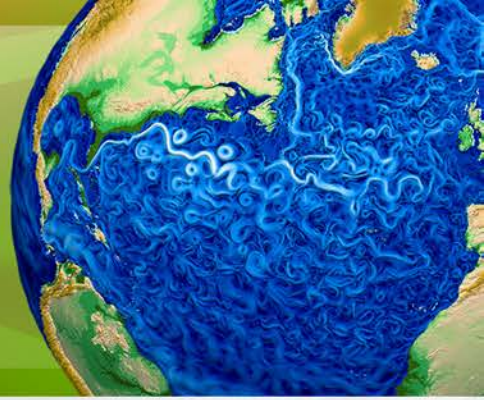
E3SM
Energy Exascale
Earth System Model



Accessing E3SM Public Data

How to find and access publicly available E3SM model output.

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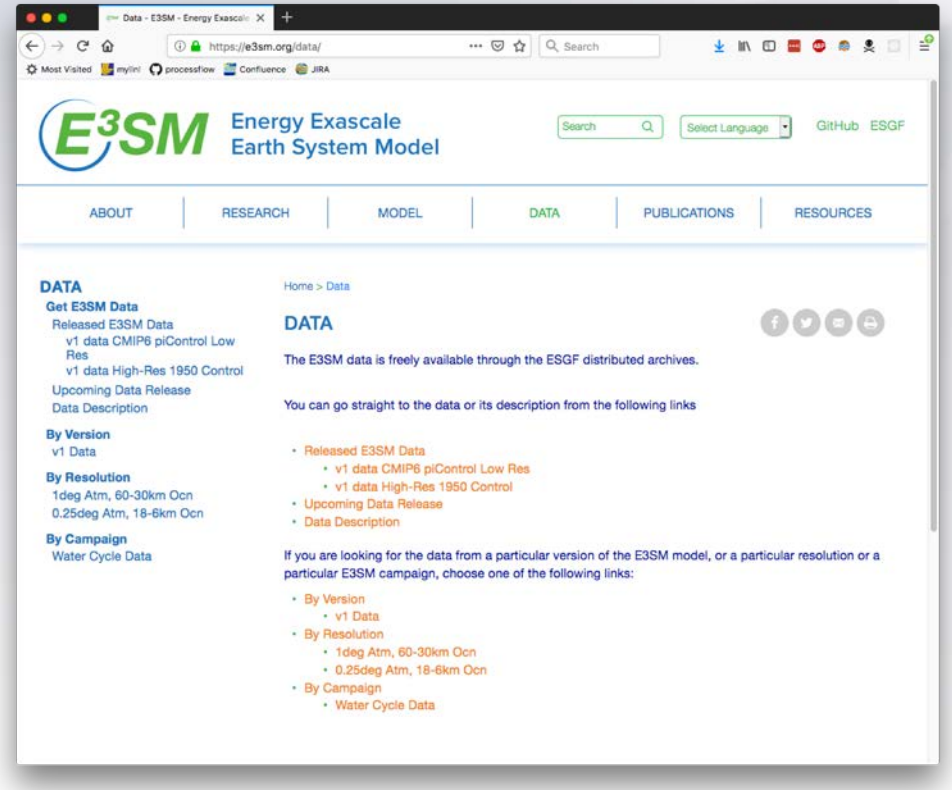
U.S. DEPARTMENT OF ENERGY

