3.0, CAM5)
  - ▶ Climatological Data Model (CDM)
- Land Models**
  - ▶ Community Land Model (CLM3, CLM4.5)
  - ▶ Climatological Data Model (CDM)
- Sea Ice Models**
  - ▶ Community Ice Code (CICE)
  - ▶ Climatological Ice Model (CIM)
- Coupler**
  - ▶ CESM Coupler (CPL)
- Ocean Models**
  - ▶ Parallel Ocean Program (POP2, POP3, POP3.0)
  - ▶ Climatological/Slab-Ocean Data Model (COSM)
- Land Ice Models**
  - ▶ Community Ice Sheet Model (CISM, CISM3)
- River Models**
  - ▶ River Transport Model (RTM)
  - ▶ Climatological River Runoff Model (CRRM)

**CESM PROJECT**

The Community Earth System Model (CESM) is a fully-coupled, global climate model that provides state-of-the-art computer simulations of the Earth's past, present, and future climate states.

CESM is sponsored by the National Science Foundation (NSF) and the U.S. Department of Energy (DOE). Administration of the CESM is maintained by the climate and Global Dynamics Division (CGD) at the National Center for Atmospheric Research (NCAR).

**MODEL SOURCE CODE**

**Copyright and Terms of Use**

All CESM source code is subject to the following [Copyright Notice and Disclaimer](#).

**Acquiring the Release Code**

The source code for CESM releases is distributed through a public Subversion code repository. This code can be checked out using Subversion client software, such as TortoiseSVN, or simply view the latest version with a web browser.

A short registration is required to access the repository. After registering, you will receive an email containing a user name and password that is necessary to gain access to the repository.

Acquisition of the code is more fully described in the most recent version of the [CESM1.2 User's Guide](#).

**REPORTING A PROBLEM**

If you have any problems, please first read the User's Guide including the sections on FAQs and Use Cases. Please also refer to the [CESM Bulletin Board](#), which is a place to facilitate communication within the CESM community. Finally, please also refer to the [Release Notes](#) entries that are provided with every release and release update. If questions or problems still exist, then please send an email to [cesm-help@cd.ucar.edu](mailto:cesm-help@cd.ucar.edu). Support questions will be answered as resources are available.

**CESM SUPPORT POLICY**

**CESM Support Policy - November 2012**

**CESM DATA MANAGEMENT & DISTRIBUTION PLAN**

The Community Earth System Model (CESM) Data Management and Data Distribution Plan documents the procedures for the storage and

CESM webpage is a gold mine for model documentation

If you cannot find an answer in the model documentation, post your question on the CESM Bulletin Board

**“I can only show you the door.  
You're the one that has to walk through it”**

*(The Matrix, 1999)*

