



Collaborative Energy and Water Cycle Information Services (CEWIS) The Prototype

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Objectives

Introduce the concept of community driven information and high end (e.g., multi-product) information services

Receive feedback (via discussion, workshops, **HERE!**) regarding roadblocks that are in the way of bringing distributed heterogeneous datasets together



Motivation

- Cross-dataset analysis is growing, requiring much effort for data preparation, by EACH researcher
- Difficulty in locating and using heterogeneous datasets together for global and regional energy and hydrology research.
- Datasets need to contain uniform characteristics
- New technologies are available to mitigate data inter-comparison issues
- Facilitate cross dataset data validation



Challenges in Performing Multi-Source Data Inter-comparisons

- Data are distributed, heterogeneous (data formats, structure), and high volume
- Requires data specific software
- Requires homogeneous data analysis, management, and visualization services
- **Data sets are often unprepared for open availability and interoperability**



Energy & Water Cycle Data Access Levels of Service

1. Catalogue of local and/or remote datasets
2. Links to local/remote datasets
3. Software to read and manipulate data
4. Tools to search for and access data
5. Interactive data exploration and visualization services
6. Interactive data management services
7. Interactive multi-sensor data services
8. Data access, management, and multi-sensor data analysis tools for datasets locally and remotely archived
9. OGC web services (WMS, WCS) to acquire and serve distributed datasets

