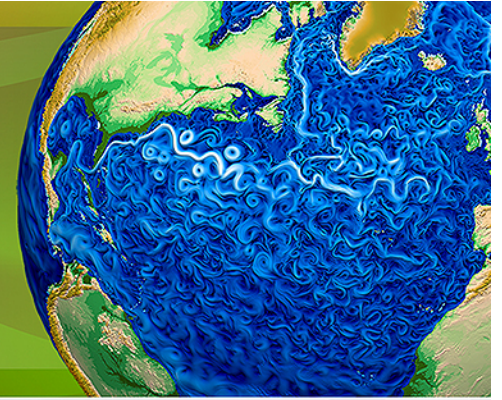




Accelerated Climate Modeling  
for Energy



# Workflow Group

Plenary Tutorial:

Framework and Tools for Supporting Model Integrations and Offline Analysis

# Overview

- Process Flow
  - Task Leads: Ben Mayer and Kerstin Kleese-Van Dam
- Data Management
  - Task Leads = Sasha Ames and Rachana Ananthakrishnan
- Diagnostics & Metrics
  - Task Leads = Jeff Painter and Brian Smith
- UV-CDAT
  - Task Leads = Charles Doutriaux and Aashish Chaudhary
- User Interface
  - Task Lead = Matthew Harris

Task Leads = Ben Mayer and Kerstin Kleese-Van Dam

## Process Flow

# Overview of Current Data Management

- Model Run Setup
- Run Management
- Many sites
  - Model runs
  - Resource availability
- Post-Process
  - Transfer
  - ESGF Publish
  - Interpolation
  - Diagnostics
  - Archive to HPSS
- Data Logistics



# Model Configuration

- Required to **Enable proper testing of scientific question**
- Query collaborators for output fields
- Configuring Input files, model parameters and output fields
- Perform 5 day run
  - Check for ability to run
- Perform 25 day run
  - Check outputs are as expected

# Run Management

- Typical time to complete production run 6-9 months;
  - time = money
- Need to be **constantly running model** or progressing towards running to **minimize time to solution**
- Status reports are generated to track progress

# DOE Computing Diversity

- DOE sites have specific strengths (compute, disk, archival storage)
- We can and do leverage these unique capabilities
- It does introduce complexities with data location and security/accounts

# Data Transfer

- Allows for leveraging multi-site strengths
- ESNNet and Globus enable high speed transfers



# ESGF Publication

- Allows organized and searchable data distribution to collaborators across sites
- Publishing of v0.1 data in progress (See Dean's Talk)

# Interpolation

- **Functional Requirement** to compare models and observations or intermodel (v0 to v1), and intermediate step between climatologies and diagnostics
- Performing several types of interpolation
  - Converting resolutions (higher -> bilinear, lower -> conservative remapping)
  - Native grid to lat/lon

# Diagnostic Analysis

- Required to diagnose how case is progressing and evaluating model output
- We are using both UV-CDAT and NCL based diagnostic tools to examine case progress
- Creating new diagnostics framework using UV-CDAT to integrate into larger workflow
- Atmosphere and Land diagnostics are almost complete

# Archive Generated Output

- Ability to, at a later date, perform analysis or recreate a case configuration
  - Long term availability
- Use HPSS for increased reliability over disk
  - Two copy or RAIT for even higher reliability
  - Also cost effectiveness
  - Automatically Computed CRC for bit error detection



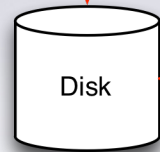
# Capability Summary

- Proper Configuration to test Hypothesis
- Simulation Progress and Status Reports
- Take best advantage of resources
  - Globus Transfers
  - ESGF Publications
- Critical functions for ability to compare and evaluate how model is progressing
- Provide final output and configuration information for later analysis via archiving

# Data Logistics



Production Compute



Network drain  
In practice 550Mbps  
(70MB/s)  
Can happen constantly

HPSS  
Archive

Analysis of Entire Case



Need 1-5TB

Model 6hr Run Request  
per day (on average)  
5 hour of run per 6 hr of  
request  
~1hour of writing  
10s to 100MB/s

Very large storage  
Tens of PB to ExaB  
200 MB/s  
Nearly Constant

Maximum Case size  
currently 130TB  
Need ~150TB  
Single Node of compute



Task Leads = Sasha Ames and Rachana Ananthakrishnan

**Data Management**



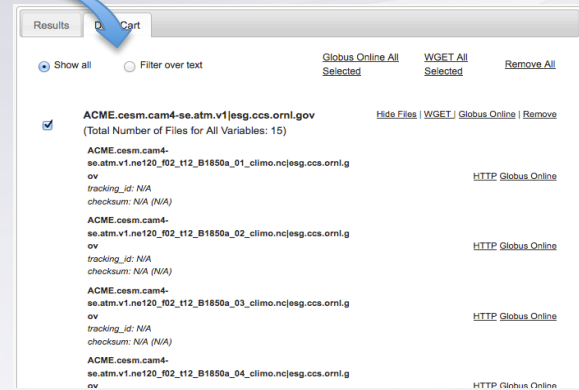
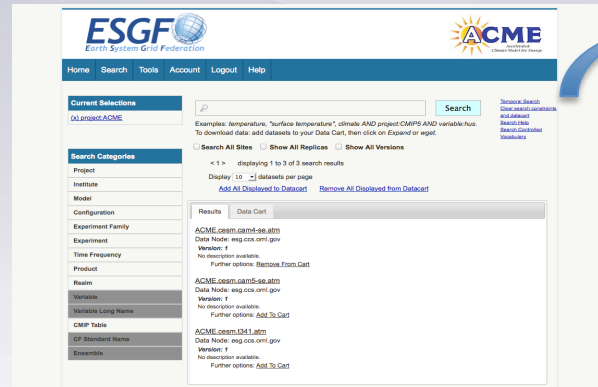
# ACME Data Publication to ESGF

- The ESGF enterprise system is a framework for the management, dissemination and analysis of model output and observational data (<http://esgf.llnl.gov>)
  - Over 40 projects use ESGF (CMIP5, CORDEX, etc.)
  - Tens of PBs of data archived (ACME → 20 datasets, ~50TB)
  - Easily accessible via http or Globus
- We're publishing model output and climo data sets now
  - Goal to integrate automated publication with managed workflow
- ESGF nodes online at LLNL, ORNL, LANL, ANL, PNNL
  - NERSC coming soon
  - ANL upgrades coming soon
- Need to publish?
  - Now: contact publication “Liaisons” for ACME
  - Future: use Publication Service web user interface
  - Know where your data is located and values for search categories
- Usage tutorial
  - <https://acme-climate.atlassian.net/wiki/display/WORKFLOW/Development+of+documentation+to+access+data+on+ESGF>

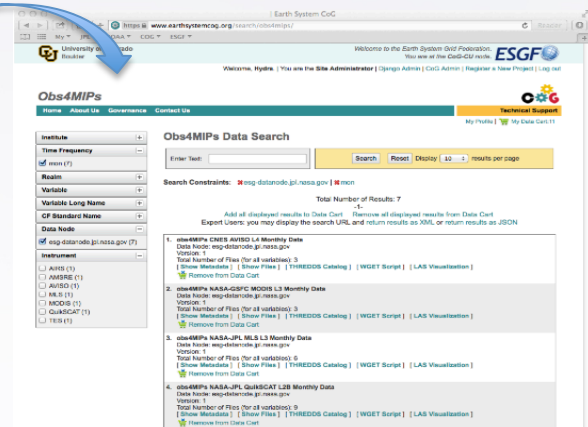


# Earth System Grid Federation (ESGF)

- ESGF Web Front End (Current)

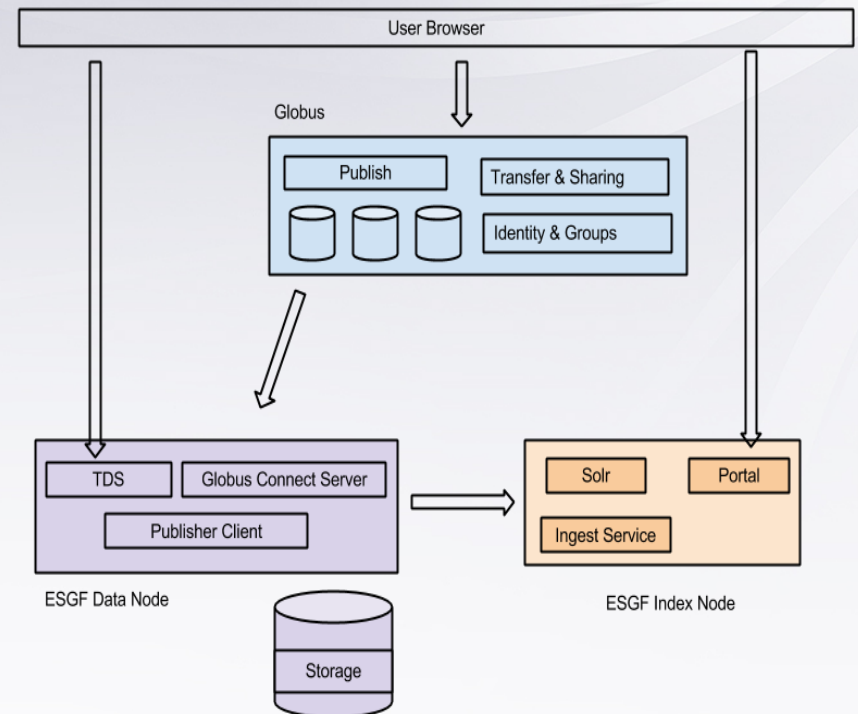


- ESGF CoG (Improved front end released now. Officially released in Sept. 2015)



