

# CCSM4 – Status and Upcoming Releases

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# CCSM4 Releases and Timelines

- January 15, 2010:
  - CCSM4.0 alpha release - to subset of users and vendors with minimal documentation (except for script's User's Guide)
- April 1, 2010:
  - CCSM4.0 release - Full documentation, including User's Guide, Model Reference Documents, and experimental data
- June 1, 2010: CESM1.0 release
  - ocean ecosystem, CAM-AP, interactive chemistry, WACCM
- New CCSM output data web design underway (including comprehensive diagnostics)

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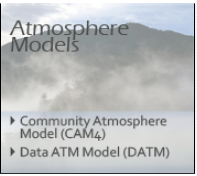


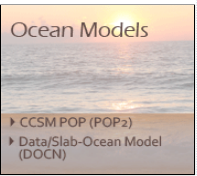
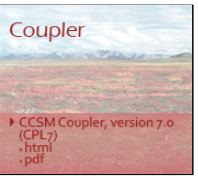
Community Climate System Model  advanced

### ABOUT CCSM ALPHA RELEASE

The alpha release of CCSM version 4.0 will be released to close collaborators and interested vendors on January 15, 2010. This web page deals specifically with the CCSM4.0 alpha release. This release is not accompanied by any model output data or complete documentation.

The Community Climate System Model (CCSM) is a coupled climate model for simulating the earth's climate system. Composed of four separate models simultaneously simulating the earth's atmosphere, ocean, land surface and sea-ice, and one central coupler component, the CCSM allows researchers to conduct fundamental research into the earth's past, present and future climate states.

### MODEL DOCUMENTATION

 <p>Complete Coupled System</p> <ul style="list-style-type: none"> <li>CCSM4.0 User's Guide             <ul style="list-style-type: none"> <li>.html</li> <li>.pdf</li> </ul> </li> </ul>	 <p>Atmosphere Models</p> <ul style="list-style-type: none"> <li>Community Atmosphere Model (CAM4)</li> <li>Data ATM Model (DATM)</li> </ul>	 <p>Ice Models</p> <ul style="list-style-type: none"> <li>Community Ice Code (CICE4)</li> <li>Data Ice Model (DICE)</li> </ul>
 <p>Land Models</p> <ul style="list-style-type: none"> <li>Community Land Model (CLM)</li> <li>Data Land Model (DLND)</li> </ul>	 <p>Ocean Models</p> <ul style="list-style-type: none"> <li>CCSM POP (POP2)</li> <li>Data/Slab-Ocean Model (DOCN)</li> </ul>	 <p>Coupler</p> <ul style="list-style-type: none"> <li>CCSM Coupler, version 7.0 (CPL7)             <ul style="list-style-type: none"> <li>.html</li> <li>.pdf</li> </ul> </li> </ul>

### 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 CCSM4.0 -- **do not attempt to svn checkout the whole repository**. The CCSM4.0 User's Guide (see above) explains how to obtain the subset of input data required for your needs.

### MODEL OUTPUT DATA

There will be no model output data associated with the CCSM4.0 alpha release.

### PERFORMANCE AND LOAD BALANCING DATA

The [CCSM4 Timing Table](#) provides performance data that will continue to evolve due to changes in the model, machine hardware and input from the user community.