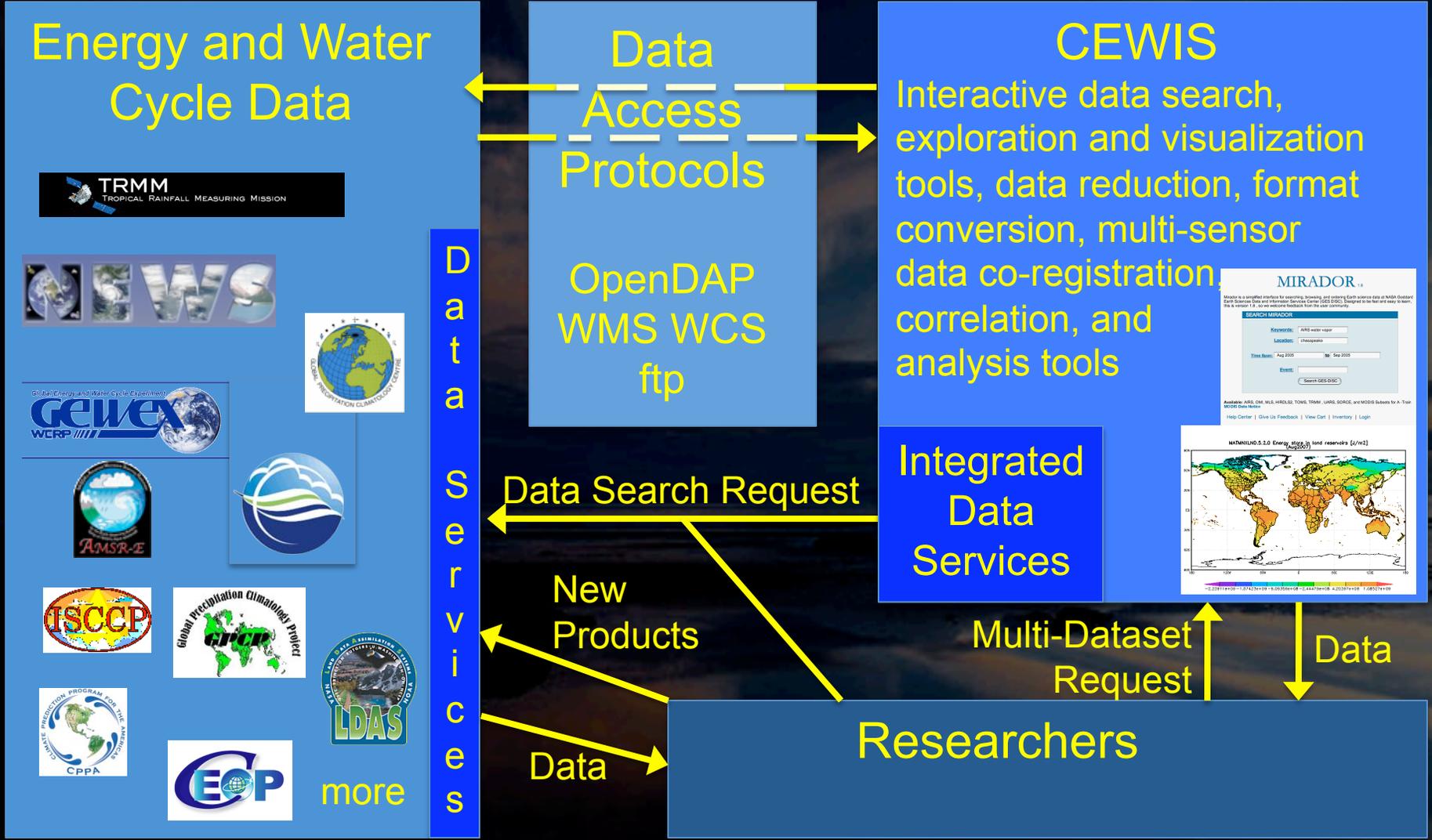


Building Upon Existing Community Information Services

- Many datasets are available with various levels of services
- Datasets can not be easily combined and analyzed with other datasets
- CEWIS provides high end information services focused on heterogeneous datasets, leveraging existing data and services
- This provides opportunity for broader access to hydrologic data products



The Collaborative Effort





CEWIS Prototype

To demonstrate a framework that provides:

- Data inter-comparison services
- Bringing together distributed datasets
- Interactive subsetting, visualization, analysis, and downloading of heterogeneous data

How would a CEWIS system of services be useful to you?

What data related roadblocks do you encounter that can be removed by CEWIS?



Prototype Datasets

- AMSR-E Surface Soil Moisture
- TMI/TRMM Daily L3 Surface Soil Moisture
- AIRS Standard Retrievals and Support Products
- GLDAS Noah Land Surface Model
- NLDAS Mosaic Land Surface Model
- TRMM 3B42 Merged Precipitation Product
- MERRA IAU 3d moist processes & cloud diagnostic
- MERRA IAU 2d land surface & surface turbulent flux diagnostics



Prototype Services

- Mirador **data search**
- Giovanni **data visualization, inter-comparison, reduction and download**
- OPeNDAP **remote data access**
- GrADS Data Server (GDS) **remote data access**
- Web Mapping Services (WMS) **remote data access**



Prototype Tour





Water Cycle Data

» OVERVIEW

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GES DISC

Goddard Earth Sciences Data and Information Services Center

Your source for earth science data and information

You are here: [GES DISC Home](#) » Water Cycle Data Portal

Overview

Water Cycle Portal

The goal of the Water Cycle Information Inlet (WCII) is to reduce the time and resources spent by scientists on data management and, thus, facilitate water cycle research, by providing easy access to, and cross-data set manipulation tools for, a community-driven inventory of water cycle products.

For example, What data services does the community need to become more efficient in getting to their science research?

The WCII objectives is to:

- Facilitate water cycle research by bringing together heterogeneous datasets
- Save each researcher the valuable time and trouble of having to locate and learn how to access datasets of interest from various sites
- Process water cycle data into information: Subset, visualize, perform preliminary analysis, co-register, etc., data of user interest.
- To build upon the NEWS Data Information Center (NDIC) and NASA data archives with user identified tools that further facilitate the usage and usability of water cycle data.

The WCII is not meant to do science, but do the pre-science data preparations thus allowing researchers to spend their resources and focus on science.

This is a similar concept as the very successful [A-Train Data Depot](#) that provides these services (including co-registration) of data along the Cloudsat A-Train track.

Latest News



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Data Holdings

Data Product

Select a product from the drop down list and it will display the data information and access methods. To use the non-javascript version go to the [non-javascript product page](#).

Select Data Product:

Product Information

Shortname: MAT3CPMST

Description: MERRA 3D IAU diagnostic, moist physics, time averaged, on pressure levels, at reduced resolution

Data Format: Monthly Product: MATMCPMST, Diurnal Product: MATUCPMST

Click Here for the [MAT3CPMST Product Information Page](#)

Click Here for the [Product Readme Document](#)

Data Access Methods

Mirador

A simplified, clean interface and employs the Google mini appliance for metadata keyword searches.