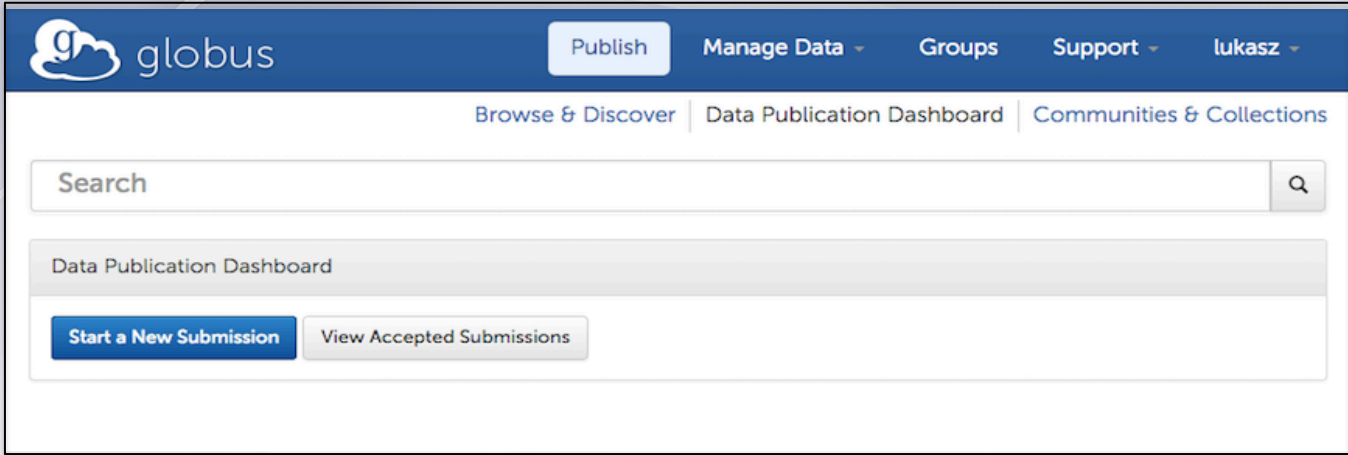
# Publication as a Service

- Goals:
  - Simple interface for scientist to publish data
  - Managed publication process
    - User provides some input,
    - Submits publication task
    - Task managed by service
    - User notified on progress/errors
- Mappings:
  - Community: ACME
  - Sub-communities: Atmosphere, Land, etc
  - Collection: Case
  - Dataset: Run

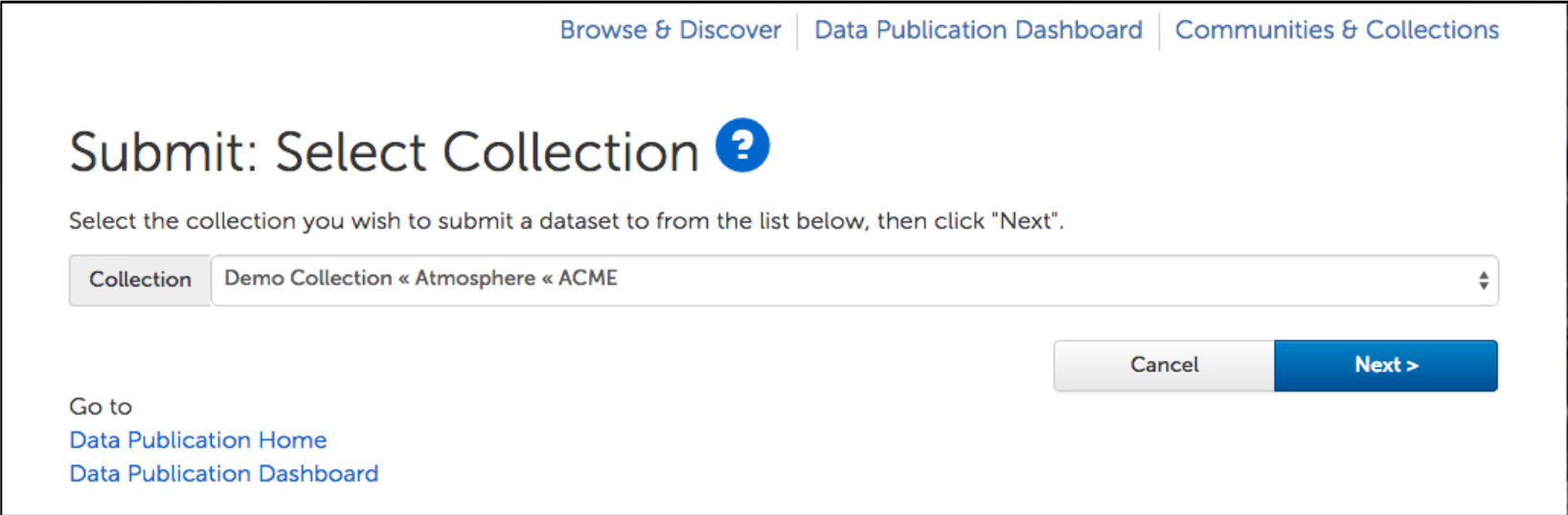


# Choose a collection

A collection is created for each Case



The screenshot shows the top navigation bar of the Globus Data Publication Dashboard. The navigation bar includes the Globus logo, a 'Publish' button, and menu items for 'Manage Data', 'Groups', 'Support', and a user profile 'lukasz'. Below the navigation bar, there are breadcrumb links for 'Browse & Discover', 'Data Publication Dashboard', and 'Communities & Collections'. A search bar is present with the placeholder text 'Search' and a search icon. Below the search bar, the 'Data Publication Dashboard' section contains two buttons: 'Start a New Submission' and 'View Accepted Submissions'.



The screenshot shows the 'Submit: Select Collection' form. The breadcrumb navigation at the top includes 'Browse & Discover', 'Data Publication Dashboard', and 'Communities & Collections'. The main heading is 'Submit: Select Collection' with a question mark icon. Below the heading, there is a text instruction: 'Select the collection you wish to submit a dataset to from the list below, then click "Next".' A dropdown menu is shown with the selected value 'Demo Collection << Atmosphere << ACME'. At the bottom right, there are two buttons: 'Cancel' and 'Next >'. At the bottom left, there are links: 'Go to Data Publication Home' and 'Data Publication Dashboard'.

# Add description

[Browse & Discover](#) | [Data Publication Dashboard](#) | [Communities & Collections](#)

**Describe** Assemble Data Publish To ESGF Complete

## Submit: Describe this Dataset ?

Please fill in the requested information about this submission below.

The name of the Institution that generated the data

**Institution \***

Computation Institute

The name of the user who generated the data

**Run Owner \***

Ananthakrishnan

Rachana

Description of this dataset

**Description \***

Test submission

**Data Node**

Oak Ridge

Cancel/Save

Next >

Metadata and  
ESGF node to  
store data



# Assembles files to publish

Identify files to publish and transfer to ESGF data node

Browse & Discover | Data Publication Dashboard | Communities & Collections

Describe | **Assemble Data** | Publish To ESGF | Complete

## Submit: Assemble this Dataset ?

Click the button to assemble the files you would like to publish to this dataset. Files chosen will be transferred to ESGF data node. Once all your data is assembled choose next to publish.

For ESGF publication, the files should be transferred in this directory structure 'ACME/<data\_type>/<experiment>/<versionnum>/<realm>/<regridding>/<range>' Globus will scan all transferred files, and create the needed directory structure in

**Refresh the page to see status of your transfers. Once completed, you can**

**Assemble Dataset** **Refresh**

< Previous Cancel/Save

Transfer Files | Activity | Manage Endpoints | Dashboard

Get Globus Connect Personal  
Turn your computer into an endpoint.

## Transfer Files

Transfer Request Submitted Successfully. Task ID: af3ee77e-eebd-11e4-b6b4-1231392cc9a8

Endpoint: climate#acme ... Go Path: /data/3/ACME/h0/b1850c5\_m1a/V0\_1/ Go

Endpoint: publish#ornl ... Go Path: /submission0\_23/ Go

File Name	Size
b1850c5_m1a.cam.h0.0001-01.nc	4.01 GB
b1850c5_m1a.cam.h0.0001-02.nc	4.01 GB
b1850c5_m1a.cam.h0.0001-03.nc	4.01 GB

more options Label This Transfer

This will be displayed in your transfer activity.

# Login to ESGF

[Browse & Discover](#) | [Data Publication Dashboard](#) | [Communities & Collections](#)

[Describe](#) | [Assemble Data](#) | [Publish To ESGF](#) | [Complete](#)

## Publish to ESGF

Your data files will be scanned and parsed to extract metadata, create a THREDDS catalog and publish to the ESGF service. This might take some time, and you can refresh to see status.

Click on Publish to start the publication process. If you want to add more files use Previous button to transfer additional files.

[Publish](#)

## Progress of Publication

Scan data:  
Generate THREDDS catalog:  
Publish to Index node:

Checks permissions  
to see if user can  
publish

[Browse & Discover](#) | [Data Publication Dashboard](#) | [Communities & Collections](#)

[Describe](#) | [Assemble Data](#) | [Publish To ESGF](#) | [Complete](#)

## Publish to ESGF

Your data files will be scanned and parsed to extract metadata, create a THREDDS catalog and publish to the ESGF service. This might take some time, and you can refresh to see status.

To be able to publish to ESGF, you need to authenticate with your ESGF OpenID and password.

ESGF OpenID

Password

[Login to ESGF](#)

[< Previous](#)

[Cancel/Save](#)

[Next >](#)

# Pick search categories

Browse & Discover | Data Publication Dashboard | Communities & Collections

Describe | Assemble Data | **Publish To ESGF** | Complete

## Publish to ESGF

Your data files will be scanned and parsed to extract metadata, create a THREDDS catalog and publish to the ESGF service. This might take some time, and you can refresh to see status.

### Facets selection

3 files have been found but not all of them are in the directory structure required by ACME project: 'ACME/<data\_type>/<experiment>/<versionnum>/<realm>/<regridding>/<range>/'. Please, select appropriate facets from the dropdown lists below. If a required facet is missing, please contact Support before proceeding.

