



MODIS Value-added Services at the GES DISC

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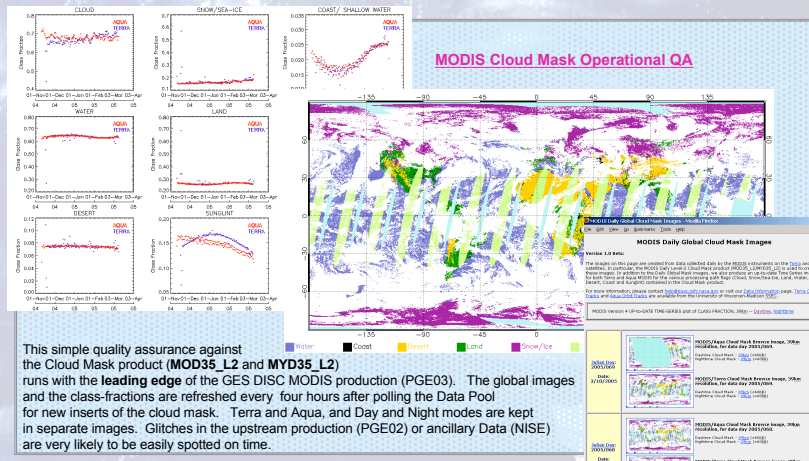
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INTRODUCTION

- Building upon historical traditions, the NASA Goddard Distributed Active Archive Center became the largest depository and distributor of MODIS data.
- The vast amounts of data, and the undergoing transitions in NASA, dictate that we transform into a center that provides **new services and technological innovations that facilitate and encourage data usage** by a broad audience: from schools, through regional resources monitors, to policy makers and sophisticated researchers.
- Better tools and services are needed, including data dissemination methods, to quickly distinguish relevant signatures in the data and extract this information for further study.

Data Pool and On-The-Fly Subsets

- Users enter desired channels/parameters/regions, and the services are executed instantaneously, as the data are being downloaded from the Data Pool.
- All **ATMOSPHERES** Level 3 (**MOD08** and **MYD08**) data have been added to the Data Pool and are available for parameter subset.
- Other MODIS subsets available from the Data Pool:
 - Level 1B Channel (band) subset for 1-km data
 - Ocean spatial subset
- The Data Pool contains **full series** of the static subsets **M[O,Y]D02SSH** and **M[O,Y]DATML2**, the 5-km L1B Radiances and the Atmospheres Level 2 joint product.



This simple quality assurance against the Cloud Mask product (**MOD35_L2** and **MYD35_L2**) runs with the **leading edge** of the GES DISC MODIS production (PGE03). The global images and the class-fractions are refreshed every four hours after polling the Data Pool for new inserts of the cloud mask. Terra and Aqua, and Day and Night modes are kept in separate images. Glitches in the upstream production (PGE02) or ancillary Data (NISE) are very likely to be easily spotted on time.

Data Access

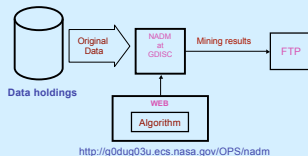
- <http://daac.gsfc.nasa.gov/data>
GES DISC hierarchical search and order interface (aka WHOM)
- <ftp://g0dps01u.ecs.nasa.gov/>
Direct ftp access to online archives
- <http://eos.nasa.gov/imswelcome>
Interface for all of NASA's Earth Observing System and related data (aka EOS Data Gateway or EDG)
- http://daac.gsfc.nasa.gov/daac-bin/MODIS/Data_order.pl?PRINT=1
All GES DISC MODIS collections and subsets at your finger tips. Convenient for Users who want to order more than one data type at a time.

On-line Visualization & Analysis

GIOVANNI
Instead of ordering large files, users select geophysical parameter(s), area, time interval, and get results in seconds.
Outputs: Numerical (ASCII), 2D plots, Correlations, Animation, Intercomparison

Near-line Archive Data Mining

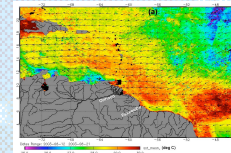
- Data Mining system allows global data users to acquire specific desired data, an otherwise impossible task due to sheer volume
- Web data mining portal to the online data holdings for industrial-strength users.
- Users submit and execute their data mining algorithm so that just the data of interest is transmitted to the user's site.
- Subscription processing automates mining process.
- This greatly reduces the amount of data that needs to be transferred, freeing up bandwidth for other users.
- For example, 13GB/day of data has been reduced to 450MB of desired data



<http://g0dug03u.ecs.nasa.gov/OPS/nadm>

Future Plans: Data Fusion, GIS

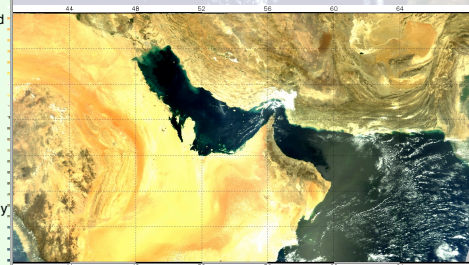
We are assessing feasibility to set up simple on-line sessions where Users can easily merge different products into a multilayer package. These can be simple overlays of Sea Surface Temperatures and Winds, or layers of radiances in multi-band GeoTIFF files, compatible with most popular GIS tools.



Data Read & Display Scripting Tools

- GES DISC receives numerous requests for free tools enabling more sophisticated data mapping and display manipulations, like the stitched Terra and Aqua image on the right, and other **automated** processing.
- HDFLook** allows both, scripting and interactive sessions. It has very friendly interface, and is easy to put to batch processing. It is distributed and supported in cooperation with University of Lille, France.
- IDL** scripts are provided where Users can tailor their own algorithms. The simplicity allows to quickly address big variety of applications, by easily incorporating all available IDL functionalities. (See Cloud Mask Operational QA, above).

<http://daac.gsfc.nasa.gov/MODIS/software.shtml>



SUMMARY

The GES DISC has made great strides in facilitating science and applications research by, in consultation with its users, developing innovative tools and data services. That is, as data users become more sophisticated in their research and more savvy with information extraction methodologies, the GES DISC has been responsive to this evolution.

The GES DISC always strives to better understand the data access, usage, and manipulation needs of the audience, so that it can continue to be on the leading edge for user-focused data services. Any user feedback would be greatly appreciated. Additional information can be found at:

MicroWave Scansat Data (MSD) Deep Layer Temperature and Ocean Precipitation Data
Deep layer temperatures and oceanic precipitation rates derived from 15 years of measurements taken by the Polar-orbiting Operational Satellite (POCS)

MODIS Atmospheric Products
Atmosphere-related parameters such as Imaging Spectroradiometer instrument

MODIS Ocean Products
Ocean-related parameters such as SeaWiFS instrument on board

SeaWiFS Data Products
This data set consists of satellite measurements of SeaWiFS instrument on board

Total Ozone Mapping Spectrometer
Global total column ozone trends. The

Open Source Project for a Network Data Access Protocol (OpenDAP)

Formerly known as the Distributed Oceanographic Display System (DODS), OpenDAP uses a network server that allows clients to retrieve GES DISC data archived in various formats, perform spatial and parameter subsetting, and output the data in ASCII or DODS objects.

<http://daac.gsfc.nasa.gov/services/dods/DODS.html>