

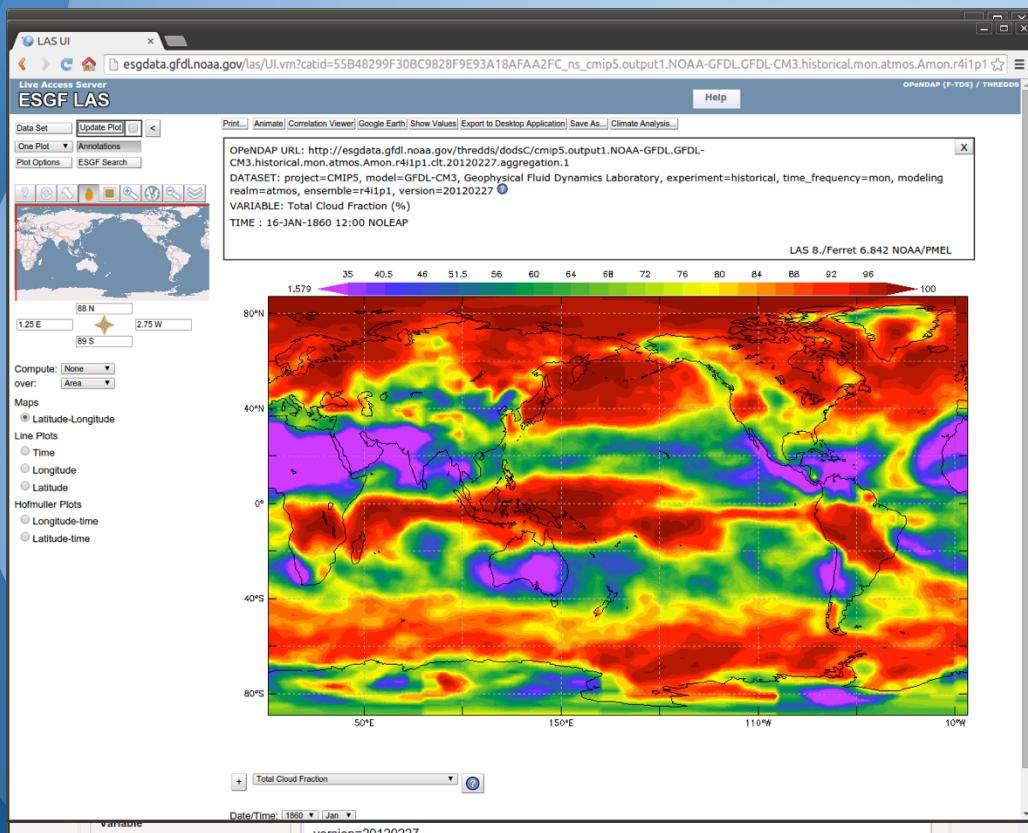
# ESGF Analysis and Visualization

## Challenges and Opportunities

Roland Schweitzer and Kevin O'Brien

Weathertop Consulting, LLC and University of Washington

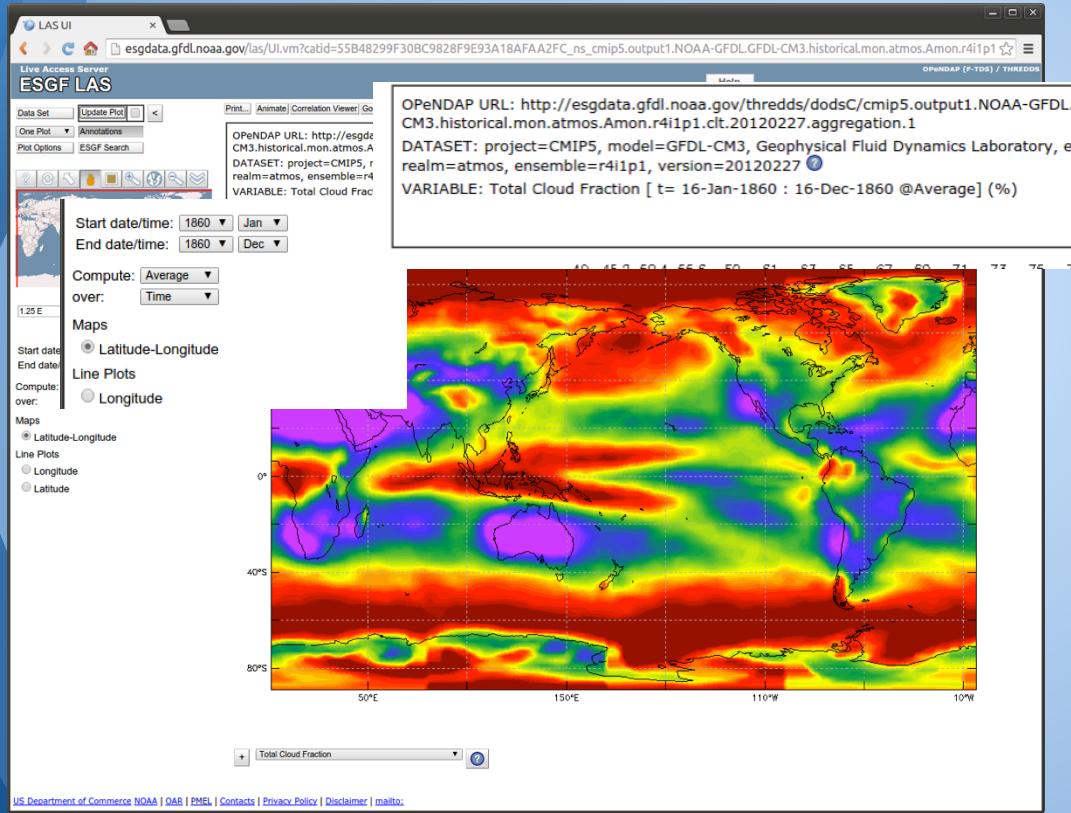
# Opportunity - visualization



Analyze and  
Visualize  
link right  
off the  
GFDL node.

