

Getting up and running with CESM

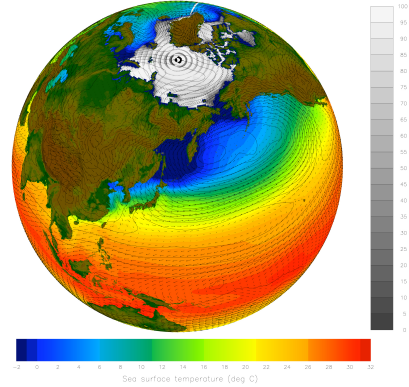
Cécile Hannay
Climate and Global Dynamics (CGD), NCAR

NCAR is sponsored by the National Science Foundation

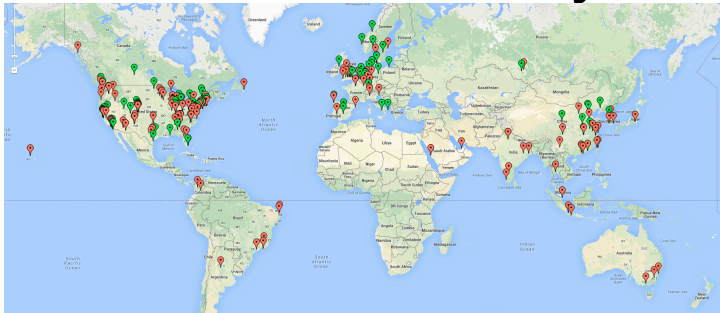


Why CESM ?

State of the Art Climate Model



Widely used by the
Climate Community

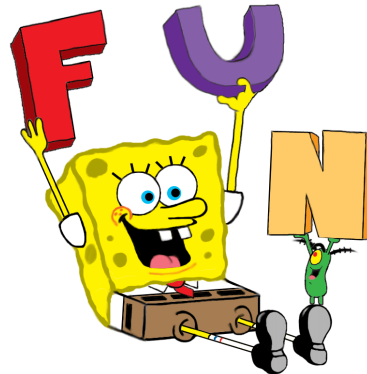


Over 5000 downloads
around the world

Well supported



It's fun



Outline

- **CESM webpage**
- **One-Time Setup**
- **How to set and run an experiment**
- **Getting More Help**

CESM 1.2 Webpage

<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](#).

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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 xml files](#)

Atmosphere Models

- ▶ [Community Atmosphere Model \(CAM5, CAM-CHM, WACCM\)](#)
- ▶ [Climatological Data Model \(CLM4\)](#)

Land Models

- ▶ [Community Land Model \(CLM4, CLM4.5\)](#)
- ▶ [Climatological Data Model \(CLM4\)](#)

Sea Ice Models

- ▶ [Community Ice CodE \(ICE4\)](#)
- ▶ [Climatological Ice Model \(DICE\)](#)

Coupler

- ▶ [CESM Coupler \(CPL7\)](#)

Ocean Models

Land Ice Models

River 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

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Acquiring the Release Code

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REPORTING A PROBLEM

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CESM SUPPORT POLICY

[CESM Support Policy - November 2012](#)

Release Notes



Scientific validation



Guidance on model versions



Post processing Tools



Model Documentation



← Background and Sponsors

← How to acquire the code

← Reporting problems Getting Help

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MODEL DOCUMENTATION

CESM 1.2

- ▶ User's Guide
- ▶ Machines, Resolutions, Component sets
- ▶ Model Component Namelists
- ▶ \$CASEROOT xml files



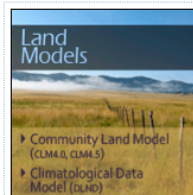
Atmosphere Models

- ▶ Community Atmosphere Model (CAM5, CAM-OISM, WACCM)
- ▶ Climatological Data Model (cdm3)



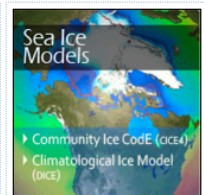
Land Models

- ▶ Community Land Model (CLM4.0, CLM4.5)
- ▶ Climatological Data Model (cdm3)



Sea Ice Models

- ▶ Community Ice Code (cice4)
- ▶ Climatological Ice Model (cice)



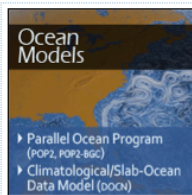
Coupler

- ▶ CESM Coupler (CPL7)



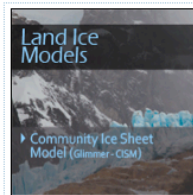
Ocean Models

- ▶ Parallel Ocean Program (POP2, POP2-86C)
- ▶ Climatological/Slab-Ocean Data Model (ocsv)



Land Ice Models

- ▶ Community Ice Sheet Model (Glimmer - CISM)



River Models

- ▶ River Transport Model (rtm)
- ▶ Climatological River Runoff Model (r2cr)



EXTERNAL LIBRARY DOCUMENTATION

- Parallel I/O Library (PIO)
- Model Coupling Toolkit (MCT)
- Earth System Modeling Framework (ESMF)

MODEL INPUT DATA

The input data necessary to run all supported component sets is made available from a public [Subversion input data repository](#). Note that the inputdata repository has much more data in it than you need to run CESM1.2 — **DO NOT attempt to svn checkout the whole input data repository**. The [CESM1.2 User's Guide](#) explains how to obtain the subset of input data required for your needs.

PERFORMANCE AND LOAD BALANCING DATA

The timing table provides performance data that will continue to evolve due to changes in the model, machine hardware and input from the user community. For CESM1.2, please refer to the [CESM1.1.1 Timing Table](#).

Model Input data



Timing and load balance



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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 distribution of data associated with the CESM project.

Data management and distribution



Outline

- **CESM webpage**
- **One-Time Setup**
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 - **Download Source Code**
 - **Create an Input Data Root Directory**
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- **How to set and run an experiment**
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Registration

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CESM Models

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- Model File Naming Conventions
- Experiment Case Naming Conventions

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- ▶ Climatological Data Model (CLM4)

Sea Ice Models

- ▶ Community Ice Code (cice4)
- ▶ Climatological Ice Model (CICE)

Coupler

- ▶ CESM Coupler (CPL7)

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CESM SUPPORT POLICY

CESM Support Policy - November 2012

- Right hand column has a link to the registration page, click on it

Community Earth System Model

CESM1.0 Release User Registration

Required Fields

Last Name:

First Name:

E-Mail:

Institution:

Purpose:

Valid special characters to use: `period, hyphen, apostrophe, forward slash, colon, comma`. No additional special characters are allowed.

