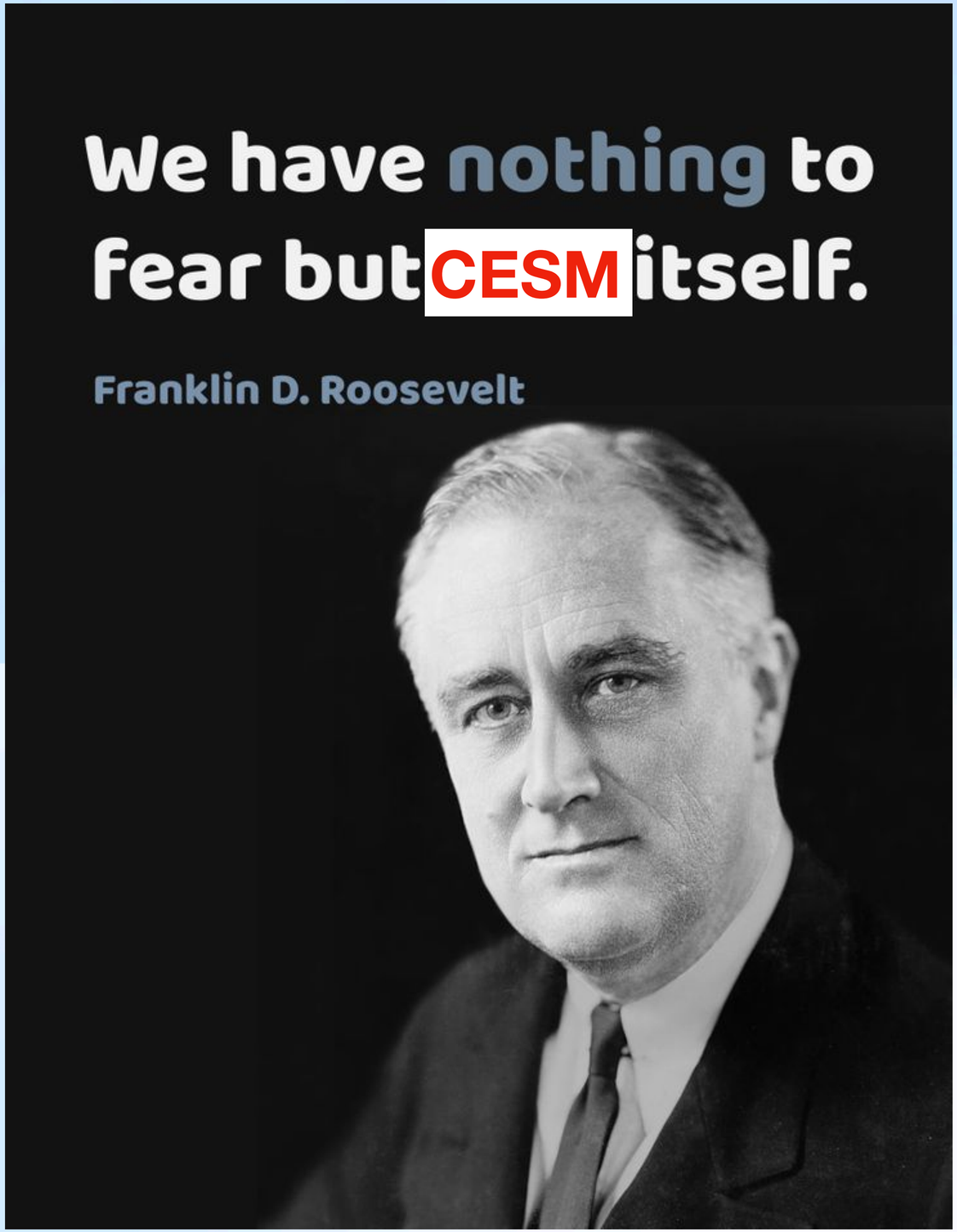
Intro to CESM2!