Captured 12/4/2014

# Opportunity - analysis

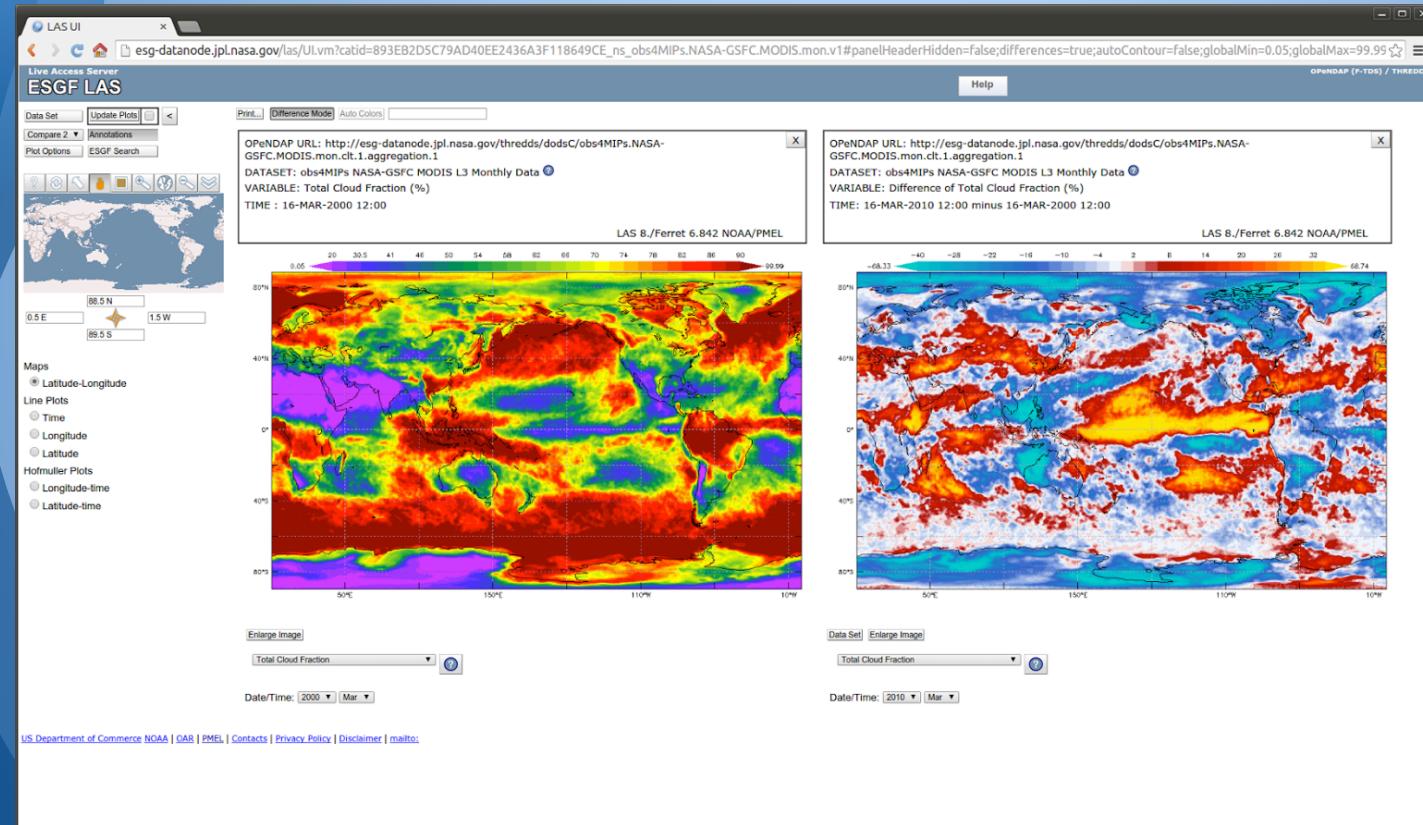


A time  
average of  
Jan - Dec  
1860  
computed  
on-the-fly.

Captured 12/4/2014