Project:	<input type="text" value="ACME"/>
Data type:	<input type="text" value="climo"/>
Experiment:	<input type="text" value="b1850c5_m1a"/>
Version number:	<input type="text" value="v0_1"/>
Realm:	<input type="text" value="atm"/>
Regridding:	<input type="text" value="ne30_g16"/>
Range:	<input type="text" value="all"/>

Optional step to rearrange files in directory structure needed by ESGF publish tool

# Status updates

Browse & Discover | Data Publication Dashboard | Communities & Collections

Describe Assemble Data Publish To ESGF Complete

## Publish to ESGF

Your data files will be scanned and parsed to extract metadata, create a THREDDS catalog and publish to the ESGF service. This might take some time, and you can refresh to see status.

### Progress of Publication

Refresh the page to see status of your publication.

Scan data:	Done
Generate THREDDS catalog:	In progress
Publish to Index node:	Not started

[Refresh](#) [Re-publish](#)

[< Previous](#) [Cancel/Save](#) [Next >](#)

Manage remote metadata extraction, generation of THREDDS catalogs and push to ESGF search index

Browse & Discover | Data Publication Dashboard | Communities & Collections

Describe Assemble Data Publish To ESGF Complete

## Submit: Submission Complete!

Your data set has been published to ESGF.

[Go to data publication dashboard](#)  
[Communities and Collections](#)

[Submit another item to the same collection](#)

# Planned Work

- Deployment of next version with email notification
- Production deployment of service
- Support for other ESGF data nodes
- Programmatic interface for supporting automation and scripting
- Seamless integration with ESGF policies for publication
- Integration with publication tool configuration manager (developed at ORNL)



Task Leads = Jeff Painter and Brian Smith

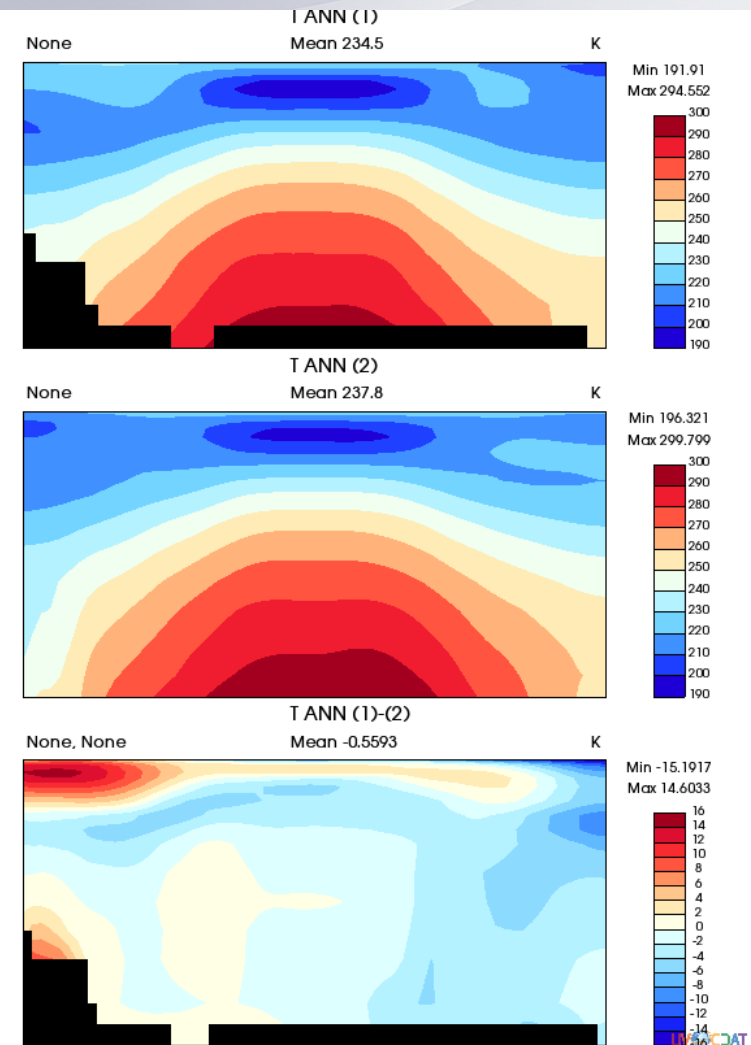
# Diagnostics

# Command Line Diagnostics

Specify:

- Model information - data location, optional filter specification, optional flag indicating climatology vs raw
- Observation information (optional)
- Package type - atmosphere / land / ocean
- Variables, seasons (optional), additional variable options (optional)
- “plot set”

```
diags --outputdir ~/diagout/ --modelpath=~metrics_data/cam35_data/,climos=yes  
--obs path=~metrics_data/obs_data_5.6/,filter="f_startswith('NCEP')",climos=yes  
--package AMWG --set 4 --vars T --seasons ANN
```



# Command Line Diagnostics

Output is:

- One PNG image file for each plot
- Another PNG image file for all plots combined
- A NetCDF file with the data used to compute each plot.
  - suitable for further analysis or preparing specialized plots for publication

# Command Line Diagnostics

metadiags.py:

- Wrapper around diags script to create all diagnostics collections with a single command line invocation
- Additional diagnostic “collections” are easy to add

• Example:

```
diags_collection['so']['desc'] = 'Tier 1B Diagnostics (Southern Ocean)'
```

```
diags_collection['so']['regions'] = ['Southern_Extratropics']
```

```
diags_collection['so']['SHFLX'] = {'plottype': '3', 'obs': ['LARYEA_1']}
```

```
diags_collection['so']['QFLX'] = {'plottype': '5', 'obs': ['LARYEA_1']}
```

....

- Takes model location, obs location, and output directory as arguments

climatology.py (and new climatology2.py):

- Creates climatology files
- Supports unstructured native grid datasets
- Takes input data location and output directory as arguments



Menu

# Classic Viewer

Output Display

UV-CDAT:EA Classic Logout user: https://esg.ccs.ornl.gov/.../openid/williams13

Back to Atm Home

### Classic View

**Dataset:**

**Package:**

**Variables:**

**Times:**

<b>NVAP 1988-1999 - Tropics</b>	DJF JJA ANN
TGCLDLWP Cloud liquid water	plot plot plot
PREH2O Total precipitable water	plot plot plot
<b>Legates and Willmott 1920-80 - Tropics</b>	DJF JJA ANN
PRECT_TROP Tropical Precipitation rate	plot plot plot
<b>MODIS Mar2000-Aug2004</b>	DJF JJA ANN
MEANTAU Mean cloud optical thickness (Day)	plot plot plot
MEANTTOP Mean cloud top temperature (Day)	plot plot plot
TGCLDLWP Cloud liquid water	plot plot plot
TCLDAREA Total cloud area (Day)	plot plot plot
MEANPTOP Mean cloud top pressure (Day)	plot plot plot
PREH2O Total precipitable water	plot plot plot
<b>ERA40 Reanalysis 1980-2001 - Tropics</b>	DJF JJA ANN
PREH2O Total precipitable water	plot plot plot
<b>CERES 2000-2003</b>	DJF JJA ANN
FSNTOA TOA new SW flux	plot plot plot
LWCF TOA longwave cloud forcing	plot plot plot
FSNTOAC TOA clearsky new SW flux	plot plot plot
FLUTC TOA clearsky upward LW flux	plot plot plot
SWCF TOA shortwave cloud forcing	plot plot plot
ALBEDO TOA Albedo	plot plot plot
FLUT TOA upward LW flux	plot plot plot
ALBEDOC TOA clearsky albedo	plot plot plot
<b>IPCC/CRU Climatology 1961-90</b>	DJF JJA ANN
TREFHT 2-meter air temperature (land)	plot plot plot
<b>ISCCP D2 1983-2001</b>	DJF JJA ANN
CLDMED Mid cloud amount (IR clouds)	plot plot plot
CLDLW Low cloud amount (IR clouds)	plot plot plot

FSNTOA ANN (1)  
cam5-se Mean 199.566193 W/m<sup>2</sup>

FSNTOA ANN (2)  
obs\_CERES Mean 203.336416 W/m<sup>2</sup>

FSNTOA ANN (1)-(2)  
cam5-se, obs\_CERES Mean -0.425765 W/m<sup>2</sup>

Controls

Diagnostic Selection



# UV-CDAT Integration

Click on “Set Path” to choose the model data location.  
Optionally, you can type in a filter or state that data is climo files.

Click on “Use Observations 1” and “Set Path” to choose the obs data location.  
Click on the “Obs set 1” pull-down menu to choose among the obs sets in that location.

Diagnostics

Package: AMWG

- 1 - Tables of Global, tropical, and extratropical DJF, JJA, ANN means and RMSE
- 2 - Line Plots of Annual Implied Northward Transport
- 3 - Line Plots of Zonal Means
- 4 - Vertical Contour Plots Zonal Means
- 5 - Horizontal Contour Plots of Seasonal Means
- 6 - (Experimental, doesnt work with GUI) Horizontal Vector Plots of Seasonal Means
- 7 - Polar Contour and Vector Plots of Seasonal Means
- 8 - Annual Cycle Contour Plots of Zonal Means
- 9 - Horizontal Contour Plots of DJF-JJA Differences
- 10 - Annual Line Plots of Global Means
- 11 (Experimental, doesnt work with GUI) - Pacific annual cycle, Scatter plots
- 12 (Experimental, doesnt work with GUI) - Vertical Profiles at 17 selected raobs stations
- 13 - Cloud Simulator Histograms
- 14 - Taylor diagrams
- 15 - ARM Sites Annual Cycle Contour Plots
- 41 - Horizontal Contour Plots of Meridional Means

Variable

Variables: T Variable Options: 850 mbar

Seasons: ANN Region:

Use Dataset 1

Set Path /Users/painter1/metrics\_data/cam35\_data

Climos File Filter:

Use Dataset 2

Use Observations 1

Set Path /Users/painter1/metrics\_data/obs\_data\_selections

Obs set 1: NCEP

Use Observations 2

Apply Cancel

# UV-CDAT Integration

Choose a plot set

Choose a variable and a season.  
Sometimes more options are  
available – a level set in this case.