(Maximum characters: 400. You have 400 characters left.)

Have you used previous versions of CCSM/CESM? Yes No

Publications using previous versions of CCSM/CESM:

If you have used previous versions of CCSM/CESM, please provide publications you have using the code. Valid special characters to use: `period, hyphen, apostrophe, forward slash, colon, comma`. No additional special characters are allowed.

(Maximum characters: 400. You have 400 characters left.)

Copyright and Terms of Use

The Community Earth System Model (CESM) was developed in cooperation with the National Science Foundation (NSF), the Department of Energy (DOE), the National Aeronautics and Space Administration (NASA), the University Corporation for Atmospheric Research (UCAR) and the National Center for Atmospheric Research (NCAR). Except for the copyrightable components listed in the copyright, CESM is public domain software. There are third party tools and libraries that are embedded and they are subject to their own copyright notices and terms.

Please read the Copyright and Terms of Use on the CESM1.0 release home page.


Access to the Model

Once you agree to the Copyright and Terms of Use and submit your user information, you will be contacted via email with a subversion repository user name and password. This user name and password will allow you to access the source code.

Agree to Terms* Yes No

- Register -- you will be emailed a username and password

Outline

- **CESM webpage**
- **Software & Hardware Requirements**
- **One-Time Setup**
 - **Registration**
 -  **Download Source Code**
 - **Create an Input Data Root Directory**
 - **Porting**
- **How to set and run an experiment**
- **Getting More Help**

Download the Source Code

- Code and input datasets are in a subversion repository (*)

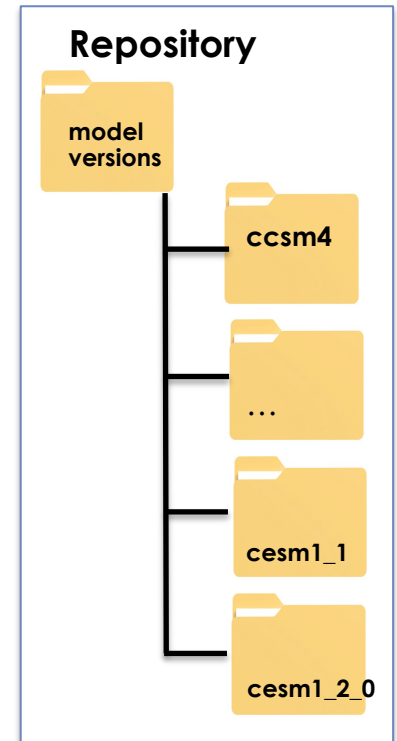
https://svn-ccsm-release.cgd.ucar.edu/model_versions

- List the versions available on the CESM repository

`svn list https://svn-ccsm-release.cgd.ucar.edu/model_versions`

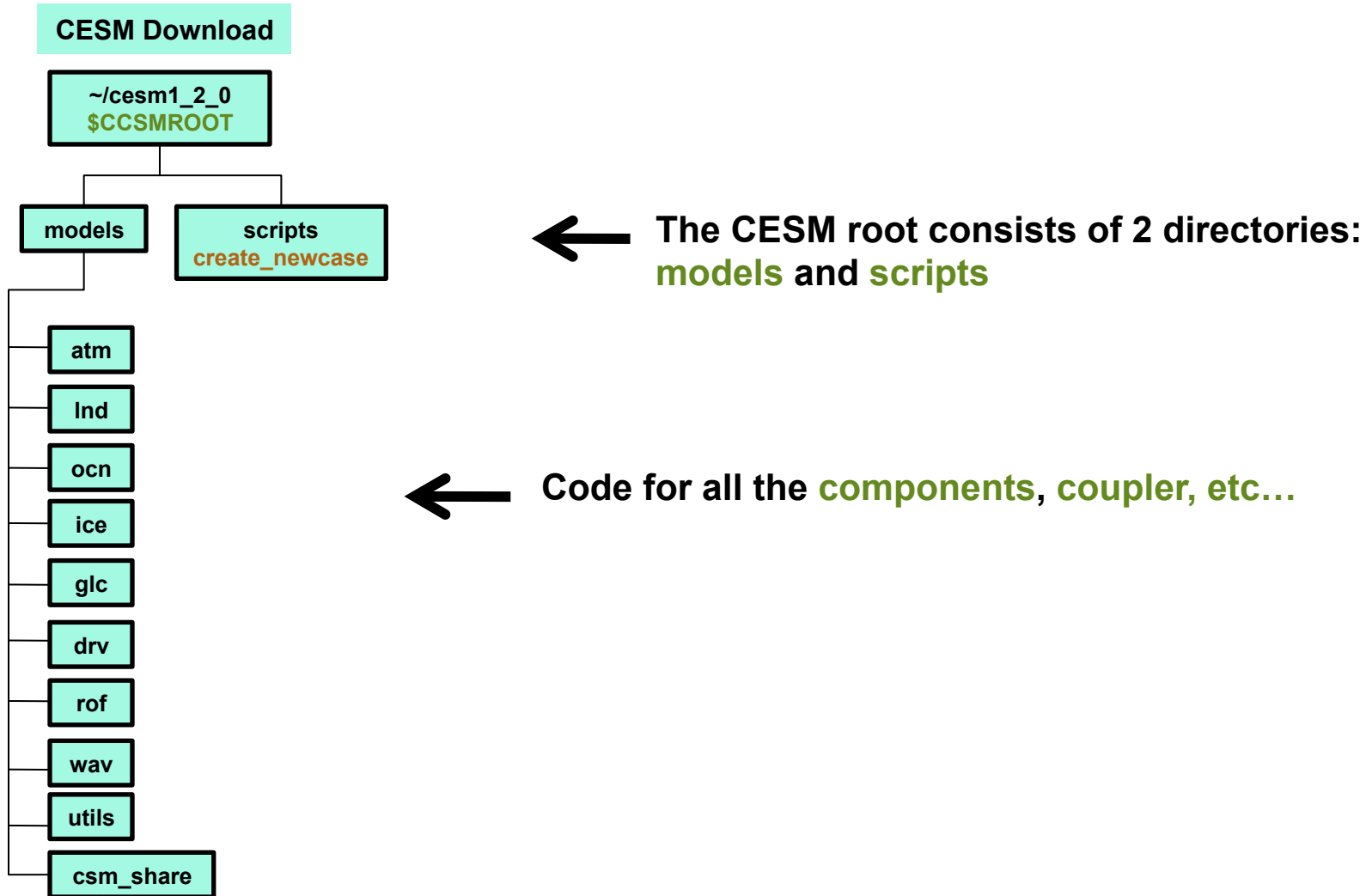
- Check out a working copy from the repository (“Download code”)