January 30, 2025


We have nothing to
fear but CESM itself.
Franklin D. Roosevelt

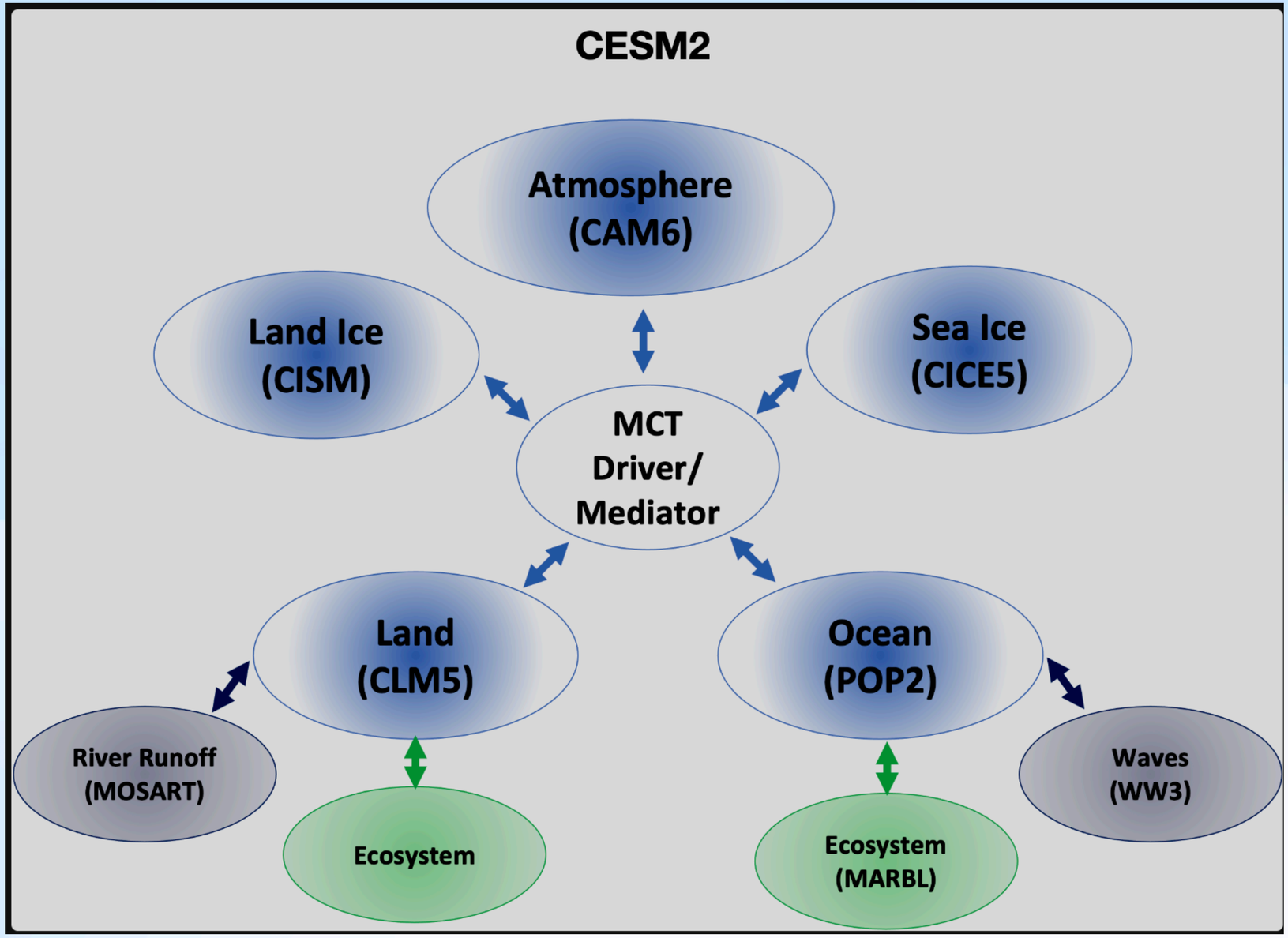

We have nothing to
fear
CESM
elf.
Franklin D
velt

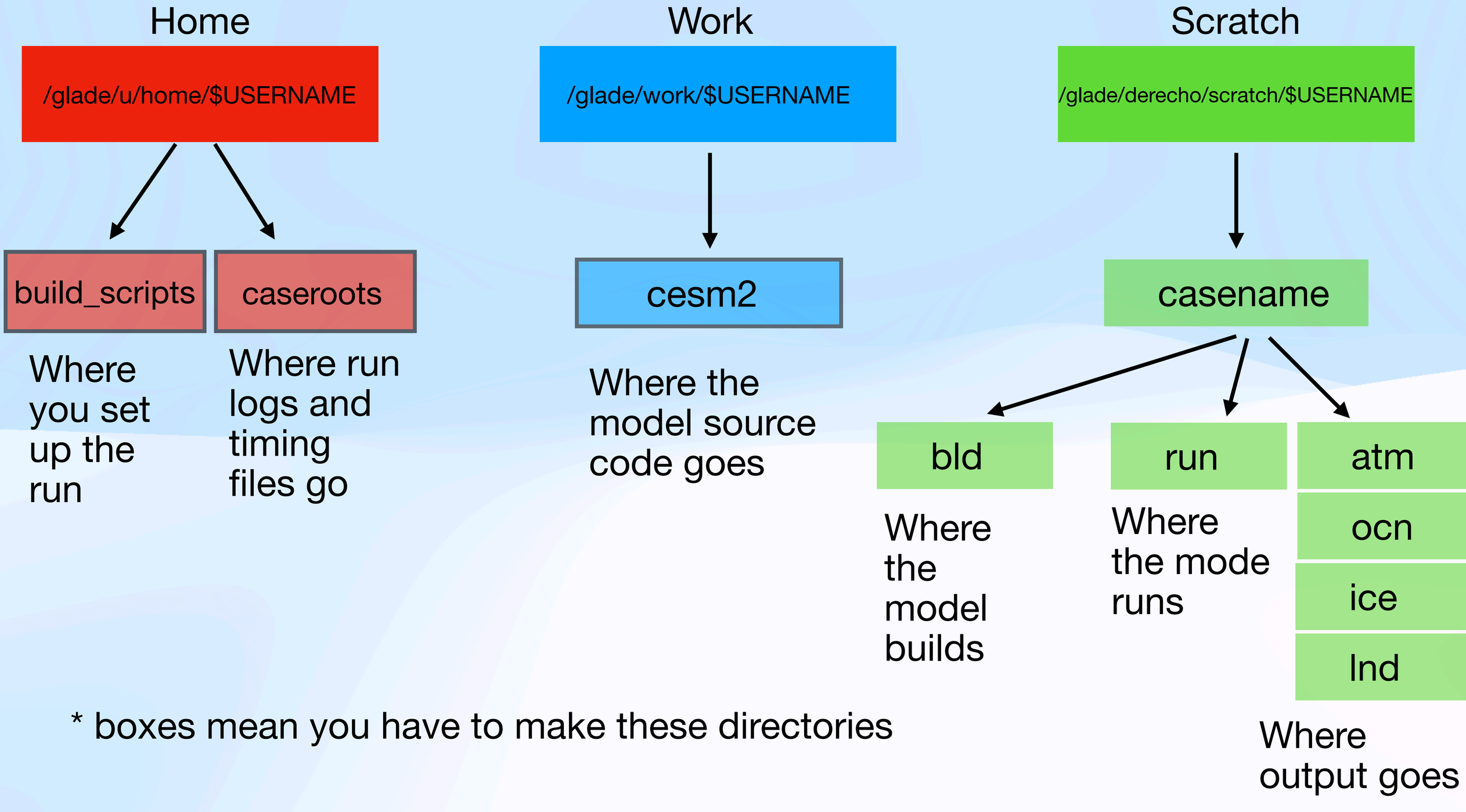

I can't
do it

CESM2 Skills Learned Today

- Layout of Derecho and important directories: home, work, scratch
- Download model in work directory
- Walk through build script
- Submit first run! 🎉
- Time permitting: opening/plotting netcdf data in Jupyter notebook

Community Earth System Model 2




Home
/glade/u/home/$USERNAME
build_scripts
caseroots
Where you set up the run
Where run logs and timing files go
Work
/glade/work/$USERNAME
cesm2
Where the model source code goes
Scratch
/glade/derecho/scratch/$USERNAME
casename
bld
run
atm
ocn
ice
lnd
Where the model builds
Where the mode runs
Where output goes
* boxes mean you have to make these directories

Log-in to Derecho

ssh -XY USERNAME@derecho.hpc.ucar.edu

If the -XY doesn’t work just remove it

Follow along tutorial: https://tinyurl.com/cesm2-eps231

Let’s download the model!

```
cd /glade/work/$USERNAME

mkdir cesm2

git clone https://github.com/ESCOMP/CESM.git cesm2

cd cesm2

git checkout release-cesm2.1.5

./manage_externals/checkout_externals
```

CESM has been designed to be easy to use. Once you have downloaded the CESM code, a CESM `case` can be run with a set of 4 commands.

Note: In CESM jargon, a case refers to a specific instance of a model simulation.

1. Create a new case using `create_newcase`
2. Set up the case by invoking `case.setup`
3. Build the executable using `case.build`
4. Run your case using `case.submit`

Go to your home/build_scripts directory

cp ~asalazar/EPS231/INTRO/build_script_sample.sh ./

Open .sh file using vim or any other text editor (I use VS code)

(Walk through build script file)

Edit .bashrc file:

```
cd ~

vi .bashrc
```

[then add the following text, press i in vi]

```
export PBS_ACCOUNT=UHAR0028
```

[press esc and type :x! to save]

```
source .bashrc
```

[then return to your build_scripts directory]

```
./build_script_sample.sh test1
```

[if test1 is already taken do test2]

cp /home/u/asalazar/EPS231/INTRO/open_netcdf.ipynb path_to_your_home

Log in to Jupyter hub: https://jupyterhub.hpc.ucar.edu/