Finally, click on Apply!

The screenshot shows the 'Diagnostics' window in UV-CDAT. The 'Package' is set to 'AMWG'. A list of 16 plot sets is shown, with '5 - Horizontal Contour Plots of Seasonal Means' selected. Below the list, the 'Variable' section shows 'T' selected for 'Variables' and '850 mbar' for 'Variable Options'. 'ANN' is selected for 'Seasons'. The 'Use Dataset 1' section is checked, with the path set to '/Users/painter1/metrics\_data/cam35\_data' and 'Climos' checked. The 'Use Observations 1' section is also checked, with the path set to '/Users/painter1/metrics\_data/obs\_data\_selections' and 'NCEP' selected for 'Obs set 1'. 'Apply' and 'Cancel' buttons are at the bottom.

Diagnostics

Package: AMWG

- 1 - Tables of Global, tropical, and extratropical DJF, JJA, ANN means and RMSE
- 2 - Line Plots of Annual Implied Northward Transport
- 3 - Line Plots of Zonal Means
- 4 - Vertical Contour Plots Zonal Means
- 5 - Horizontal Contour Plots of Seasonal Means
- 6 - (Experimental, doesnt work with GUI) Horizontal Vector Plots of Seasonal Means
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- 41 - Horizontal Contour Plots of Meridional Means

Variable

Variables: T Variable Options: 850 mbar

Seasons: ANN Region:

Use Dataset 1

Set Path /Users/painter1/metrics\_data/cam35\_data

Climos File Filter:

Use Dataset 2

Use Observations 1

Set Path /Users/painter1/metrics\_data/obs\_data\_selections

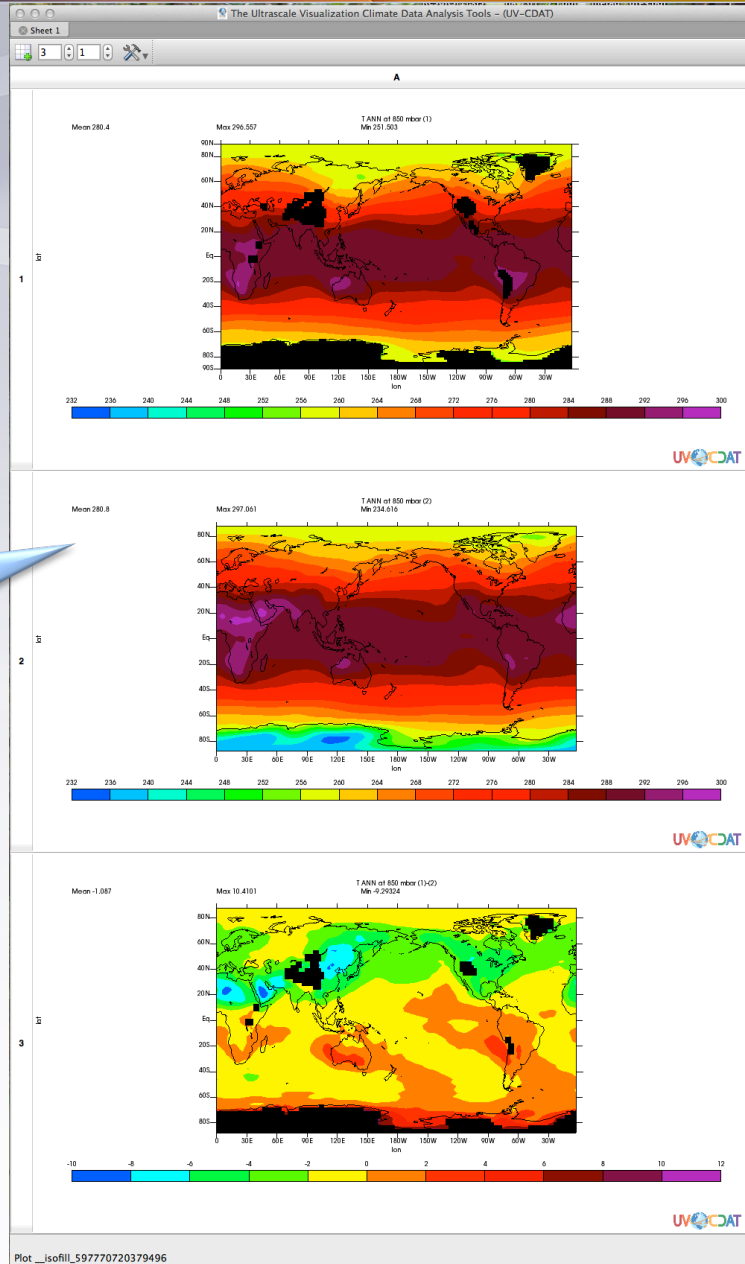
Obs set 1: NCEP

Use Observations 2

Apply Cancel

# UV-CDAT Integration

Generated  
Diagnostics



Diagnostics

Package: AMWG

- 1 - Tables of Global, tropical, and extratropical DJF, JJA, ANN means and RMSE
- 2 - Line Plots of Annual Implied Northward Transport
- 3 - Line Plots of Zonal Means
- 4 - Vertical Contour Plots Zonal Means
- 5 - Horizontal Contour Plots of Seasonal Means
- 6 - (Experimental, doesnt work with GUI) Horizontal Vector Plots of Seasonal Means
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Variable

Variables: T Variable Options: 850 mbar

Seasons: ANN Region:

Use Dataset 1

Set Path: /Users/painter1/metrics\_data/cam35\_data

Climos File Filter:

Use Dataset 2

Use Observations 1

Set Path: /Users/painter1/metrics\_data/obs\_data\_selections

Obs set 1: NCEP

Use Observations 2

Apply Cancel

Task Leads = Charles Doutriaux and Aashish Chaudhary

**UV-CDAT**

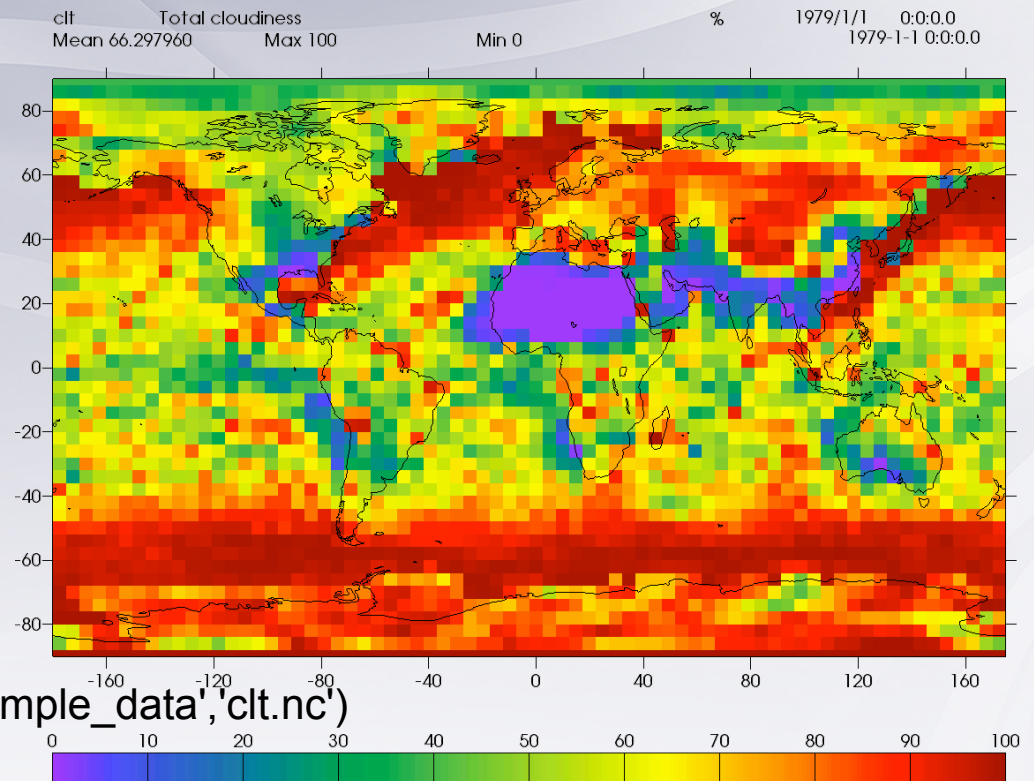


# Documentation (<http://uvcdat.llnl.gov>)

- Input/Output: cdms2
  - <http://uvcdat.llnl.gov/documentation/cdms/cdms.html>
- Arrays: NumPy/NumPy.ma/MV2
  - <http://www.numpy.org/>
- Utilities: genutil and cdutil
  - <http://uvcdat.llnl.gov/documentation/utilities/utilities.html>
- Visualization: VCS
  - <http://uvcdat.llnl.gov/documentation/vcs/vcs.html>
  - <http://uvcdat.llnl.gov/gallery.php>
- Tutorials
  - <http://uvcdat.llnl.gov/tutorials.html>