Access URL:

<http://mirador.gsfc.nasa.gov/cgi-bin/mirador/homepageAlt.pl?keyword=MAT3CPMST>

OPeNDAP

OPeNDAP URL:

<http://goldsmr3.sci.gsfc.nasa.gov/opensap/MERRA/MAT3CPMST.5.2.0/contents.html>

GDS

<http://goldsmr3.sci.gsfc.nasa.gov/dods/>

Direct FTP

Product:

<ftp://goldsmr3.sci.gsfc.nasa.gov/data/s4pa/MERRA/MAT3CPMST.5.2.0/>

Data Visualization Tools

Giovanni

Daily Product:

http://gdata1.sci.gsfc.nasa.gov/daac-bin/G3/gui.cgi?instance_id=MERRA_MONTH_3D



Mirador

Additional Features

Mirador

Data Access Made Simple

You are here: [Keyword Search](#)

Keyword

Projects

Science Areas

SEARCH MIRADOR

Keyword:

Location:

[Advanced Search](#)

Time Span

From:

To:



Available: [AIRS](#), [OMI](#), [MLS](#), [HIRDLS](#), [TOMS](#), [UARS](#), [TRMM](#), [GLDAS](#), [SORCE](#), [Subsets from A-Train Sensors \(e.g MODIS, AIRS, OMI and MLS\)](#)

What's New: [View GES-DISC Data by NASA Science Area](#), [Search TRMM Orbital data by % missing data](#)



Acknowledgements:

Location Gazetteer data from: [National GeoSpatial Information Agency](#)

Events Gazetteer data from: [Unisys](#), [EPA](#) and [Smithsonian Global Volcanism Program](#)

LATEST NEWS

2009-08-12 - New discipline-oriented search capability in Mirador

[+ Read More](#)

2009-04-08 - A new GES DISC data navigation interface is available

[+ Read More](#)

2008-12-10 - 2008 Fall AGU Meeting: Earth Science Data System Presentations

[+ Read More](#)

2008-12-02 - Volcano Activity has been added to our Events database

[+ Read More](#)

2008-12-02 - MERRA data now available

[+ Read More](#)

[+ Mirador News Archive](#)



+ GES DISC Home

Mirador

Keyword: ?

MAT3CPMST

[Hide Search Options](#)

Time Span ?

From: ?

1978-01-01

To: ?

2009-12-08 23:59:59

Location: ?

(-90,-180),(90,180)

[Coverage Map](#)

Event: ?

[Search GES-DISC](#)

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Mirador 1.32

Data Access Made Simple

You are here: [Keyword Search](#) » [Data sets from MAT3CPMST search](#) » [File Listing of MAT3CPMST](#)

Keyword

Projects

Science Areas

Results 1 - 15 for MAT3CPMST (3 seconds)

Sort by time:

MERRA 3D IAU Diagnostic, Moist Physics, Time average 3-hourly (1.25x1.25L42)

[info](#)

[Add Selected Items To Cart](#) [Add All Files in All Pages To Cart](#)

<input type="checkbox"/> File Names/Descriptive File Names	<input checked="" type="checkbox"/> Select All in Page	Start Time
<input checked="" type="checkbox"/> MERRA300.prod.assim.tavg3_3d_mst_Cp.20080126.hdf (55.56 MB) Download: HDF (FTP)		2008-01-26 00:00:00 Metadata
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<input checked="" type="checkbox"/> MERRA300.prod.assim.tavg3_3d_mst_Cp.20080116.hdf (55.25 MB) Download: HDF (FTP)		2008-01-16 00:00:00 Metadata
<input checked="" type="checkbox"/> MERRA300.prod.assim.tavg3_3d_mst_Cp.20080115.hdf (55.58 MB) Download: HDF (FTP)		2008-01-15 00:00:00 Metadata
<input checked="" type="checkbox"/> MERRA300.prod.assim.tavg3_3d_mst_Cp.20080114.hdf (55.56 MB) Download: HDF (FTP)		2008-01-14 00:00:00 Metadata



Contents of /MERRA/MAT3CPMST.5.2.0

Name	Last Modified	Size	Response Links
Parent Directory/			
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1980/	2008-11-13T19:45:17	-	- - - - -
1981/	2008-11-14T05:14:52	-	- - - - -
1982/	2008-11-25T21:21:49	-	- - - - -
1983/	2009-01-15T16:04:06	-	- - - - -
1984/	2009-01-27T13:44:40	-	- - - - -
1985/	2009-03-17T19:31:03	-	- - - - -
1986/	2009-05-02T03:57:01	-	- - - - -
1987/	2009-07-08T17:23:43	-	- - - - -
1988/	2009-07-21T13:19:26	-	- - - - -
1989/	2008-11-14T14:20:58	-	- - - - -
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2007/	2009-12-03T19:43:15	-	- - - - -



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GES DISC

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You are here: [GES DISC Home](#) » [Water Cycle Data Portal](#) » [Additional Features](#) » Tools

Tools

Visualization Tools

Giovanni

[Giovanni Water Cycle Instance](#) [↗](#) is a web-based graphics and analysis tool to explore data products easily and quickly.