# Opportunity - comparison

(same model, same node)



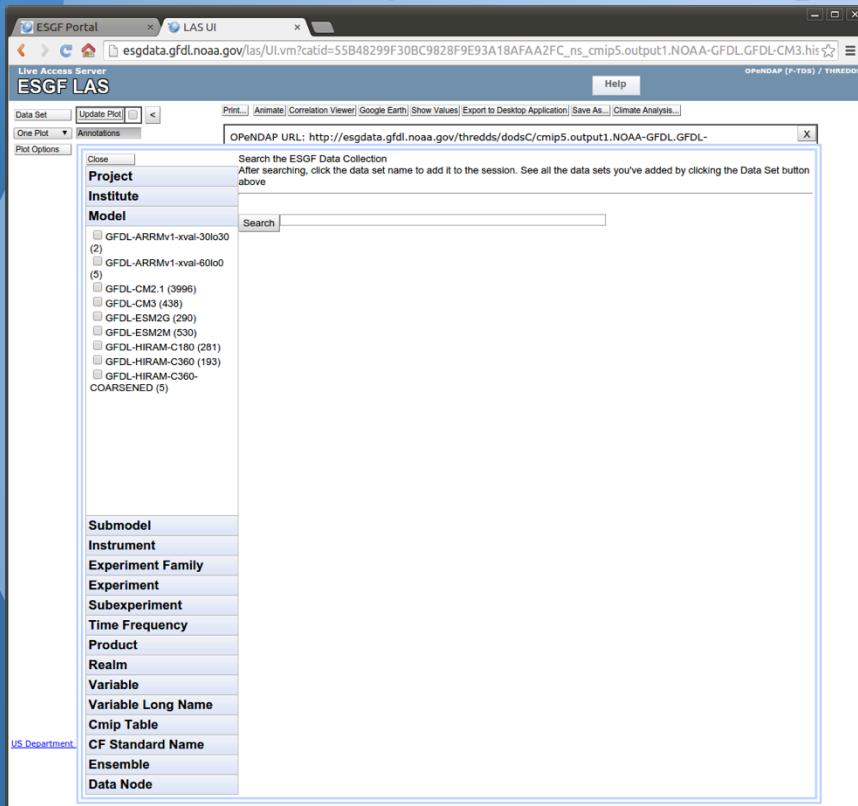
Mar  
2000  
Captured 12/5/2014  
and Mar  
2010  
from the  
GSFC  
MODIS.  
Captured 12/5/2014