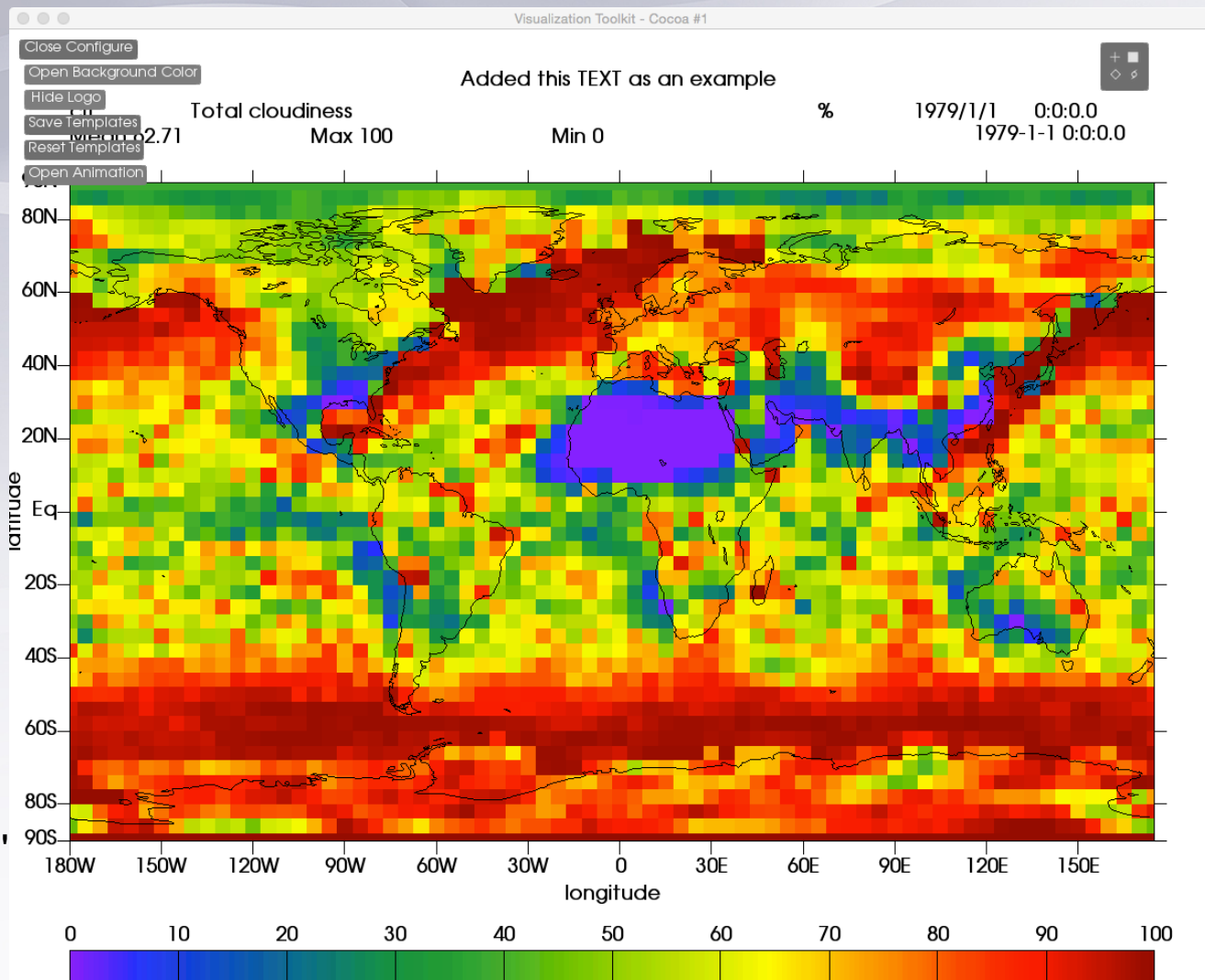
# Quick Script Example

- `import sys,os, cdms2, vcs`
- `x=vcs.init()`
- `x.setcolormap("rainbow")`
- `gm = vcs.createboxfill()`
- `f=cdms2.open(os.path.join(sys.prefix,'sample_data','clt.nc')`  
`)`
- `s=f("clt")`
- `x.plot(s,gm)`
- `#x.png('test_vcs_basic_boxfill.png')`



# Plot Interaction

- `import sys,os`
- `Import cdms2, vcs`
- `x=vcs.init()`
- `x.setbgoutputdimensions(1200,1091,units="pixels")`
- `x.setcolormap("rainbow")`
- `gm = vcs.createboxfill()`
- `f=cdms2.open(os.path.join(sys.prefix,'sample_data','clt.nc'))`
- `s=f("clt")`
- `x.plot(s,gm)`
- `x.interact()`



# Gallery and Example Scripts

The screenshot shows the UV-CDAT Gallery website. The left panel displays a 'Gallery' page with a search bar and a list of 'All Examples' under a 'Filters' section. The 'Graphics Method' filter is expanded, showing options like Boxfill, Continents, Isofill, Isoline, Outline, Meshfill, One Dimension, Scatter, Vector, X vs Y, XY vs Y, YX vs X, Template, 3D Scalar, and 3D Vector. Below the filters are two preview images: a 2D 'Zonal Wind (m/s) Slicing' plot and a 3D 'Zonal Wind (m/s) Transparency Longitude Slicing' plot.

The right panel shows a detailed view of the 'VCS 3D Wnd Vector' example. It includes a '(png) Source' link, a title 'Zonal Wind (m/s) Slicing', and a 3D vector plot. Below the plot is a '2000 Position' slider and the UV-CDAT logo. The bottom section contains a code block with the following Python script:

```
...
Created on Jun 18, 2014

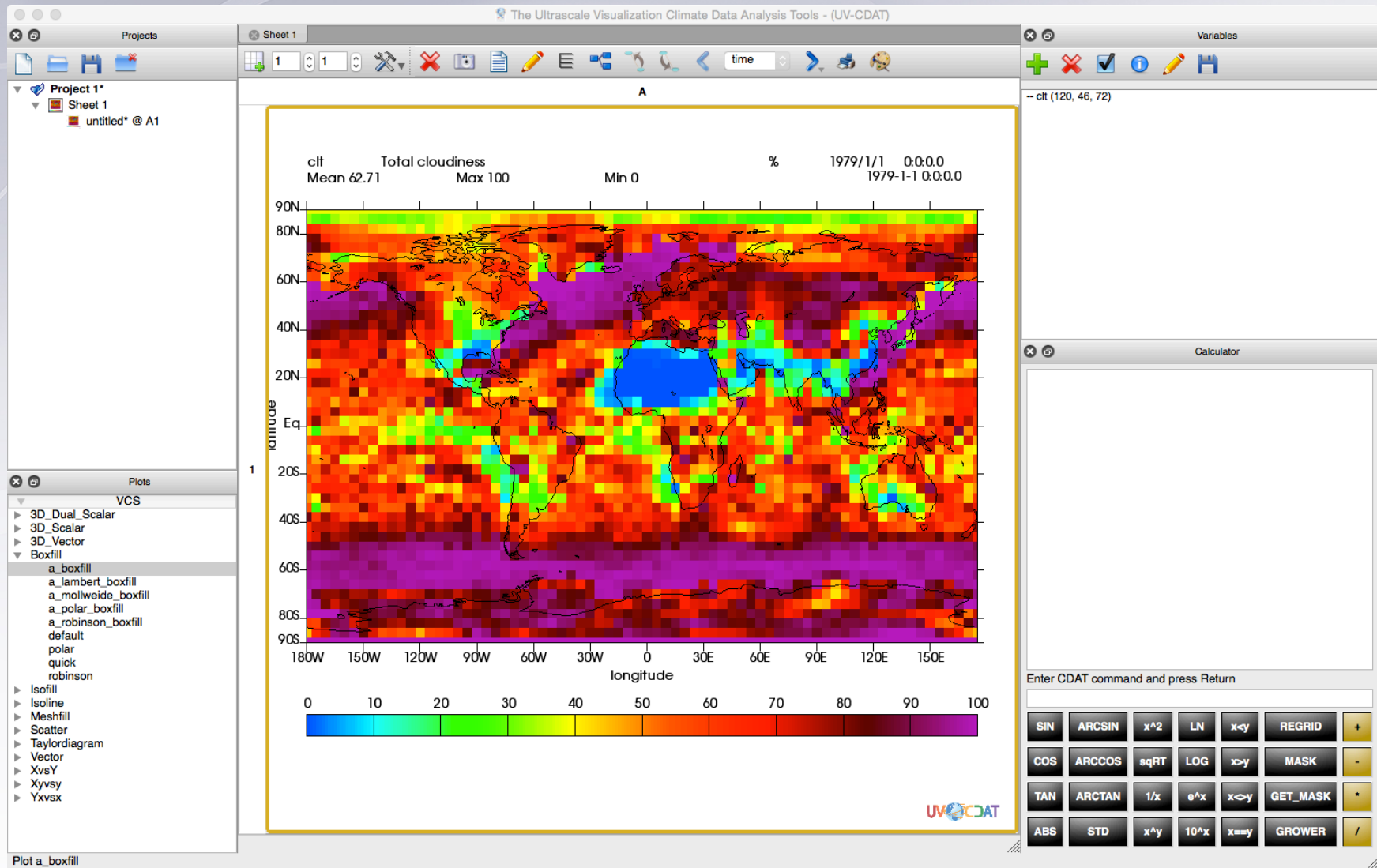
@author: tpmawel
...

import vcs, cdms2, sys

x = vcs.init()
f = cdms2.open( sys.prefix+"/sample_data/geos5-sample.nc" )
dv3d = vcs.get3d_vector()
dv3d.VerticalScaling = 4.0
dv3d.BaseMapOpacity = 0.0
dv3d.ScaleColorMap = [50.0, 75.0, 1]
dv3d.ZSlider = [26.0], vcs.on
dv3d.GlyphDensity = 3.0
dv3d.GlyphSize = 0.6
dv3d = vcs.get3d_vector()
v0 = f["uwnd"]
v1 = f["vwnd"]
x.plot( v0, v1, dv3d )
x.interact()
```