`svn co https://svn-ccsm-release.cgd.ucar.edu/model_versions/cesm1_2_0`




(*) You can get subversion at <http://subversion.apache.org/>

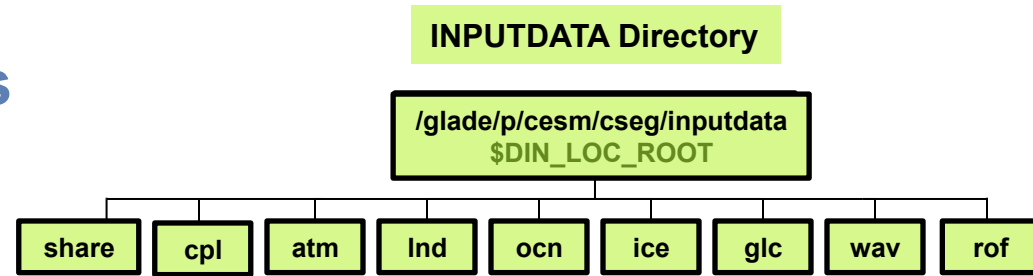
Overview of Directories (after initial model download)



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Overview of Directories (+ inputdata directory)



Inputdata directory `$DIN_LOC_ROOT`
contains all input data required to run the model



CESM Download

`~/cesm1_2_0`
`$CCSMROOT`

models

scripts

`create_newcase`

atm

lnd

ocn

ice

glc

drv

rof


wav

utils

csm_share

- Ideally directory is shared by a group of users to save disc space (on supported machines - populated inputdata already exists)

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Porting

- On supported machines - no porting is necessary
- On other machines – porting needs to be done

Porting details are **outside the scope of this tutorial**

More info about porting:

1. User's Guide

Porting and Validating CESM
on a new platform



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

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- Experiment Case Naming Conventions

MODEL DOCUMENTATION

- CESM1.2**
 - User's Guide
 - Machines, Resolutions, Enhancement sets
 - Model Component Hierarchies
 - BCASEPROOT and Files
- Atmosphere Models**
 - Community Atmosphere Model (CAM, Oceanic, Micro)
 - Community Earth System Model (CESM) Daily Model (CESM)
- Land Models**
 - Community Land Model (CLM4.5)
 - Community Earth System Model (CESM) Land Model (CESM)
- Sea Ice Models**
 - Community Ice Cycle Model (CICE)
 - Community Ice Model (CIM)
- Coupler**
 - CESM Coupler (CPL)
- Ocean Models**
 - Parallel Ocean Program (POP)
 - Community Ocean Model (COMO)
- Land Ice Models**
 - Community Ice Sheet Model (ICESM)
- River Models**
 - River Transport Model (RTM)
 - Community River Runoff Model (CRRM)

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CESM SUPPORT POLICY
CESM Support Policy - November 2012

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2. Porting tutorial

<http://www.cesm.ucar.edu/events/tutorials/081114/porting-edwards.pdf>

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Congrats !
**You are ready to set
and run an experiment**

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Work Flow: Super Quick Start

CESM can be run with a set of **4 commands**

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

```
# go into scripts directory into the source code download  
cd /path_to_source_code_download/cesm1_2_0/scripts
```

(1) # (1) create a new case in the directory "cases" in your home directory

```
./create_newcase -case ~/cases/case01 -compset FC5 -res f19_f19 -mach cheyenne
```

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

(2) # (2) invoke cesm_setup

```
./cesm_setup
```

(3) # (3) Build the executable

```
./case01.build
```

(4) # (4) submit your run to the batch queue

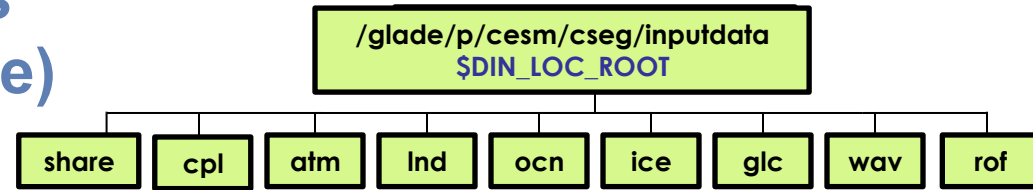
```
./case01.submit
```

It is that easy !



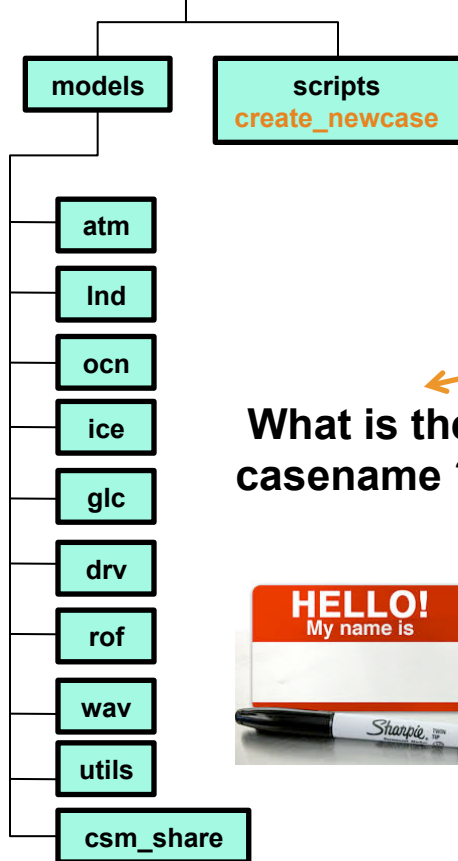
Overview of Directories (+ before create_newcase)