# Challenge - comparison

(different model, different node)

Finding the data

LAS has to implement its own search and the node it chooses only has NOAA-GFDL data indexed.



# Challenge - comparison

(different model, different node)

Finding the data

Switch to NASA JPL  
node from which  
the NOAA GFDL  
data can be found.

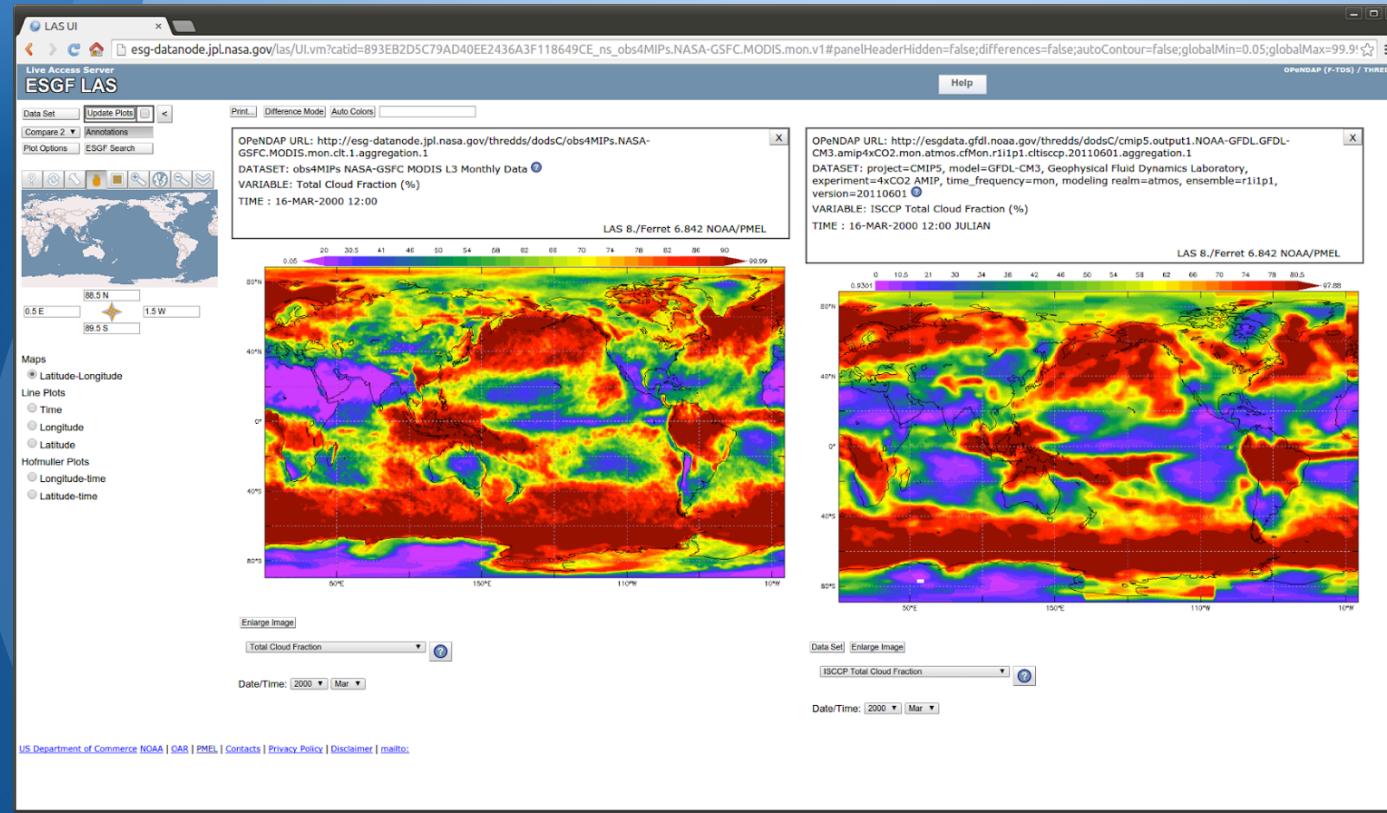
The screenshot shows the ESGF Portal interface with multiple tabs open. The main content area displays a list of search results for NOAA GFDL data. The results are numbered 1 through 16 and include details such as project (CMIP5), model (GFDL-CM3), experiment (4XCO2), run (run 1), and version (20110601). The results are filtered by the 'NOAA-GFDL' project. The left sidebar shows a navigation tree with categories like Project, Institute, Model, Submodel, Instrument, Experiment Family, Experiment, Subexperiment, Time Frequency, Product, Realm, Variable, and Variable Long Name. The bottom of the interface includes a search bar and a 'total cloud' status indicator.