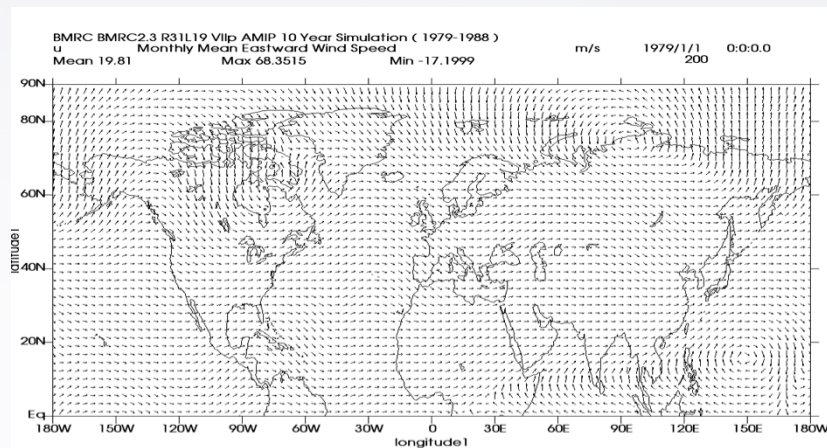
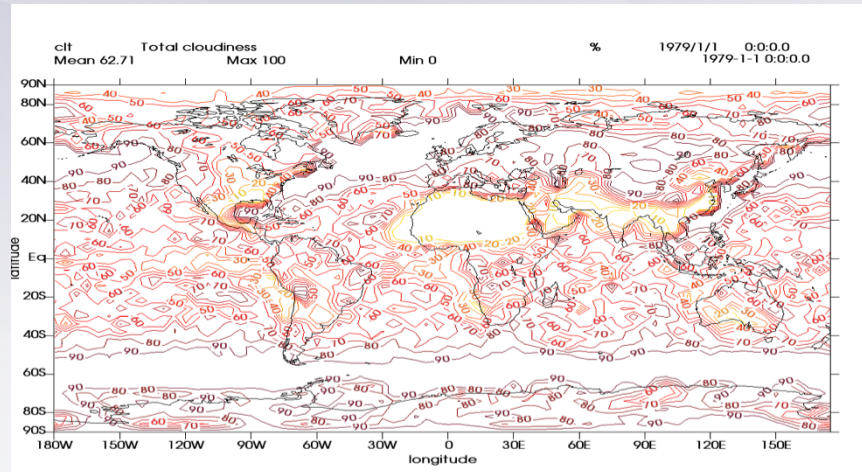


# Graphical User Interface



# Visualization Improvements

- VCS 2D and VCS 3D code sharing
- Sophisticated labeling of contours
- Customization of font face, color, background, etc for each isoline.
- Better vector plots
- Various bug fixes, rendering improvements.



# Software Quality “Control”

- **Workflow**

- **Git** branch based workflow
- **Master** and **Release** branches
- **Review** and then merge
- Automated testing using CTest / BuildBot / Travis CI

- **Testing**

- **400+ tests**
  - **Tests algorithms, state changes etc.**
  - **Includes diagnostics, IO, visualization, and interactions**
- **Buildbot** is used to monitor the git repositories and schedule builds and tests when pull requests are created or the integration branches (master/release) are changed.
- **CMake/CTest** deals with the actual building and testing, and then posting the results on dashboards hosted by **CDash**

# Software Quality “Control”

Fix run tests buildbot #1261

**Open** aashish24 wants to merge 5 commits into `release` from `fix_run_tests_buildbot`

Conversation 10 Commits 5 Files changed 6

**aashish24** commented 4 days ago

No description provided.

**aashish24** added some commits 4 days ago

- Added new script to run tests
- Using cdat macro for testing
- Converted last of tests to use cdat test macro
- Removed osx as its failing on travis

**GIT**

**Dashboard**



**UV-CDAT**

Dashboard Calendar Previous Current Project

No file changed as of Monday, May 04 2015 - 21:00 EDT

- 1 hours ago: 6 tests failed on 1d4a7ef6-build27-uvcdat-test-laptop-linux-release
- 1 hours ago: 11 tests failed on 1d4a7ef6-build205-uvcdat-garant-linux-release
- 1 hours ago: 1 warning introduced on 1d4a7ef6-build27-uvcdat-test-laptop-linux-release
- 1 hours ago: 1 warning introduced on 1d4a7ef6-build205-uvcdat-garant-linux-release
- 1 hours ago: 6 tests failed on 1d4a7ef6-build204-uvcdat-garant-linux-release

Site	Build Name	Update		Configure		Build		Test			Build Time
		Files	Error	Warn	Error	Warn	Not Run	Fail	Pass		
test-laptop	1d4a7ef6-build27-uvcdat-test-laptop-linux-release		0	0	0	1	0	6	410		1 hour ago

**BuildBot**

**Grid View**

Kitware Open Source Categories:	VTk/VTk: 168244b217d2... in master	VTk/VTk: a96660c5bd8... in master	VTk/VTk: ac7ea9f4b17... in warning_fix	VTk/VTk: 117444599a32... in master	VTk/VTk: 6ad386cff8c... in unused_parameter
vtk-bigmac-osx-shared-debug+clang+openqI2+python	OK	OK	OK	OK	OK
vtk-bigmac-osx-shared-debug+clang+python	OK	failed build-n-test	OK	OK	OK
vtk-dashlin1-linux-shared-release+mpi+python+qt	OK	OK	OK	OK	OK
vtk-kamino-osx-shared-release+clang+java+mpi+python+qt+ttb	OK	OK	OK	OK	OK
vtk-kamino-osx-shared-release+mpi+python+ttb	OK	OK	OK	OK	OK
vtk-megas-linux-shared-release+mpi+python+qt+qt5	OK	OK	OK	OK	OK
vtk-nemesis-windows-shared-release+mpi+openqI2+python	OK	OK	OK	OK	OK
vtk-tarvalon-windows-shared-release+mpi+qt+vs	OK	OK	OK	OK	OK
vtk-trey-osx-shared-release+python+qt	OK	OK	OK	OK	OK

**Travis CI**

UV-CDAT/uvcdat **build passing**

Current Branches Build History Pull Requests **Build #1791** Settings

**Pull Request #1261** Fix run tests buildbot

Fix textbox\_blank\_text test

Jonathan Beezley authored and committed

- # 1791 passed
- Commit 32f60aa
- #1261: Fix run tests buildbot
- ran for 30 min 40 sec
- about 2 hours ago



Task Lead = Matthew Harris

User Interface

# ACME

The company name in the Road Runner cartoons is ironic, since the word acme is derived from Greek (ακμή / ακμή ; English transliteration: acmē) meaning the peak, zenith or prime

Log in

[Privacy & Legal Notice](#) [Site Issues](#)

All users must authenticate

## Please Sign In

User Name

Password

Sign In

New User Registration.

[Privacy & Legal Notice](#) [Site Issues](#)

## Create An Account

username

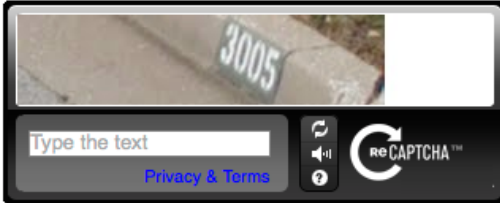
email

first\_name

last\_name

password1

password2



Create Account

Open Menu Node List ACME ACME Issues Globus Log Out Welcome adben

Node: WDCG\_Gate

AdminPeer: esgf-data.dkrz.de

Location: Hamburg

Url: esgf-data.dkrz.de

Node: BADC\_P2P\_INDEX

AdminPeer: pcmdi9.llnl.gov

Location: Appleton

Url: esgf-index1.ceda.ac.uk

Node: IPSL Index Peer

AdminPeer: esgf-node.ipsl.fr

Location: Paris

Url: esgf-node.ipsl.fr

Node: Euclipse

AdminPeer: euclipse1.dkrz.de

Location: Hamburg

Url: euclipse1.dkrz.de

Node: esgf-pcmdi-9

AdminPeer: pcmdi9.llnl.gov

Location: Livermore

Url: pcmdi9.llnl.gov

Node: IPSL CMIP5 data

AdminPeer: esgf-node.ipsl.fr

Location: Paris

Url: vesgf.ipsl.fr

Easy access to every ESGF node

nodeSearch

status	up
dataDownCount	0
dataDownUsers	0
ip	198.128.245.159
hostname	pcmdi9.llnl.gov
namespace	gov.llnl
registeredUsers	10962
version	v1.7.1-phenix-release-master
adminPeer	pcmdi9.llnl.gov
location	Livermore
longName	PCMDI ESGF P2P NODE 9
dataDownSize	0
org	llnl
shortName	esgf-pcmdi-9
authService	https://pcmdi9.llnl.gov/esg-orp/saml/soap/secure/authorizationService.htm
email	pcmdi-node-admin@llnl.gov

Facet options

institute

Filter value

LLNL : 736

Search string: project=ACME,time\_frequency=mon,institute=LLNL,

Search

### Hit number 1

index\_node : esg.ccs.ornl.gov

version : 1

dataset\_id\_template : %(project)s.%(data\_type)s.%(experiment)s.%(versionnum)s.%(realm)s.%(regridding)s.%(range)s