E3SM Data Page

Using a web browser, navigate to https://e3sm.org/data/

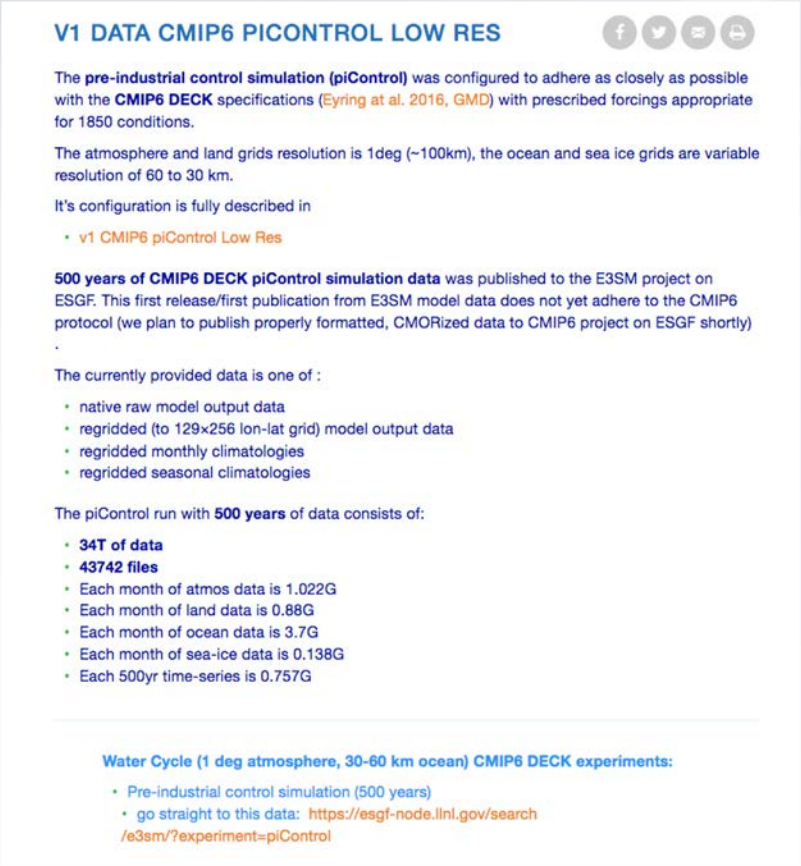
- This page gives an overview of all currently published E3SM data and will be updated when new data is published.
- Each dataset has its own page with descriptions of both the dataset as well as the experiment configuration used to generate it.



Experiment Description

Each datasets pages includes a description of the experimental specification as well as an overview of the data files included.

Each dataset page also includes a link to the dataset itself, in this case:
https://esgf-node.llnl.gov/search/e3sm/?experiment=piControl



V1 DATA CMIP6 PICONTROL LOW RES

The **pre-industrial control simulation (piControl)** was configured to adhere as closely as possible with the **CMIP6 DECK** specifications (Eyring at al. 2016, GMD) with prescribed forcings appropriate for 1850 conditions.

The atmosphere and land grids resolution is 1deg (~100km), the ocean and sea ice grids are variable resolution of 60 to 30 km.

It's configuration is fully described in

- v1 CMIP6 piControl Low Res

500 years of CMIP6 DECK piControl simulation data was published to the E3SM project on ESGF. This first release/first publication from E3SM model data does not yet adhere to the CMIP6 protocol (we plan to publish properly formatted, CMORized data to CMIP6 project on ESGF shortly)
.

The currently provided data is one of :

- native raw model output data
- regridded (to 129×256 lon-lat grid) model output data
- regridded monthly climatologies
- regridded seasonal climatologies

The piControl run with **500 years** of data consists of:

- **34T of data**
- **43742 files**
- Each month of atmos data is 1.022G
- Each month of land data is 0.88G
- Each month of ocean data is 3.7G
- Each month of sea-ice data is 0.138G
- Each 500yr time-series is 0.757G