[Other Giovanni instances](#)

Giovanni is a Web-based application developed by the GES DISC that provides a simple and intuitive way to visualize, analyze, and access vast amounts of Earth science remote sensing data without having to download the data.

WCII Web Map Service Interactive interface

[Water Cycle Web Map Service interface](#) is a web-based graphics and analysis tool to explore data products in the WMS easily and quickly.

Data Tools

[HDFView](#) [↗](#)

HDFView is a Java-based GUI tool for browsing and editing HDF4 and HDF5 files. [HDFEOS plug-in](#) extends the capabilities to HDFEOS files.



Water Cycle Prototype

Giovanni Instance for the Water Cycle Information Inlet (WCII) Prototype

Home

Remove All

The WCII Giovanni instance provides a window to the data sets used in the WCII Prototype, including a sampling of relevant parameters and services.

Select:

Spatial

Cursor Coordinates: 28.47656, -89.64844

Area of Interest: West: -91.75781 North: 36.210937 South: 22.851562 East: -74.88281 [Update Map](#)

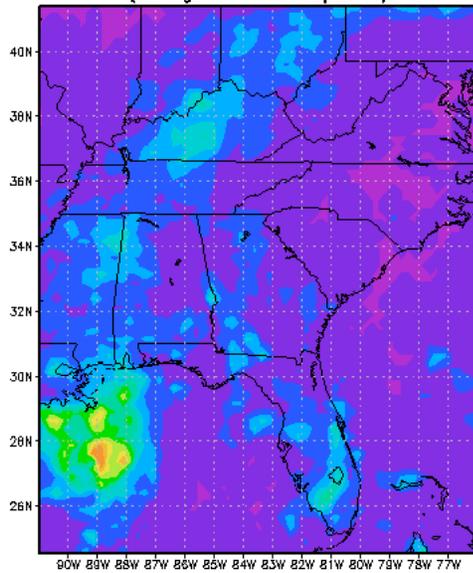
Parameters

Display: Data Product Info Units

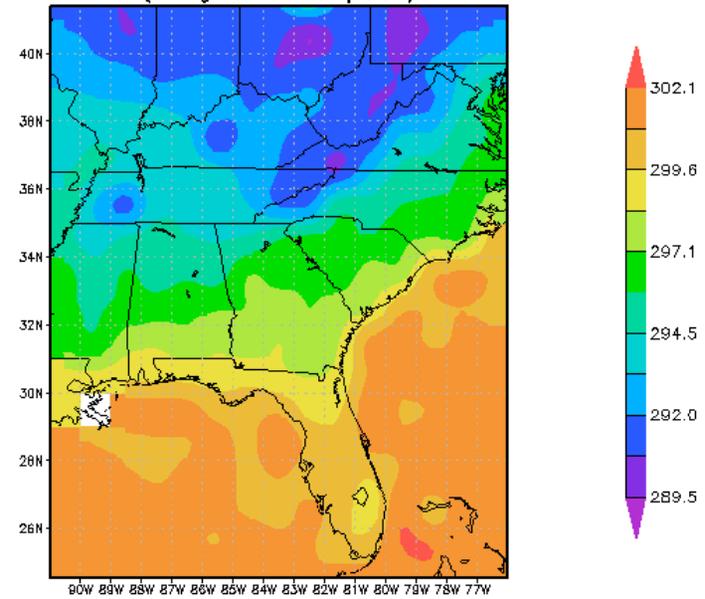
<input type="checkbox"/> AIRX3STD.005(2002/08/31 - 2009/11/20)		▲
<input checked="" type="checkbox"/> Surface air temperature_descending (SurfAirTemp_D)	Data Product Info Aqua - AIRS standard	
<input type="checkbox"/> AMSRE_LAND3_NETCDF.002(2002/06/19 - 2009/11/17)		▲
<input checked="" type="checkbox"/> AMSRE_LAND3_NETCDF	Data Product Info	
<input type="checkbox"/> TMI_SOILM3.1.0(1998/01/01 - 2004/12/31)		▲
<input type="checkbox"/> TMI_SOILM3	Data Product Info	
<input type="checkbox"/> TRMM_3B42.006(1997/12/31 - 2009/05/31)		▲
<input checked="" type="checkbox"/> precipitation	Data Product Info	