INPUTDATA Directory



CESM Download

~/cesm1_2_0
\$CCSMROOT



In the scripts directory,

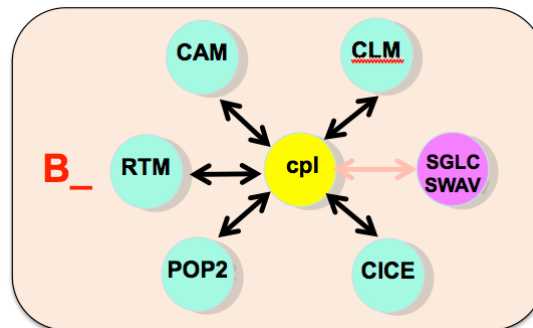
create_newcase is the tool that generates a new case.

create_newcase requires 4 arguments

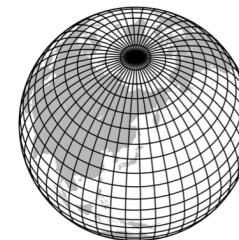
What is the casename ?



Which model configuration ?
Which set of components ?



Which resolution?



Which machine are you running on?



Syntax of create_newcase

create_newcase requires 4 arguments

```
create_newcase -case ~/cases/case01 -compset FC5 -res f19_f19 -mach cheyenne
```

Syntax of create_newcase

`create_newcase` requires 4 arguments

```
create_newcase -case ~/cases/case01 -compset FC5 -res f19_f19 -mach cheyenne
```

What is the
casename ?



case specify the name and location of the case being created
`~/cases/case01`

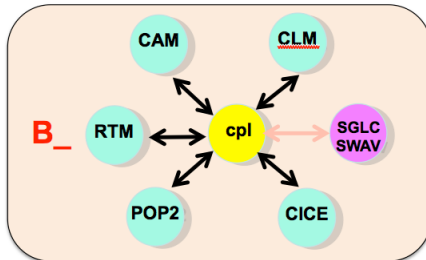


Syntax of create_newcase

`create_newcase` requires 4 arguments

```
create_newcase -case ~/cases/case01 -compset FC5 -res f19_f19 -mach cheyenne
```

Which component set ?



`compset` specifies the “component set”

Component set specifies component models, forcing scenarios and physics options for those models

Examples:

FC5 = Active atmosphere and Land with prescribed SSTs and sea-ice.

B1850 = All active components (atm, land, ocean, sea-ice)

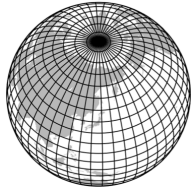
For more information: see the [CESM webpage](#)

Syntax of create_newcase

`create_newcase` requires 4 arguments

```
create_newcase -case ~/cases/case01 -compset FC5 -res f19_f19 -mach cheyenne
```

Which
resolution?



`res` specifies the **model resolutions** (or grid)

Example

`f19_f19` (atm/ln_d_ocr/ice) => finite volume at about 2 degree resolution

Syntax of create_newcase

`create_newcase` requires 4 arguments

```
create_newcase -case ~/cases/case01 -compset FC5 -res f19_f19 -mach cheyenne
```

Which machine
are you running on?



mach specifies the **machine** that will be used.

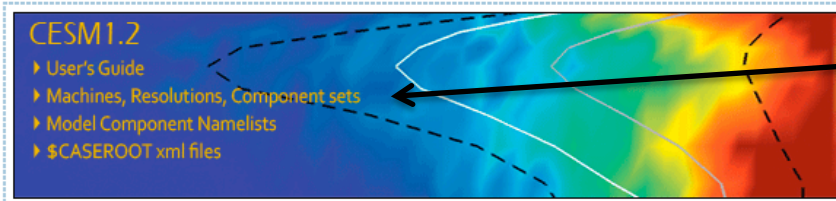
Valid Values for res, compset, and mach

Command line to list all the valid choices for grids, compsets and machines

`./create_newcase -list <type>`

with type can be [compsets, grids, machines]

MODEL DOCUMENTATION

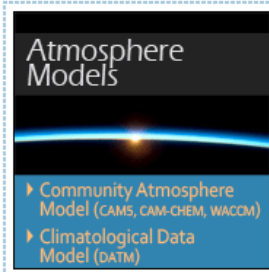


CESM1.2

- ▶ User's Guide
- ▶ Machines, Resolutions, Component sets
- ▶ Model Component Namelists
- ▶ \$CASEROOT xml files

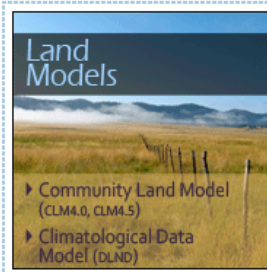
List of valid values is also available from the CESM website

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



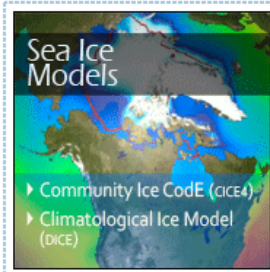
Atmosphere Models

- ▶ Community Atmosphere Model (CAM5, CAM-CHEM, WACCM)
- ▶ Climatological Data Model (DATM)



Land Models

- ▶ Community Land Model (CLM4.0, CLM4.5)
- ▶ Climatological Data Model (DLND)



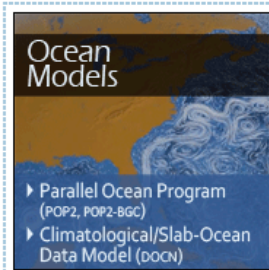
Sea Ice Models

- ▶ Community Ice Code (CICE4)
- ▶ Climatological Ice Model (OICE)



Coupler

- ▶ CESM Coupler (CPL7)



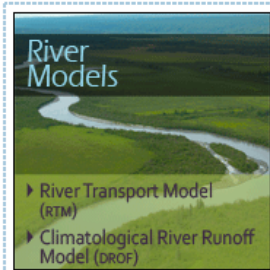
Ocean Models

- ▶ Parallel Ocean Program (POP2, POP2-BGC)
- ▶ Climatological/Slab-Ocean Data Model (DOCN)