Rank	Project	Model	Experiment	Run	Version
1	CMIP5	GFDL-CM3	4XCO2	run 1	20110601
2	CMIP5	NOAA GFDL GFDL-CM3	4XCO2	run 1	20110601
3	CMIP5	NOAA GFDL GFDL-CM3	4XCO2	run 1	20110601
4	CMIP5	NOAA GFDL GFDL-CM3	4XCO2	run 1	20110601
5	CMIP5	NOAA GFDL GFDL-CM3	4XCO2	run 1	20110601
6	CMIP5	GFDL-CM3	Geophysical Fluid Dynamics Laboratory	experiment=AMIP, time frequency=day	20110601
7	CMIP5	GFDL-CM3	Geophysical Fluid Dynamics Laboratory	experiment=AMIP, time frequency=mon	20110601
8	CMIP5	GFDL-CM3	Geophysical Fluid Dynamics Laboratory	experiment=AMIP, time frequency=mon	20110601
9	CMIP5	GFDL-CM3	Geophysical Fluid Dynamics Laboratory	experiment=AMIP, time frequency=mon	20110601
10	CMIP5	GFDL-CM3	Geophysical Fluid Dynamics Laboratory	experiment=AMIP plus 4K anomaly	20110601
11	CMIP5	NOAA GFDL GFDL-CM3	4XCO2	run 1	20110601
12	CMIP5	GFDL-FSM2M	Geophysical Fluid Dynamics Laboratory	experiment=ESM feedback, time frequency=mon	20111228
13	CMIP5	GFDL-FSM2M	Geophysical Fluid Dynamics Laboratory	experiment=ESM feedback 2, time frequency=mon	20120411
14	CMIP5	GFDL-FSM2M	Geophysical Fluid Dynamics Laboratory	experiment=ESM fixed climate 4	20111228
15	CMIP5	GFDL-FSM2M	Geophysical Fluid Dynamics Laboratory	experiment=ESM fixed climate 2, time frequency=mon	20120411
16	CMIP5	GFDL-FSM2M	Geophysical Fluid Dynamics Laboratory	ensemble=r1i1p1, time frequency=mon	20120411

Comparing the data

# Challenge - comparison

(different model, different node)

