Using Aerosol Express (aka Giovanni-4) with MODIS Aerosol Data

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The first public release of the next-generation Giovanni system, Giovanni-4, was named *Aerosol Express* because it operated exclusively atmospheric aerosol data.

This presentation will demonstrate the basic operations of Giovanni-4, and provide two basic case studies using the system.
The basic operations of Giovanni-4, like its predecessor system, are:

- Selecting the desired visualization type;
- selecting the time period of interest;
- selecting the spatial area of interest; and
- selecting the data variables to be plotted.

The following slides will demonstrate each of these operations.
The Giovanni-4 Interface

Error in the content of AOD dust 550 nm GOCART model data prior to June 7, 2013...

Select Plot
Choose a plot type.

- Maps
- Comparisons: Map, Correlation
- Time Series
- Vertical
- Miscellaneous

Select Date Range (UTC)
YYYY-MM-DD 00 hrs to YYYY-MM-DD 23 hrs
Valid Range: 1979-01-01 to 2014-08-25

Select Region (Bounding Box)
Format: West, South, East, North

Select Variables

- Disciplines
  - Aerosols (43)
  - Atmospheric Chemistry (12)
  - Atmospheric Dynamics (61)
  - Hydrology (5)
  - Water and Energy Cycle (24)

- Measurements
  - Aerosol Index (1)
  - Air Pressure (4)
  - Air Temperature (12)
  - Altitude (4)
  - Angstrom Exponent (4)
  - Atmospheric Moisture (20)
  - CH4 (4)
  - CO (4)
  - Cloud Fraction (4)
  - Cloud Properties (9)
  - Component Aerosol Optical Depth (11)
  - Evapotranspiration (1)

Number of matching Variables: 0 of 133
Please select 2 variables

Keyword:  Search  Clear

Total Variable(s) included in Plot: 0

Help  Reset  Feedback  Plot Data
Selecting a Visualization Type
Selecting a Data Product
Selecting a Time Period
Selecting a Spatial Region
Image Download (PNG; GeoTIFF also available)

Unsmoothed (default)

Smoothed plotting option
The URL for this session:

http://giovanni.gsfc.nasa.gov/giovanni/#service=INTERACTIVE_MAP
&starttime=2004-03-01T00:00:00Z&endtime=2004-06-30T23:59:59Z&bbox=-44.2969,2.3203,12.6563,45.2109&data=MYD08_M3_051_Optical_Depth_Land_And_Ocean_Mean_Mean&variableFacets=dataFieldDiscipline%3AAerosols%3B
Time-Series Case Studies
I. A “Normal” Time – Series
Time Series, Area-Averaged of Aerosol Optical Depth 550 nm (Dark Target) monthly 1 deg. [MODIS-Aqua MYD08_M3 v051] over 2003-Jan - 2010-Dec, Region 44.2969W, 2.3203N, 12.6563E, 45.2109N
Time-Series Case Studies
II. A Seasonal Time-Series
Interactive Scatter Plot:
Compare MODIS-Terra AOD to MODIS-Aqua AOD

MODIS-Terra AOD
May 2004

MODIS-Aqua AOD
May 2004
Interactive Scatter Plot: Compare MODIS-Terra AOD to MODIS-Aqua AOD

Choose 2 variables to compare
Interactive Scatter Plot: Compare MODIS-Terra AOD to MODIS-Aqua AOD

4. Scatter (Interactive)

Drag bounding box on plot to subset data

2004–05
Lat.: 1.5 to 36.5
Long.: 43.5 to 12.5

Regression: $y = 0.921x + 0.0356$, $R: 0.860$, $N: 1680$

Drag bounding box on map to subset data

Aerosol Optical Depth 550 nm (Dark Target)
monthly 1 deg. [MODIS–Aqua MYD08_M3 v051]
Interactive Scatter Plot: Compare MODIS-Terra AOD to MODIS-Aqua AOD

4. **Scatter (Interactive)**

Drag bounding box on plot to subset data

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Regression: \( y = 0.966x + 0.0186, R: 0.776, N: 198 \)

Drag bounding box on map to subset data

Reset Map and Chart
Interactive Scatter Plot:
Compare MODIS-Terra AOD to MODIS-Aqua AOD
Thank you for attending this demonstration of Giovanni-4 today.

Any questions?