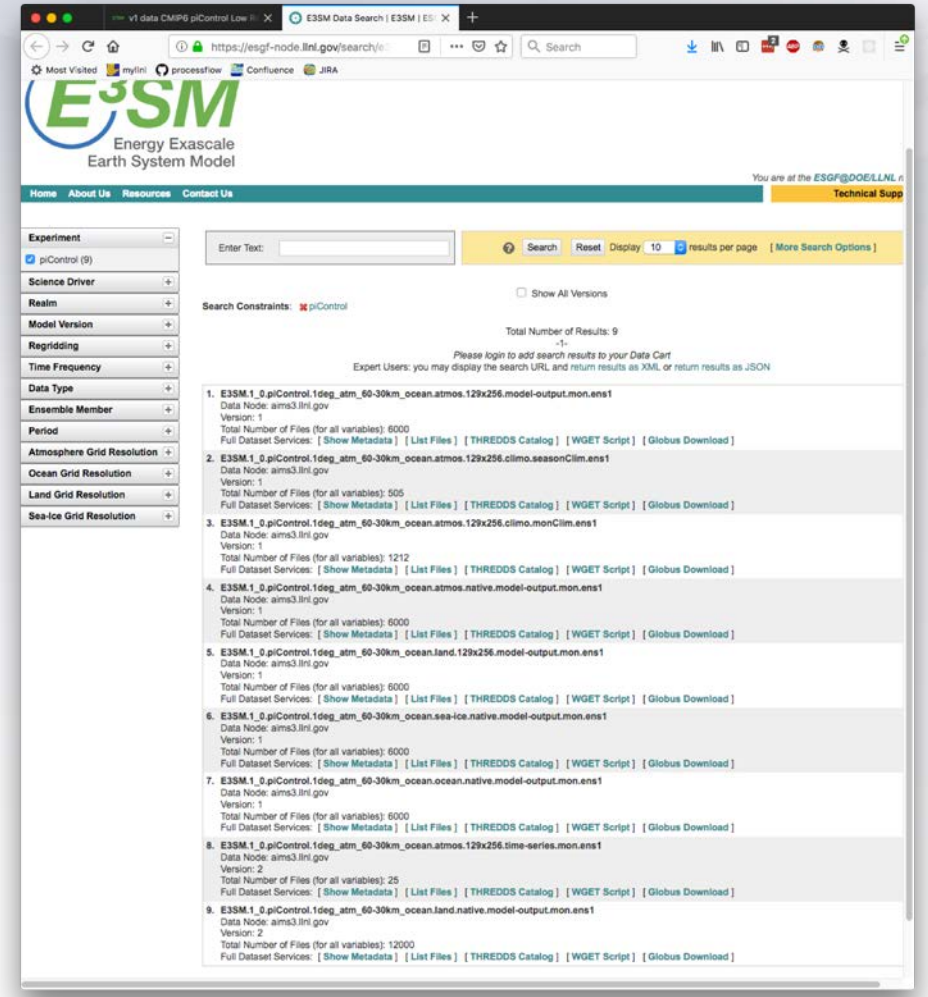
Water Cycle (1 deg atmosphere, 30-60 km ocean) CMIP6 DECK experiments:

- Pre-industrial control simulation (500 years)
  - go straight to this data: https://esgf-node.llnl.gov/search/e3sm/?experiment=piControl

ESGF Dataset

Each dataset is broken into subsets for each type of data and for each model component. The piControl has the following subsets:

- Atmosphere
  - Raw monthly history files
  - Regridded monthly history files
  - Seasonal Climotoligies
  - Monthly Climotologies
  - Regridded Timeseries
- Land
  - Raw monthly history files
  - Regridded monthly history files
- Ocean
  - Raw monthly history files
- Sea-Ice
  - Raw monthly history files



Download Methods

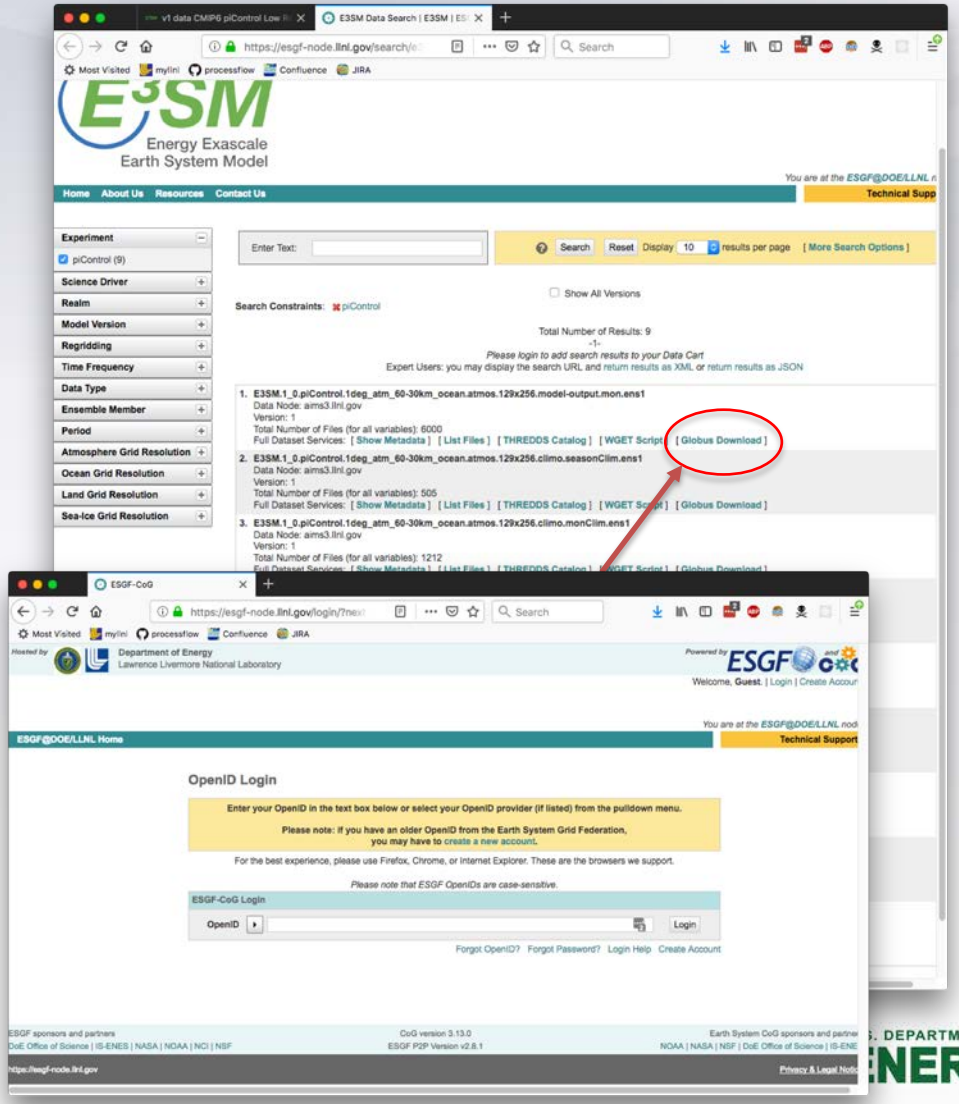
- There are three download methods
  - Globus
    - Recommended method
    - Able to download entire datasets
    - much faster then standard HTTP
  - WGET script
    - More complex, can only handle 1000 files at a time
  - Individual file download
    - one file at a time