cf\_standard\_name : latitude, clearsky\_net\_solar\_flux\_at\_surface, snow\_depth\_over\_ice, hybrid\_a\_coefficient\_at\_layer\_midpoints, hybrid\_a\_coefficient\_at\_layer\_interfaces, surface\_latent\_heat\_flux, longitude, hybrid\_b\_coefficient\_at\_layer\_interfaces, hybrid\_b\_coefficient\_at\_layer\_midpoints, clearsky\_net\_solar\_flux\_at\_top\_of\_model, reference\_pressure, atmosphere\_hybrid\_sigma\_pressure\_coordinate, water\_equivalent\_snow\_depth, zonal\_surface\_stress, vertically-integrated\_total\_cloud, gauss\_weights, grid\_box\_averaged\_cloud\_ice\_amount, average\_rain\_mixing\_ratio, fractional\_occurrence\_of\_ice, meridional\_flux\_of\_zonal\_momentum, fractional\_occurrence\_of\_liquid, meridional\_water\_transport, specific\_humidity, fractional\_occurrence\_of\_rain, fractional\_occurrence\_of\_snow, cloud\_fraction, total\_grid\_box\_cloud\_liquid\_water\_path, vertical\_heat\_flux, solar\_heating\_rate, surface\_temperature(radiative), longwave\_heating\_rate, fraction\_of\_sfc\_area\_covered\_by\_ocean, t\_tendency\_-\_moist\_processes, solar\_insolation, net\_longwave\_flux\_at\_surface, grid\_box\_averaged\_cloud\_liquid\_number, vertically-integrated\_high\_cloud, average\_rain\_number\_conc, prognostic\_in-cloud\_water\_mixing\_ratio, average\_cloud\_ice\_number\_conc, meridional\_wind, clearsky\_downwelling\_solar\_flux\_at\_surface, average\_cloud\_water\_number\_conc, aerosol\_optical\_depth\_550\_nm\_model\_3\_from\_dust, aerosol\_optical\_depth\_550\_nm\_model\_1\_from\_dust, reference\_height\_temperature, pbl\_height, upwelling\_longwave\_flux\_at\_top\_of\_model, vertical\_velocity(pressure), fractional\_ice\_content\_within\_cloud, average\_ice\_effective\_radius, average\_droplet\_effective\_radius, relative\_humidity, 10m\_wind\_speed, vertical\_diffusion\_of\_q, downwelling\_longwave\_flux\_at\_surface, longwave\_cloud\_forcing, meridional\_velocity\_squared, total(vertically\_integrated)\_precipitable\_water, clearsky\_net\_longwave\_flux\_at\_top\_of\_model, average\_snow\_number\_conc, zonal\_wind, convective\_precipitation\_rate(liq+\_ice), large-scale(stable)\_precipitation\_rate(liq+\_ice), fraction\_of\_sfc\_area\_covered\_by\_sea-ice, net\_longwave\_flux\_at\_top\_of\_model, fraction\_of\_sfc\_area\_covered\_by\_land, zonal\_velocity\_squared, sea\_level\_pressure, surface\_water\_flux, grid\_box\_averaged\_cloud\_ice\_number, atmosphere\_hybrid\_sigma\_pressure\_coordinate, average\_snow\_mixing\_ratio, vertically-integrated\_droplet\_concentration, meridional\_heat\_transport,

Open Menu Node List ACME ACME Issues Globus Log Out Welcome adben

Node: WDCG\_Gate  
AdminPeer: esgf-data.dkrz.de  
Location: Hamburg  
Uri: esgf-data.dkrz.de

Node: BADC\_P2P\_INDEX  
AdminPeer: pcmdi9.llnl.gov  
Location: Appletton  
Uri: esgf-index1.ceda.ac.uk

Node: IPSL Index Peer  
AdminPeer: esgf-node.ipsl.fr  
Location: Paris  
Uri: esgf-node.ipsl.fr

Node: Euclipse  
AdminPeer: euclipse1.dkrz.de  
Location: Hamburg  
Uri: euclipse1.dkrz.de

Node: esgf-pcmdi-9  
AdminPeer: pcmdi9.llnl.gov  
Location: Livermore  
Uri: pcmdi9.llnl.gov

Node: IPSL CMIP5 data  
AdminPeer: esgf-node.ipsl.fr  
Location: Paris  
Uri: vesgf.ipsl.fr

nodeSelect

status	up
dataDownCount	0
dataDownUsers	0
ip	198.128.245.159
hostname	pcmdi9.llnl.gov
namespace	gov.llnl
registeredUsers	10962
version	v1.7.1-phoenix-release-master
adminPeer	pcmdi9.llnl.gov
location	Livermore
longName	PCMDI ESGF P2P NODE 9
dataDownSize	0
org	llnl
shortName	esgf-pcmdi-9
authService	https://pcmdi9.llnl.gov/esg-orp/saml/soap/secure/authorizationService.htm
email	pcmdi-node-admin@llnl.gov

nodeSearch

Facet options

institute

Filter value

LLNL : 736

Search string: project=ACME,time\_frequency=mon,institute=LLNL,

Search

**Hit number 1**

index\_node : esg.ccs.ornl.gov

version : 1

dataset\_id\_template : %(project)s.%(data\_type)s.%(experiment)s.%(versionnum)s.%(realm)s.%(regridding)s.%(range)s

cf\_standard\_name : latitude, clearsky\_net\_solar\_flux\_at\_surface, snow\_depth\_over\_ice, hybrid\_a\_coefficient\_at\_layer\_midpoints, hybrid\_a\_coefficient\_at\_layer\_interfaces, surface\_latent\_heat\_flux, longitude, hybrid\_b\_coefficient\_at\_layer\_interfaces, hybrid\_b\_coefficient\_at\_layer\_midpoints, clearsky\_net\_solar\_flux\_at\_top\_of\_model, reference\_pressure, atmosphere\_hybrid\_sigma\_pressure\_coordinate, water\_equivalent\_snow\_depth, zonal\_surface\_stress, vertically-integrated\_total\_cloud, gauss\_weights, grid\_box\_averaged\_cloud\_ice\_amount, average\_rain\_mixing\_ratio, fractional\_occurrence\_of\_ice, meridional\_flux\_of\_zonal\_momentum, fractional\_occurrence\_of\_liquid, meridional\_water\_transport, specific\_humidity, fractional\_occurrence\_of\_rain, fractional\_occurrence\_of\_snow, cloud\_fraction, total\_grid\_box\_cloud\_liquid\_water\_path, vertical\_heat\_flux, solar\_heating\_rate, surface\_temperature(radiative), longwave\_heating\_rate, fraction\_of\_sfc\_area\_covered\_by\_ocean, t\_tendency\_-\_moist\_processes, solar\_insolation, net\_longwave\_flux\_at\_surface, grid\_box\_averaged\_cloud\_liquid\_number, vertically-integrated\_high\_cloud, average\_rain\_number\_conc, prognostic\_in-cloud\_water\_mixing\_ratio, average\_cloud\_ice\_number\_conc, meridional\_wind, clearsky\_downwelling\_solar\_flux\_at\_surface, average\_cloud\_water\_number\_conc, aerosol\_optical\_depth\_550\_nm\_model\_3\_from\_dust, aerosol\_optical\_depth\_550\_nm\_model\_1\_from\_dust, reference\_height\_temperature, pbl\_height, upwelling\_longwave\_flux\_at\_top\_of\_model, vertical\_velocity(pressure), fractional\_ice\_content\_within\_cloud, average\_ice\_effective\_radius, average\_droplet\_effective\_radius, relative\_humidity, 10m\_wind\_speed, vertical\_diffusion\_of\_q, downwelling\_longwave\_flux\_at\_surface, longwave\_cloud\_forcing, meridional\_velocity\_squared, total(vertically\_integrated)\_precipitable\_water, clearsky\_net\_longwave\_flux\_at\_top\_of\_model, average\_snow\_number\_conc, zonal\_wind, convective\_precipitation\_rate(liq+\_ice), large-scale(stable)\_precipitation\_rate(liq+\_ice), fraction\_of\_sfc\_area\_covered\_by\_sea-ice, net\_longwave\_flux\_at\_top\_of\_model, fraction\_of\_sfc\_area\_covered\_by\_land, zonal\_velocity\_squared, sea\_level\_pressure, surface\_water\_flux, grid\_box\_averaged\_cloud\_ice\_number, atmosphere\_hybrid\_sigma\_pressure\_coordinate, average\_snow\_mixing\_ratio, vertically-integrated\_droplet\_concentration, meridional\_heat\_transport,

Convenient  
node search

Real-time node  
information and  
availability



Node: WDCG_Gate AdminPeer: esgf-data.dkrz.de Location: Hamburg Uri: esgf-data.dkrz.de	Node: BADC_P2P_INDEX AdminPeer: pcmdi9.llnl.gov Location: Appletton Uri: esgf-index1.ceda.ac.uk	Node: IPSL Index Peer AdminPeer: esgf-node.ipsl.fr Location: Paris Uri: esgf-node.ipsl.fr	Node: Euclipse AdminPeer: euclipse1.dkrz.de Location: Hamburg Uri: euclipse1.dkrz.de	Node: esgf-pcmdi-9 AdminPeer: pcmdi9.llnl.gov Location: Livermore Uri: pcmdi9.llnl.gov	Node: IPSL CMIP5 data AdminPeer: esgf-node.ipsl.fr Location: Paris Uri: vesgf.ipsl.fr
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nodeSelect	
status	up
dataDownCount	0
dataDownUsers	0
ip	198.128.245.159
hostname	pcmdi9.llnl.gov
namespace	gov.llnl
registeredUsers	10962
version	v1.7.1-phenix-release-master
adminPeer	pcmdi9.llnl.gov
location	Livermore
longName	PCMDI ESGF P2P NODE 9
dataDownSize	0
org	llnl
shortName	esgf-pcmdi-9
authService	https://pcmdi9.llnl.gov/esg-orp/saml/soap/secure/authorizationService.htm
email	pcmdi-node-admin@llnl.gov

nodeSearch	
Facet options	institute
Filter value	LLNL : 736
Search string:	project=ACME,time_frequency=mon,institute=LLNL,
<input type="button" value="Search"/>	

### Hit number 1

index\_node : esg.ccs.ornl.gov

version : 1

dataset\_id\_template : %(project)s.%(data\_type)s.%(experiment)s.%(versionnum)s.%(realm)s.%(regridding)s.%(range)s

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Results from selected node with desired search criterion

- Provenance Capture
- Status Messages
- Science Input
- Node Search
- Heat Map
- Model Run
- Node Selector
- CDATWeb Analysis
- Charting System Status

Layout Style

- Balanced
- Dark mode is off
- Store Current Layout
- Load Previous Layout

Dashboard panel selector

Save and load your favorite layouts

cdat status

provenance nodeSelect nodeSearch

status	up
dataDownCount	0
dataDownUsers	0
ip	198.128.245.159
hostname	pcmdi9.llnl.gov
namespace	gov.llnl
registeredUsers	10962
version	v1.7.1-phenix-release-master
adminPeer	pcmdi9.llnl.gov
location	Livermore
longName	PCMDI ESGF P2P NODE 9
dataDownSize	0
org	llnl
shortName	esgf-pcmdi-9
authService	https://pcmdi9.llnl.gov/esg- orp/saml/soap/secure/authorizationService.htm
email	pcmdi-node-admin@llnl.gov