Land Ice Models

- ▶ Community Ice Sheet Model (Climmer - CISM)



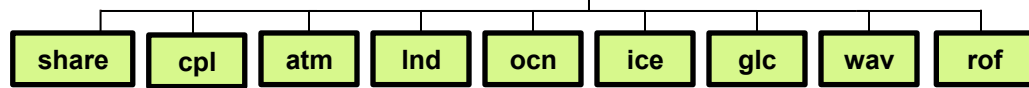
River Models

- ▶ River Transport Model (RTM)
- ▶ Climatological River Runoff Model (PROF)

Overview of Directories (after create_newcase)

INPUTDATA Directory

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



CESM Download

~/cesm1_2_0
\$CCSMROOT

models

scripts

create_newcase

CASE Directory

~/cases/case01
\$CASEROOT
cesm_setup
env_*.xml
xmlchange

create_newcase creates case directory that contains:

cesm_setup: script used in the next step

files with xml variables used by CESM scripts

script to edit env_*.xml files

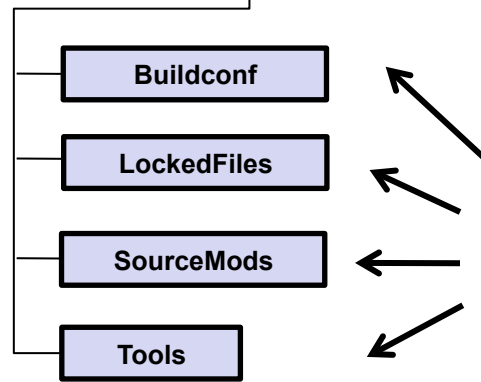
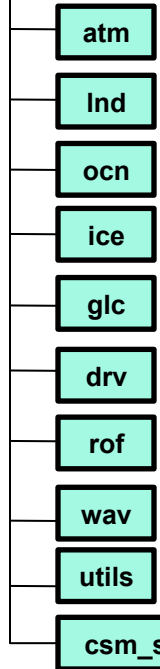
Buildconf

LockedFiles

SourceMods

Tools

subdirectories



About env_*.xml files

- env_*.xml contains variables used by scripts
 - env_case.xml: set by create_newcase and cannot be modified
 - env_mach_pes.xml : specifies layout of components
 - env_build.xml: specifies build information
 - env_run.xml : sets run time information (such as length of run, frequency of restarts, ...)
User interacts with this file most frequently

- Here's a snippet of the env_run.xml file

```
<!--"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" />
```

“id” - variable name

“value” – variable value

CESM will run for 5 days

- To modify a variable in an xml file – use **xmlchange**
xmlchange STOP_N=20

Work Flow: Super Quick Start

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

```
# go into scripts directory into the source code download
cd /path_to_source_code_download/cesm1_2_0/scripts

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

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

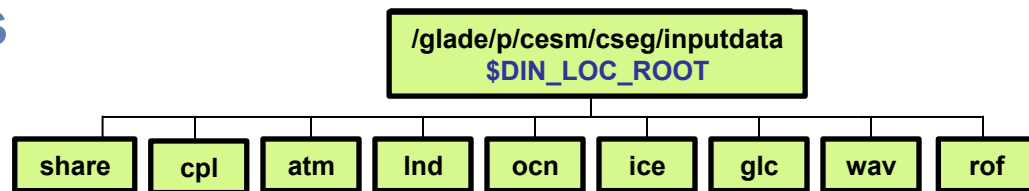
# (2) invoke cesm_setup
./cesm_setup

# (3) Build the executable
./case01.build

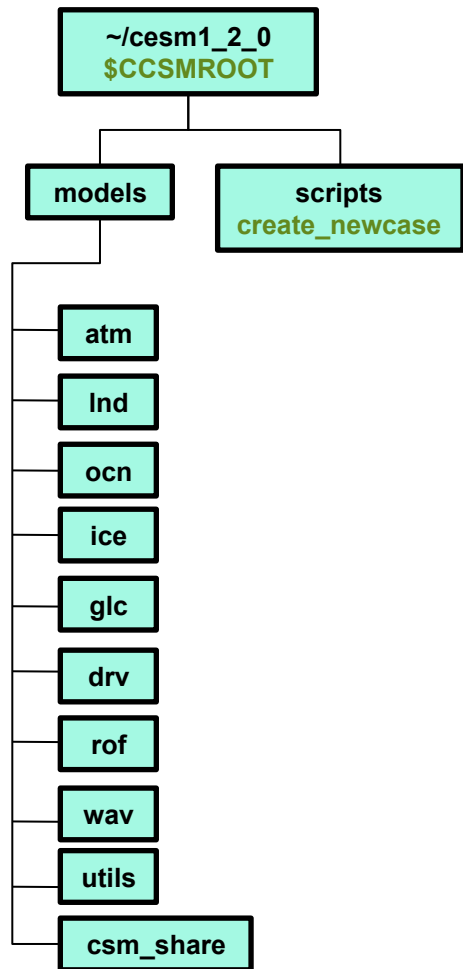
# (4) submit your run to the batch queue
./case01.submit
```

Overview of Directories (after cesm_setup)

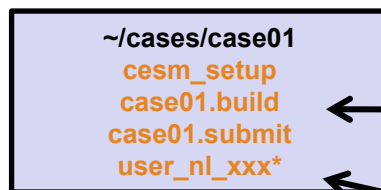
INPUTDATA Directory



CESM Download



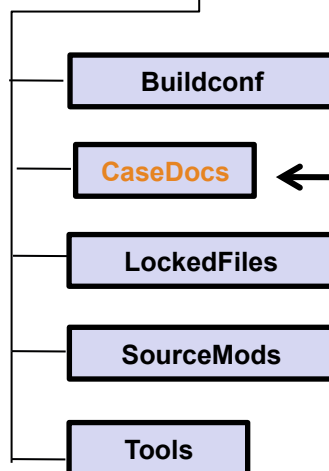
CASE Directory



cesm_setup creates:

case scripts (to build, run and archive)

namelist modification files `user_nl_***`
this is where you modify **your namelists**



CaseDocs: contains **copy of the namelists**
This is for reference only and files in this directory **SHOULD NOT BE EDITED**.