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# CCSM4.0 alpha release

## Extensive CCSM4 User's Guide already in place

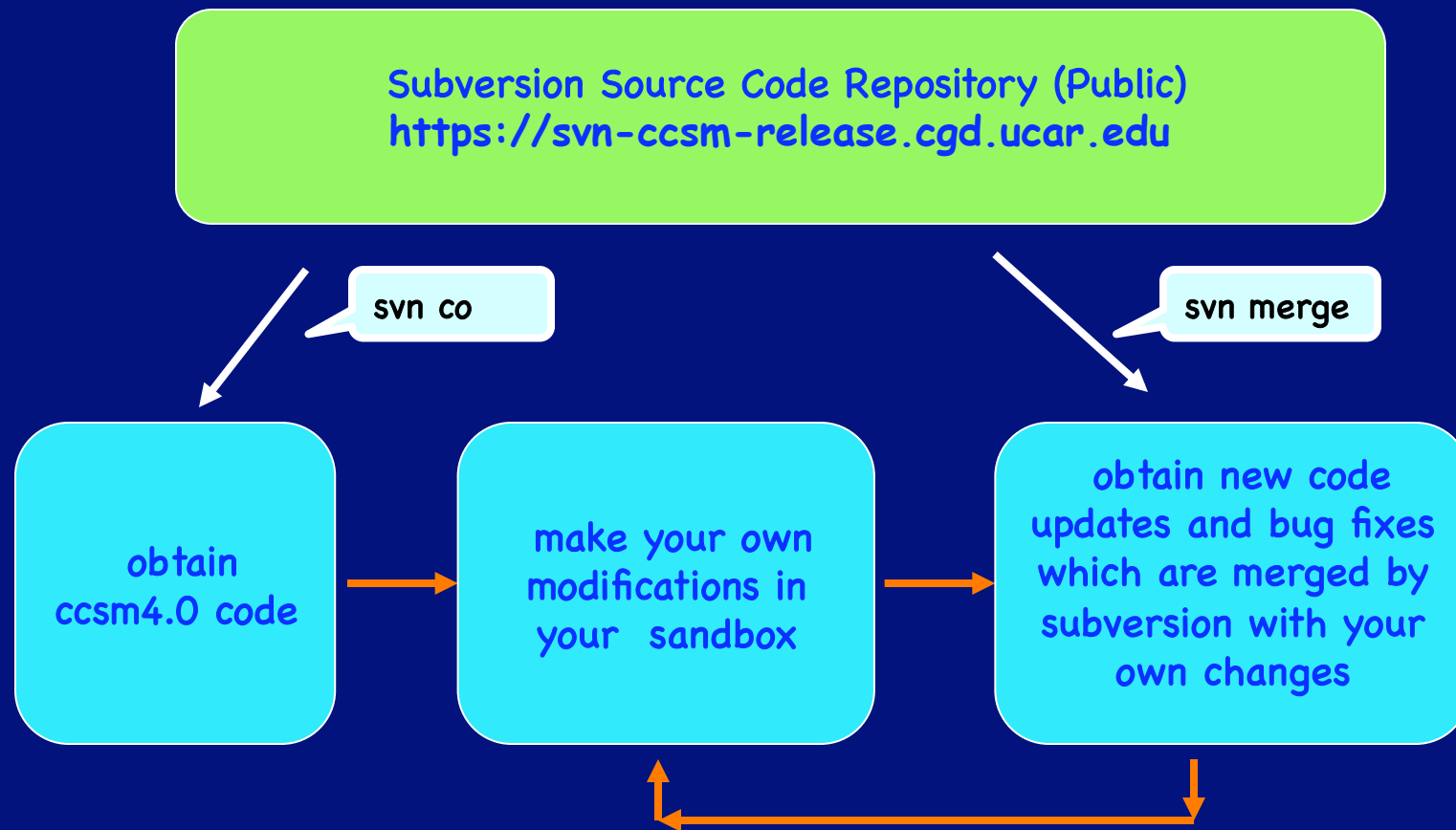
## Members of PCWG can apply for alpha user access by filling out registration link at

## www.cesm.ucar.edu /models/ccsm4.0

# How will CCSM4 be released?

- Leverage Subversion revision control system
- Source code and Input Data obtained from Subversion servers (*not tar files*)
- Output data of control runs from ESG
- Advantages:
  - Easier for CSEG to produce *frequent* updates
  - Flexible way to have users obtain new updates of source code (and bug fixes)
    - Users can leverage Subversion to merge new updates into their "sandbox" with their modifications