Facet options  
cmor\_table  
Filter value  
Search string:  
Search

Close Menu Node List ACME ACME Issues Globus Log Out Welcome adben

Provenance Capture science provenance

Status Messages

Science Input

Node Search

Heat Map

Model Run

Node Selector

CDATWeb Analysis

Charting System Status

Layout Style

Balanced

Dark mode is on

Store Current Layout

Load Previous Layout

status nodeSelect nodeSearch

status up

dataDownCount 0

dataDownUsers 0

ip 198.128.245.159

hostname pcmdi9.llnl.gov

namespace gov.llnl

registeredUsers 10962

version v1.7.1-phenix-release-master

adminPeer pcmdi9.llnl.gov

location Livermore

longName PCMDI ESGF P2P NODE 9

dataDownSize 0

org llnl

shortName esgf-pcmdi-9

authService https://pcmdi9.llnl.gov/esg-  
orp/saml/soap/secure/authorizationService.htm

email pcmdi-node-admin@llnl.gov

Facet options

cmor\_table

Filter value

Search string:

Search

User color scheme





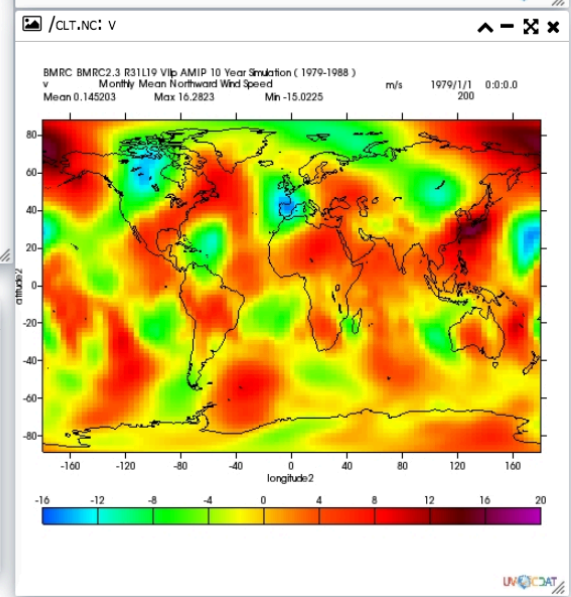
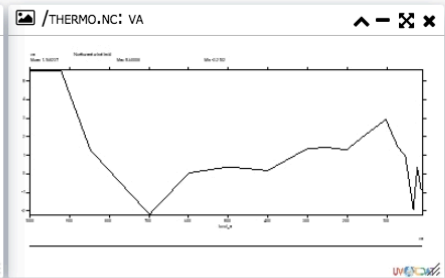
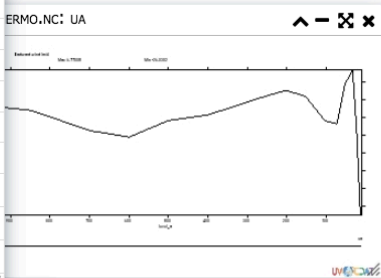
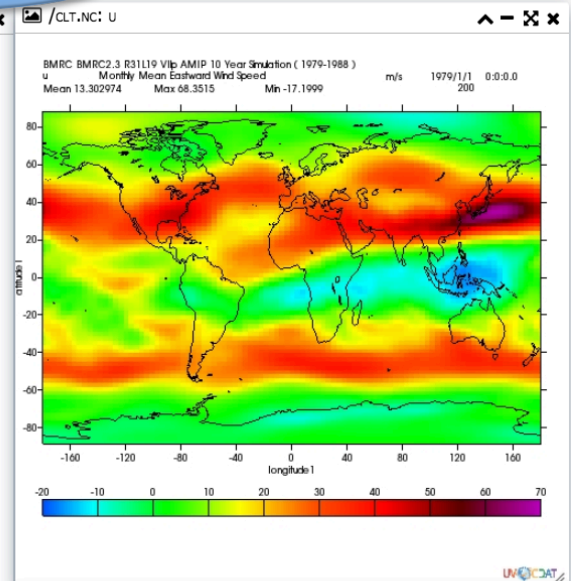
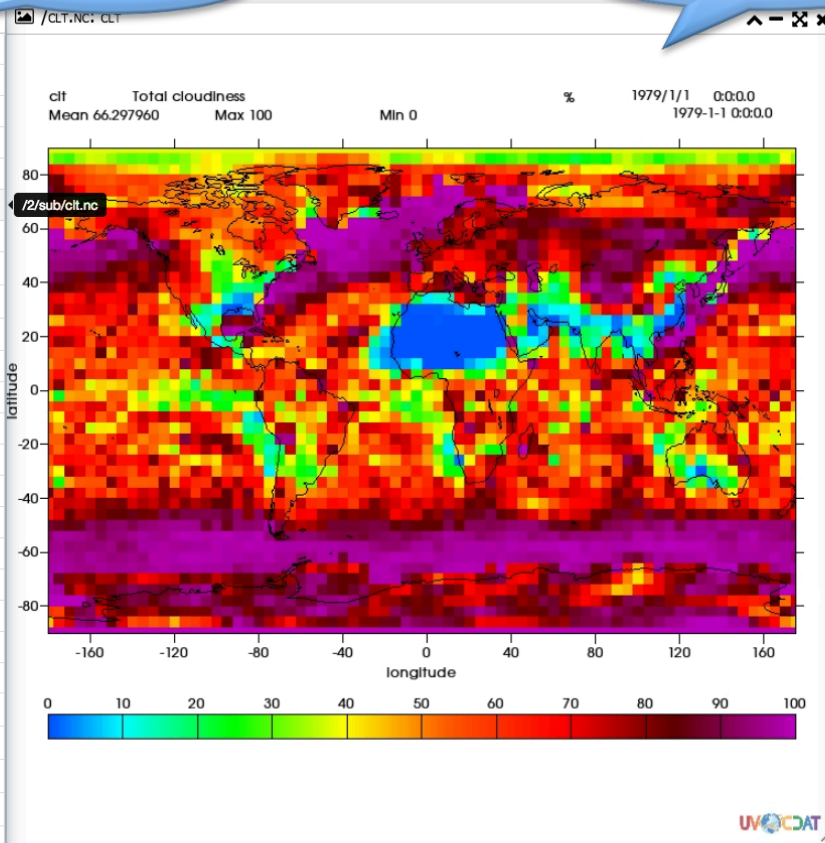
Controls

Plot area

DATA

- 1
- swan.four.nc 3
- 2
- sub
  - subsub
  - ct.nc 3
- ct.nc 3
  - ct
  - u
  - v
- meshfill.nc 5
- sampleCurveGrid4.nc 5
- sampleGenGrid3.nc 5
- sftbyrgn.nc 3
- sftif\_10x10.nc 3
- sftif\_visus.nc 3
- swan.four.nc 3
- tas\_ccsr-95a\_1979.01-197... 6
- tas\_ccsr-95a\_1980.01-198... 6
- tas\_ccsr-95a\_1981.01-198... 6
- tas\_ccsr-95a\_1982.01-198... 6
- bounds\_latitude
- bounds\_time
- bounds\_longitude
- weights\_latitude
- tas
- abs\_time
- tas\_ccsr-95a\_1983.01-198... 6
- tas\_ccsr-95a\_1984.01-198... 6
- taylor.nc 3
- test\_anim.nc 5
- thermo.nc 5
  - va
  - bounds\_time
  - ua

/VE... /TA...



Menu

# Classic Viewer

Output Display

UV-CDAT:EA Classic Logout user: https://esg.ccs.ornl.gov/.../openid/williams13

Back to Atm Home

### Classic View

**Dataset:**

**Package:**

**Variables:**

**Times:**

<b>NVAP 1988-1999 - Tropics</b>	DJF JJA ANN
TGCLDLWP Cloud liquid water	plot plot plot
PREH2O Total precipitable water	plot plot plot
<b>Legates and Willmott 1920-80 - Tropics</b>	DJF JJA ANN
PRECT_TROP Tropical Precipitation rate	plot plot plot
<b>MODIS Mar2000-Aug2004</b>	DJF JJA ANN
MEANTAU Mean cloud optical thickness (Day)	plot plot plot
MEANTTOP Mean cloud top temperature (Day)	plot plot plot
TGCLDLWP Cloud liquid water	plot plot plot
TCLDAREA Total cloud area (Day)	plot plot plot
MEANPTOP Mean cloud top pressure (Day)	plot plot plot
PREH2O Total precipitable water	plot plot plot
<b>ERA40 Reanalysis 1980-2001 - Tropics</b>	DJF JJA ANN
PREH2O Total precipitable water	plot plot plot
<b>CERES 2000-2003</b>	DJF JJA ANN
FSNTOA TOA new SW flux	plot plot plot
LWCF TOA longwave cloud forcing	plot plot plot
FSNTOAC TOA clearsky new SW flux	plot plot plot
FLUTC TOA clearsky upward LW flux	plot plot plot
SWCF TOA shortwave cloud forcing	plot plot plot
ALBEDO TOA Albedo	plot plot plot
FLUT TOA upward LW flux	plot plot plot
ALBEDOC TOA clearsky albedo	plot plot plot
<b>IPCC/CRU Climatology 1961-90</b>	DJF JJA ANN
TREFHT 2-meter air temperature (land)	plot plot plot
<b>ISCCP D2 1983-2001</b>	DJF JJA ANN
CLDMED Mid cloud amount (IR clouds)	plot plot plot
CLDLW Low cloud amount (IR clouds)	plot plot plot

cam5-se FSNTOA ANN (1) Mean 199.566193 W/m<sup>2</sup>

Min 50.1949 Max 350.214

obs\_CERES FSNTOA ANN (2) Mean 203.336416 W/m<sup>2</sup>

Min 46.3209 Max 367.259

cam5-se, obs\_CERES FSNTOA ANN (1)-(2) Mean -0.425765 W/m<sup>2</sup>

Min -43.1487 Max 34.0463

Controls

Diagnostic Selection



Accelerated Climate Modeling  
for Energy