Globus Download

Select the dataset you would like to download, and click the Globus link.

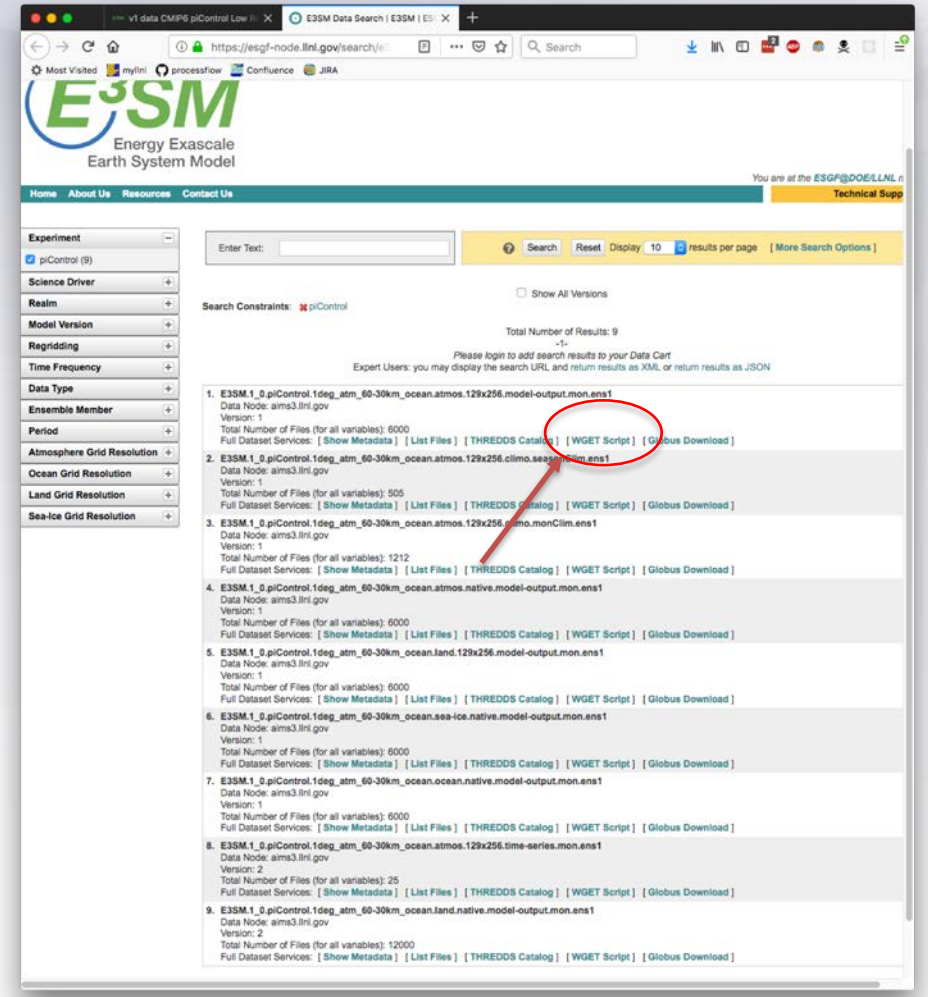
Either create a new OpenID account, or use an existing account to log into the ESGF node.