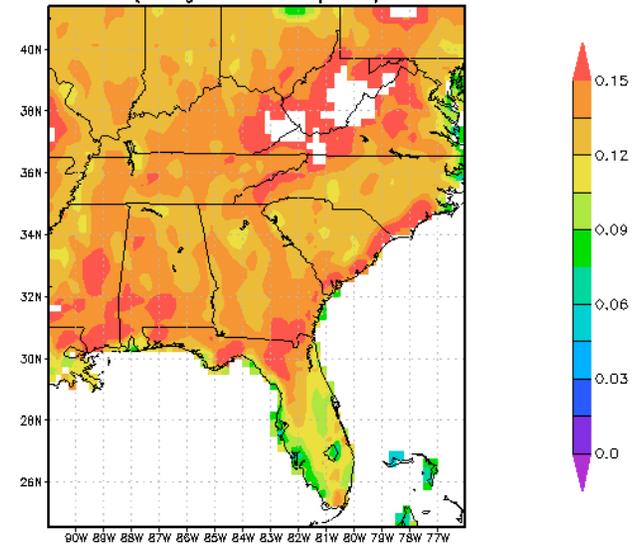
TRMM_3B42.006 precipitation [mm/hr]
(28Aug2005 - 03Sep2005)



AIRX3STD.005 Surface air temperature_descending (SurfAirTemp_D) [Kelvin]
(29Aug2005 - 04Sep2005)



AMSRE_LAND3_NETCDF.002 AMSRE_LAND3_NETCDF [g/cm³]
(28Aug2005 - 04Sep2005)





Water Cycle Information Inlet (WCII) Web Map Service (WMS)

Home Page

Parameter Info

Help Page

This WMS portal is designed for WCII project to share and exchange data and information effectively. The portal enables accessing images from different Web Map Service (WMS) and overlay different images on top of the base map. [Click here](#) to get help and samples about usage of this interface.

Select Spatial Boundaries



-12.65625, -23.90625

Pan Draw Box West: North: South: East:

Select Time

Year Month Day

Basic Parameters

- Static Parameters
- Global Land Cover from Landsat7 from JPL
 - Global Land Cover from MERIS / ENVISAT, POSTEL
 - MODIS Blue Marble Image from JPL



NOAH Products

NOAH Products	Start Time	End Time
Time-based Parameters		
<input type="checkbox"/> Latlon Diff: Noah 1.0 monthly avg surf temp cfm 1.0 monthly avg surf temp	1979-01-01	2009-09-01

TRMM Products

TRMM Products	Start Time	End Time
Time-based Parameters		
<input type="checkbox"/> TRMM 3B42 Daily Precipitation	1998-01-01	2009-04-01
<input type="checkbox"/> TRMM 3B42RT Daily Precipitation	1979-01-01	2009-09-01

Other Products

Other Products	Start Time	End Time
Time-based Parameters		
<input checked="" type="checkbox"/> AMSR-E daily soil moisture	2002-06-19	2009-11-01
<input type="checkbox"/> TMI daily soil moisture	1998-01-01	2004-12-31

USGS Drought Monitoring

USGS Drought Monitoring	Start Time	End Time
Near Real Time Parameters		
<input checked="" type="checkbox"/> Days Since Precipitation		
<input type="checkbox"/> Drought PAV 13		

Add Time Series

Place overlays side-by-side

Get Map

Width: Height:



National Aeronautics
and Space Administration

Goddard Earth Sciences
Data and Information Services Center

Search DISC

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+ Advanced Search

+ ATMOS COMPOSITION

+ HYDROLOGY

+ A-TRAIN

+ AIRS

+ HURRICANES

+ NEESPI

+ PRECIPITATION

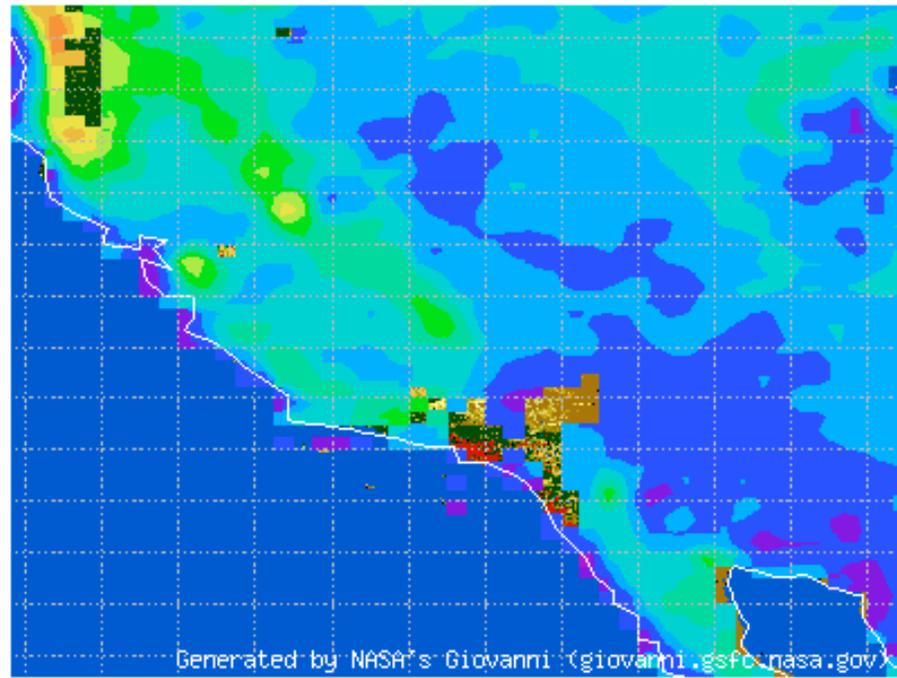
Water Cycle Information Inlet (WCII) Web Map Service (WMS)

[Home Page](#)

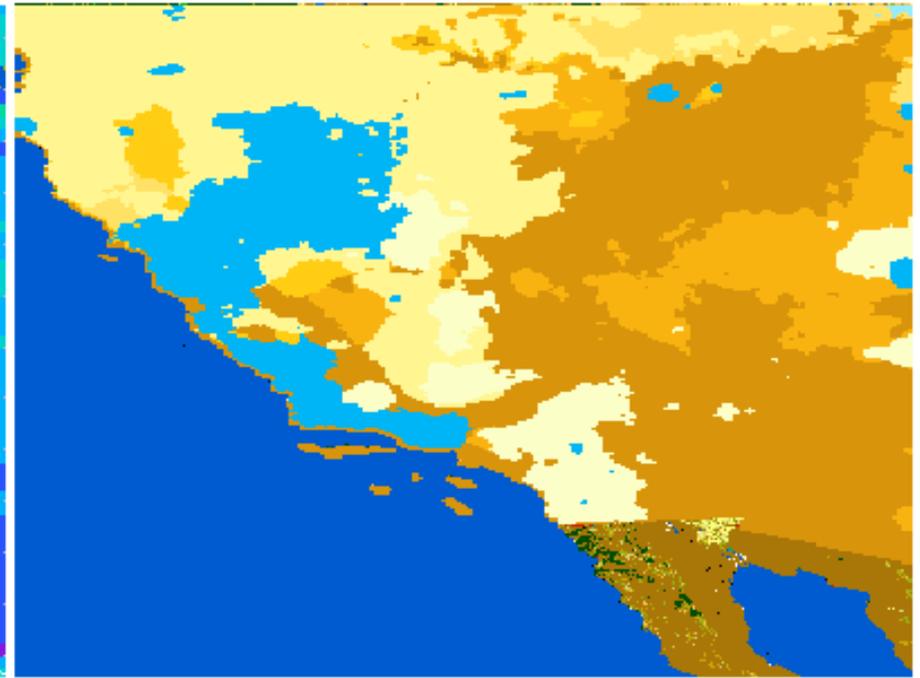
[Parameter Info](#)

[Help Page](#)

AMSR-E daily soil moisture



Days Since Precipitation



Generated by NASA's Giovanni (giovanni.gsfc.nasa.gov)



Looking Ahead

Based on community feedback...

- Initially focus on hydrological datasets archived at the GSFC Earth Sciences Data and Information Services Center (GES DISC), and NASA Energy and Water Cycle Study (NEWS)
- Establish data server/client protocols with data providers
- Community workshop: Seek community consensus (e.g., common grid sizes and resolutions, data manipulation tools)
- Expand with additional NEWS datasets, as well as GEWEX experiment datasets
- Keep growing with useful community data and services



Looking for Feedback

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Thank You!