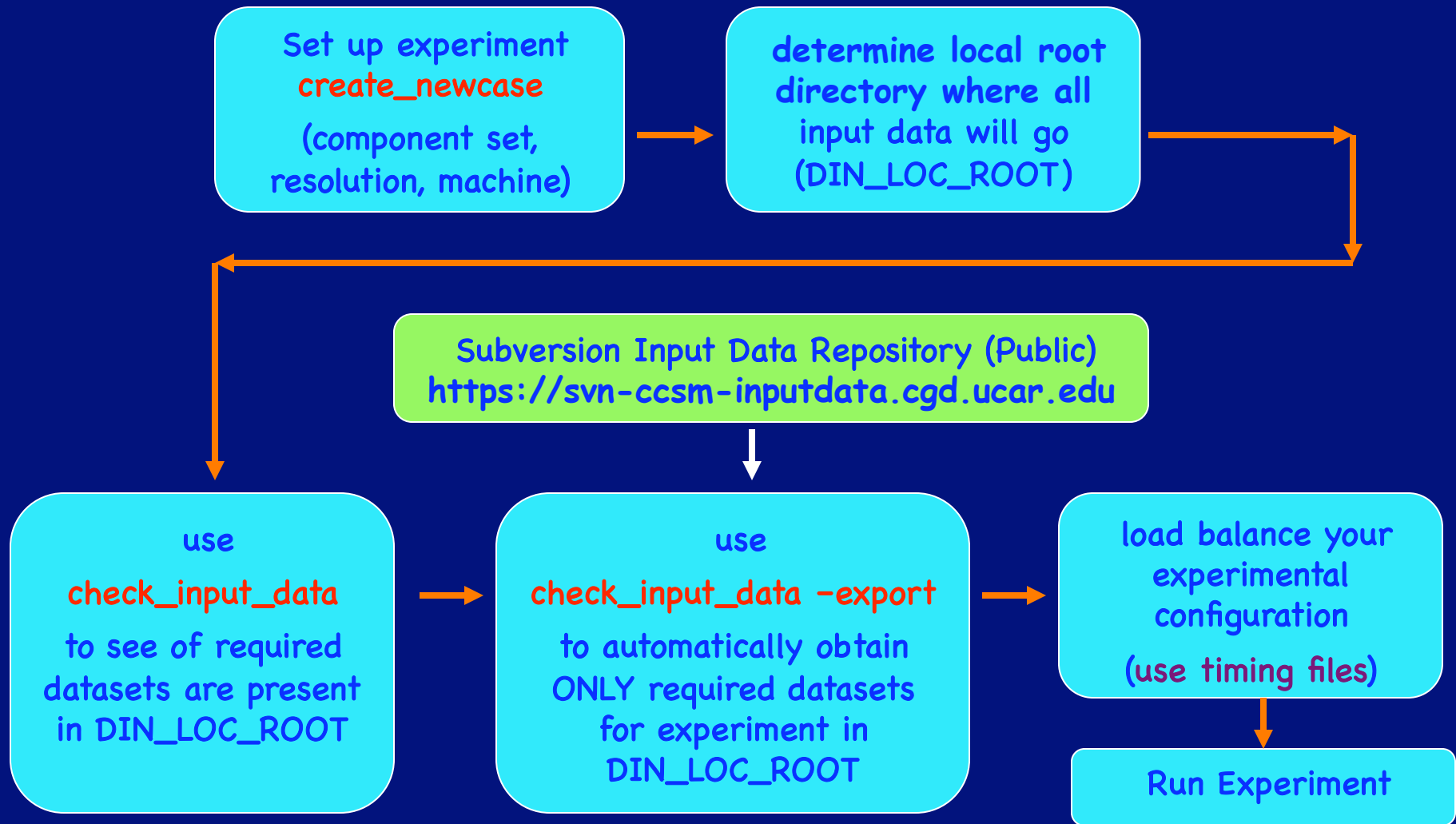
# Subversion Source Code Server - Obtaining the Code



# Obtaining Input Data

- Input data is now in Subversion repository
- Entire input data is about 900 GB and *growing*
- CCSM4 scripts permit user *automatically* obtain *only* the input data need for a given experimental configuration

# Subversion Input Data Server and CCSM4 Workflow



# Porting to your machine

- CCSM4 scripts simplifies porting process
  - capability to support “generic” machines (e.g. linux clusters with a variety of compilers)
  - user still needs to determine which generic machine most closely resembles their machine
  - user feedback will be leveraged to continuously upgrade the generic machine capability post-release



# Load Balancing a configuration on your machine

- Detailed timing information accompanies every run
  - User can leverage this to go through a load balancing exercise (determine processor layout to optimize throughput and efficiency)
- Timing tables are also available from the release web page for some standard configurations
  - This table will be expanded based on post-release user input

# What is being released in CCSM4.0?

- A large variety of model configurations
  - Resolutions, component sets and machines
    - Includes .1° POP/CICE and cubed sphere HOMME dynamical core at 1° and 1/8°
- Functional versus Scientific "support"
  - Scientific support will include associated control runs (1850CN at 2 and 1 degrees)
  - Functional support will only encompass verifying that configuration can run "out-of the box" and pass restart tests on a few machines