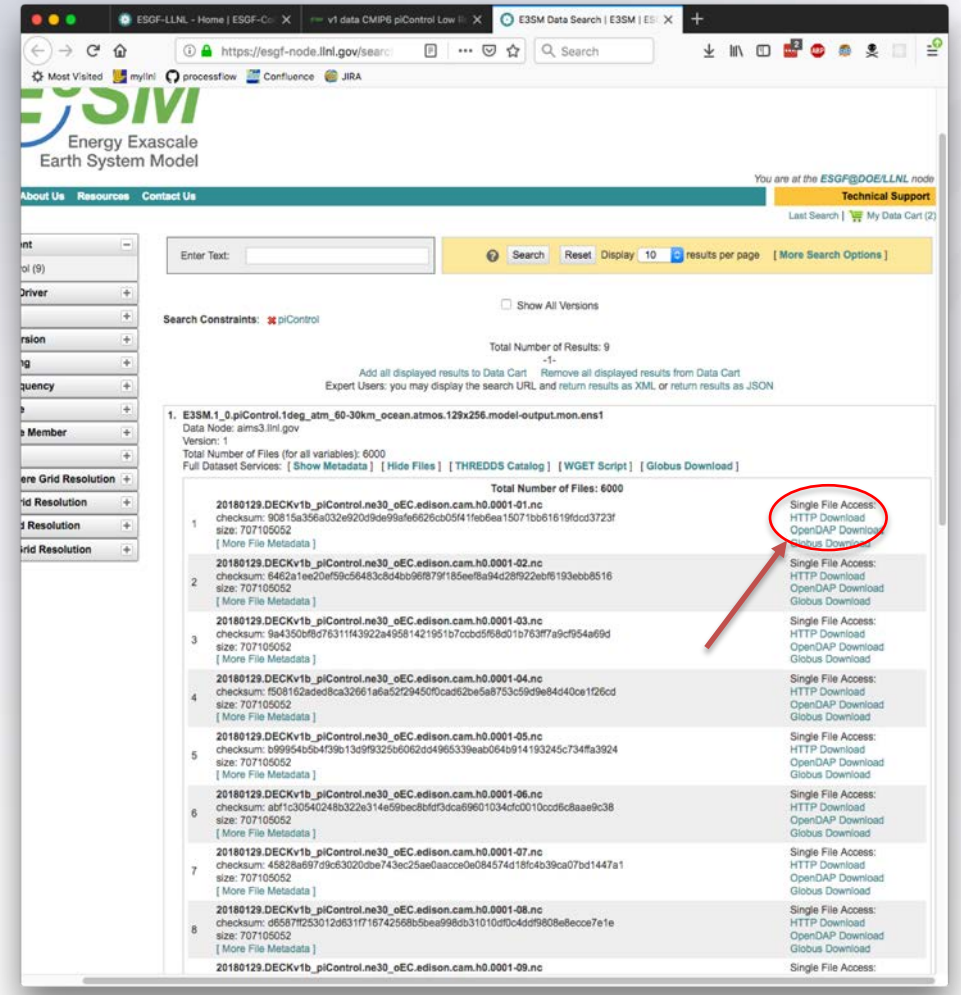
If your globus account isn't setup, use their setup link:
https://www.globus.org/SignIn#step=signup



WGET Script

- Selecting the WGET Script option will download a bash shell script to your machine.
- You must have either an up to date version of the Java Development Kit, or myproxy-logon installed.
- Run the script via the command line which will prompt for your credentials and begin downloading files one at a time.



Individual file download

- Clicking the “Show Files” option on any dataset will list all files in the dataset.
- Select the “HTTP Download” option for any file will start a download in your browser.