Work Flow: Super Quick Start

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

```
# go into scripts directory into the source code download
cd /path_to_source_code_download/cesm1_2_0/scripts

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

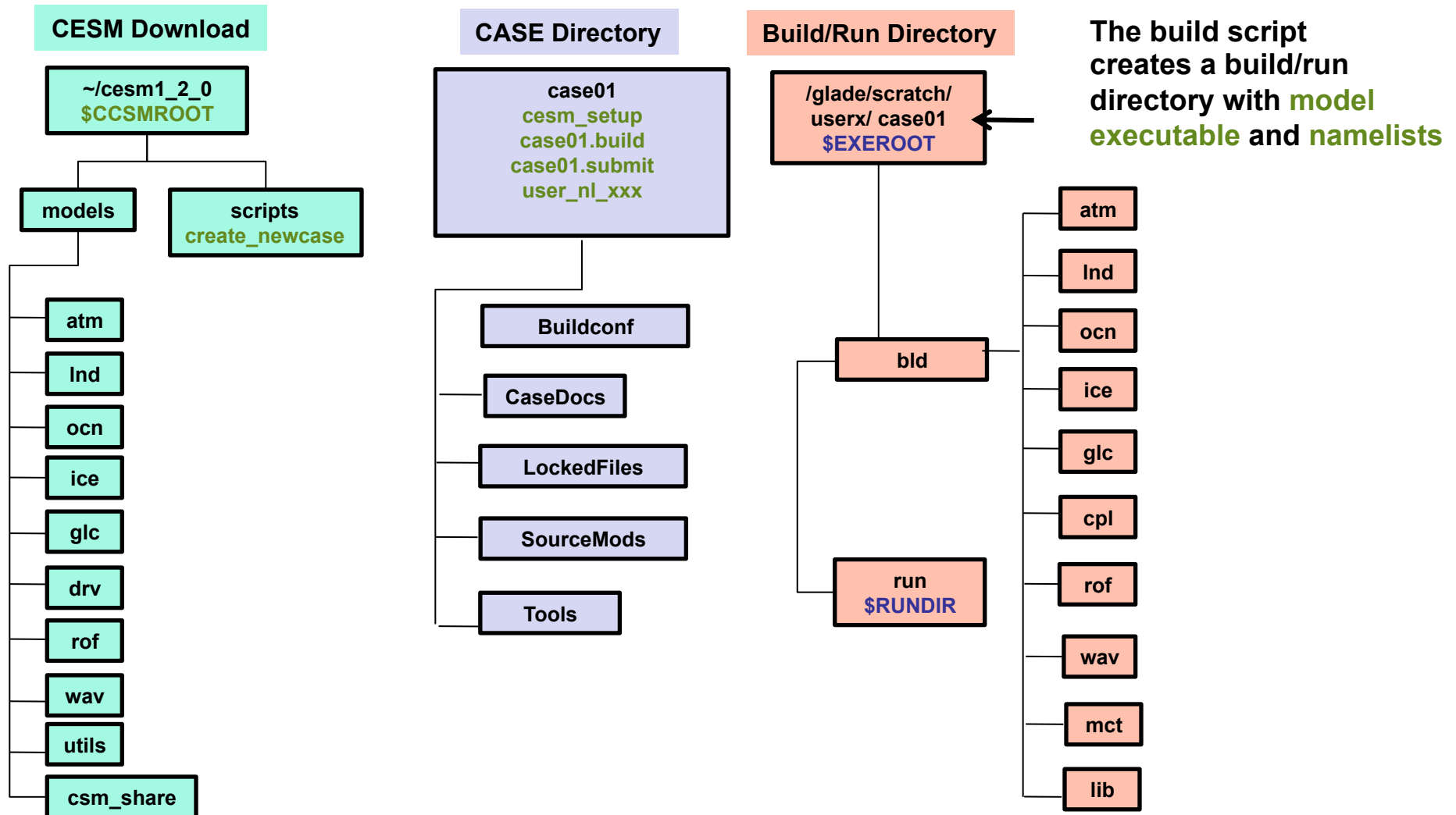
# go into the case you just created in the last step
cd ~/cases/case01/

# (2) invoke cesm_setup
./cesm_setup

# (3) Build the executable
./case01.build

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

Overview of Directories (after build)



Work Flow: Super Quick Start

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

```
# go into scripts directory into the source code download
cd /path_to_source_code_download/cesm1_2_0/scripts

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

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

Running the Model

When you submit your jobs

```
cases/case01> case01.submit  
  
check_case OK  
Job <959733> is submitted to queue <regular>
```

Use “**qstat -u \$username**” to check if job is running

```
cases/case01> qstat -u hannay
```

Job ID	Username	Queue	Jobname	SessID	NDS	TSK	Req'd Memory	Req'd Time	S	Elap Time
1244289.chadmin	hannay	regular	case01	10523	5	180	--	01:50	R	00:02
1244299.chadmin	hannay	regular	case02	--	5	180	--	01:50	Q	--