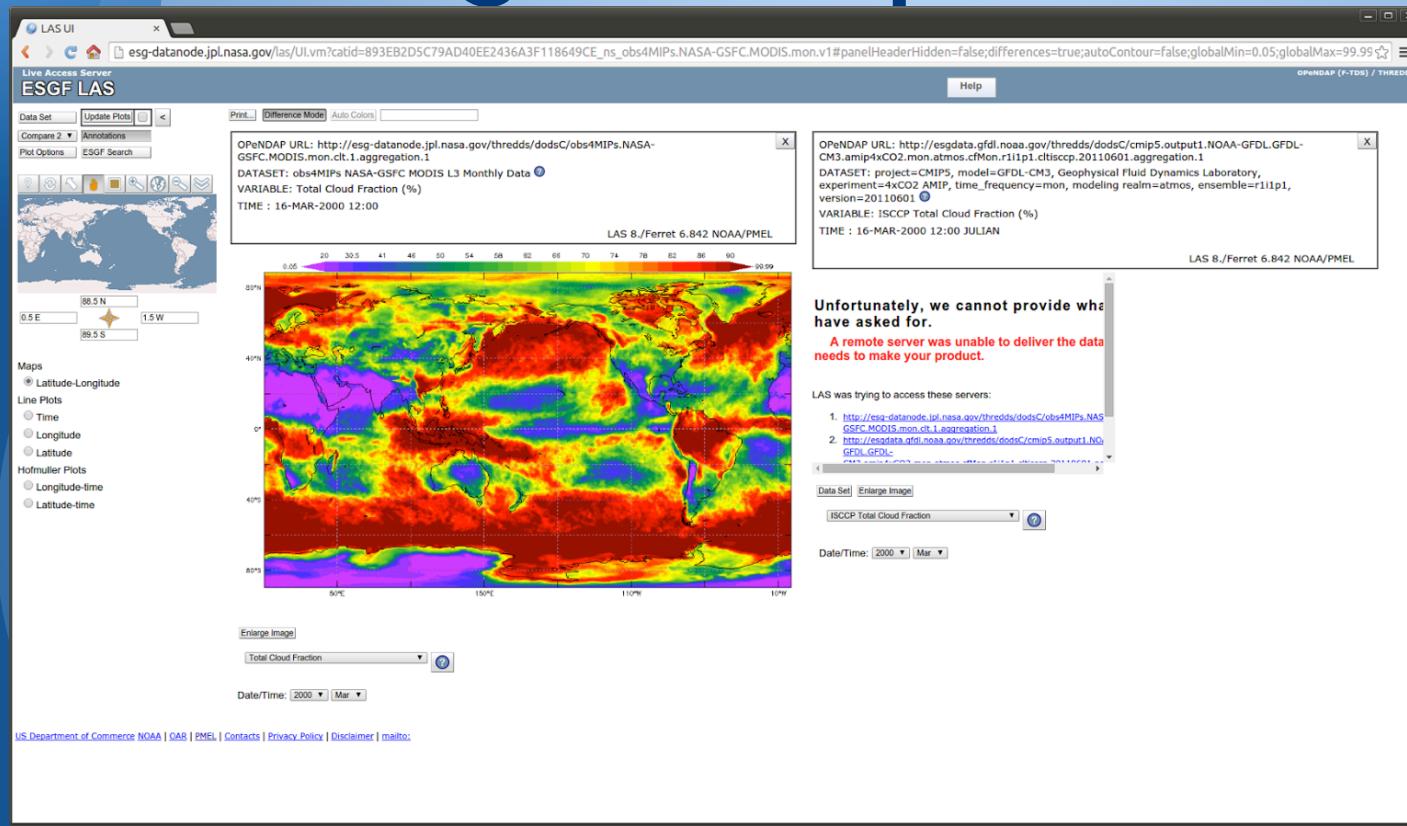


Once found a  
side-by-  
side  
plot is  
possible!

Comparing the data

# Challenge - comparison

(different model, different node)



But a difference calculation is not!

## A Bit of History

- Conceived as a UI within the gateway node.
- Implemented as a separate UI and installed at a few sites who found the magic to turn on LAS in the publisher.
- Recently reinstated in the COG UI (which should allow multiple data sets).

# Finding Answers

- Address the basics of managing the federated environment.
- Define the access types (human with browser, science code, etc and provide mechanisms for access).
- Require all access modes (OPeNDAP).
- Look at DAP4 for asynchronous access