Your job is running

Your job is waiting in the queue

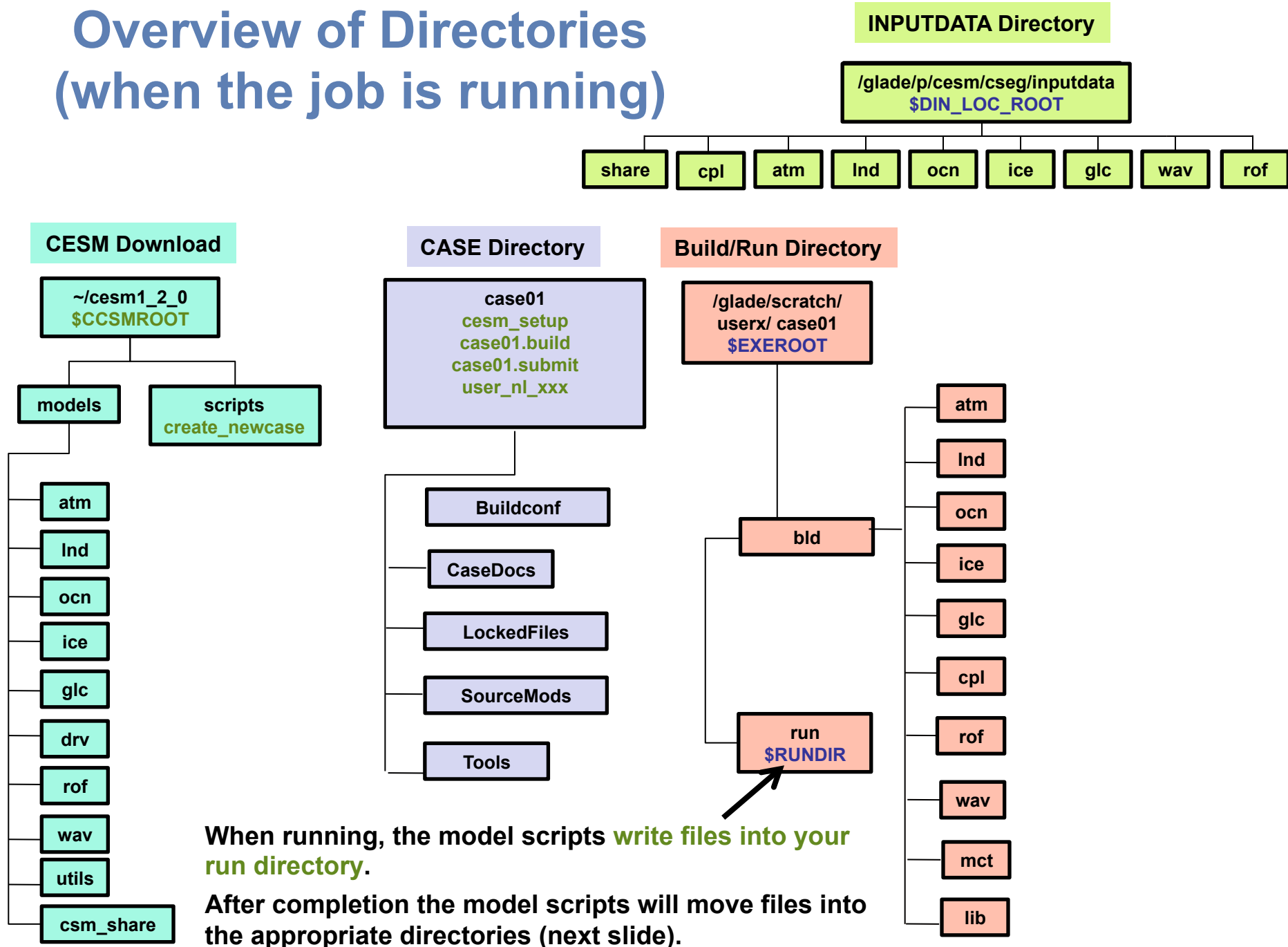
Use “**qdel Job ID**” to kill a job

```
cases/case01> qdel 1244306
```

Job ID	Username	Queue	Jobname	SessID	NDS	TSK	Req'd Memory	Req'd Time	S	Elap Time
1244306.chadmin	hannay	regular	case01	47644	5	180	--	01:50	R	00:00

Kill Job #1244306

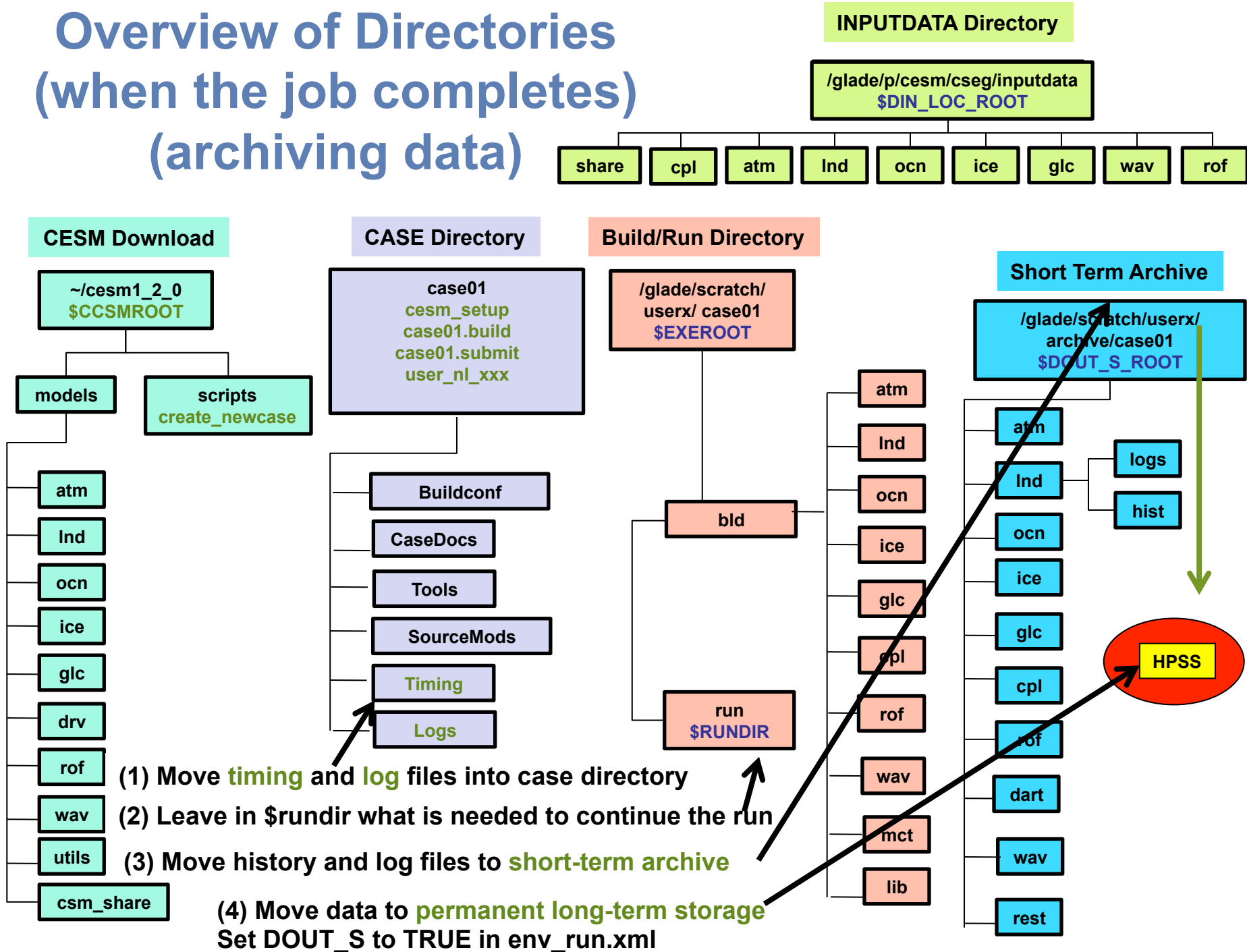
Overview of Directories (when the job is running)



When running, the model scripts **write files into your run directory.**

After completion the model scripts will move files into the appropriate directories (next slide).

Overview of Directories (when the job completes) (archiving data)



More Information/Getting Help

Online tutorial: <http://www.cesm.ucar.edu/events/tutorials/>

NCAR UCAR | **CESM**
COMMUNITY EARTH SYSTEM MODEL

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CESM Tutorials

UPCOMING CESM TUTORIALS

2015 CESM TUTORIAL
10 - 14 August 2015, National Center for Atmospheric Research, Mesa Lab, Boulder, CO [[tutorial home](#)] [[announcement](#)]

PAST CESM TUTORIALS

2014 CLM TUTORIAL
18 - 21 February 2014, National Center for Atmospheric Research, Mesa Lab, Boulder, CO [[tutorial home](#)] [[announcement](#)]

2014 CESM TUTORIAL
11 - 15 August 2014, National Center for Atmospheric Research, Mesa Lab, Boulder, CO [[tutorial home](#)] [[announcement](#)]

2013 COMMUNITY EARTH SYSTEM MODELING TUTORIAL
12 - 16 August 2013, National Center for Atmospheric Research, Boulder, CO [[tutorial home](#)] [[announcement](#)] [[tutorial agenda](#)] [[tutorial coursework](#)]

2012 COMMUNITY EARTH SYSTEM MODELING TUTORIAL
30 July - 03 August 2012, National Center for Atmospheric Research, Boulder, CO [[tutorial home](#)] [[announcement](#)]

2011 COMMUNITY EARTH SYSTEM MODELING TUTORIAL
1 -5 August 2011, National Center for Atmospheric Research, Boulder, CO [[tutorial home](#)] [[agenda](#)] [[participants](#)]

2010 COMMUNITY EARTH SYSTEM MODELING TUTORIAL
12-16 July 2010, National Center for Atmospheric Research, Boulder, CO [[agenda](#)] [[announcement](#)] [[course materials](#)]

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 Laboratory (CGD) at the National Center for Atmospheric Research (NCAR).

CESM ADMINISTRATION

- SSC
- CAB
- Governance

More Information/Getting Help

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

MODEL DOCUMENTATION

CESM1.2

- ▶ User's Guide
- ▶ Machines, Resolutions, Component sets
- ▶ Model Component Namelists
- ▶ \$CASEROOT xml files

Atmosphere Models

- ▶ Community Atmosphere Model (CAM5, CAM-CHEM, WACCM)
- ▶ Climatological Data Model (DATM)

Land Models

- ▶ Community Land Model (CLM4.0, CLM5)
- ▶ Climatological Data Model (CLND)

Sea Ice Models

- ▶ Community Ice Code (ICE4)
- ▶ Climatological Ice Model (ICE)

Coupler

- ▶ CESM Coupler (CPL7)

Ocean Models

- ▶ Parallel Ocean Program (POP2, POP2-BGC)
- ▶ Climatological/Slab-Ocean Data Model (POCO)

Land Ice Models

- ▶ Community Ice Sheet Model (Glimmer - CISM)

River Models

- ▶ River Transport Model (RTM)
- ▶ Climatological River Runoff Model (CRRF)

More Information/Getting Help

CESM Bulletin Board: <http://bb.cgd.ucar.edu/>

NCAR UCAR DiscussCESM COMMUNITY Earth System MODEL

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CESM - General
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.

Forum	Topics	Posts	Last post
Announcements	16	41	CESM1.2.0 Release Announcement by aliceb June 12, 2013 - 11:52am
Bug reporting	110	306	output date error - monthly history files shifted 1 month by eaton 11 hours 50 min ago
Input Data Inquiries	108	260	CICE input data for B2OTR? by marvel1@... 11 hours 3 min ago
Output Data Inquiries	85	202	start time by hannay May 22, 2013 - 2:02pm
Tools A place for questions about the ESMF mapping tools and the cpnc tool as well as any topics related to grid generation.	3	10	runoff_to_ocn by cyoo@... May 23, 2013 - 8:22am
Software Development Includes issues for building/running on supported machines and porting to unsupported machines	174	515	Error in porting CESM by jedwards June 14, 2013 - 10:00am
General Discussion Includes requests for new features and configuration inquiries	193	458	More general MOC computation in POP by afrigola@... June 10, 2013 - 11:48am
Subversion Issues Forum for issues related to the new version control system	9	20	CCSM4/CESM1_0 download problem by sirajkhan78@... March 4, 2011 - 5:06pm
Tutorials For discussion regarding the web based modeling tutorials	5	13	Basic_B_1B50 Compilation by sstrey2@... June 4, 2013 - 9:10am

Super important message



CESM Work Flow Cheat Sheet for the Colloquium

Set of commands to build and run the model on cheyenne during this tutorial

This is what you will use when you do an CESM experiment this week

Please “bookmark” this slide

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 -compset FC5 -res f19_f19 -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 **on a compute node**

```
go_to_compute_node
```

```
./case01.build
```

```
exit
```

CAUTION

(4) submit your run to the batch queue

```
./case01.submit
```

Your homework for today => Please do this!

- **One-time steps (do this FIRST)**

Make the directory ~/cases: `mkdir ~/cases`

Add to your .tcshrc the line: `alias go_to_compute_node 'qsub -l select=1:ncpus=36:mpiprocs=1 -l inception=login -l walltime=01:00:00 -l -q regular -A UASP0001 '`

- **Submit a 5-day run**

Use the instructions from “CESM Work Flow for the Colloquium”

- **Check it worked**

Call me or Rich to check with you everything worked fine