# AeroStat: NASA Giovanni Tool for Statistical Intercomparison of Aerosols

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## Motivation:

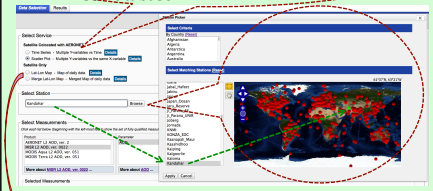
- Different papers suggested different views on the quality of MODIS and MISR aerosol products.
- Peer-reviewed papers are usually behind the latest version of the data.
- Difficult to verify/reproduce results from various published paper
- Difficult to combine consistently adjusted measurements
- In need of an online shareable environment where data processing and analysis can be done in a transparent way by any user of this environment and can be shared amongst all the members of the aerosol community.

## Goals:

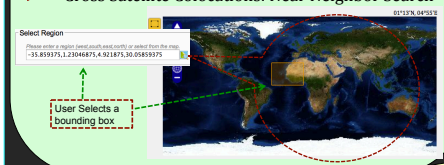
- Provide an easy-to-use collaborative environment for exploring aerosol phenomena using multi-sensor data
- Provide consistent services with multi-sensor aerosol data
- Provide a transparent environment to colocation and comparison methods with detail documentation
- Provide easy sharing of results

### AeroStat Data Are Derived from Level 2 Measurements

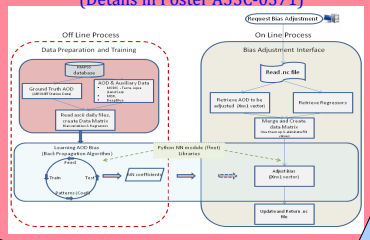
- Original Level 2 Product:
  AERONET, MODIS Terra, MODIS Aqua, MISR
- Derived Products
  - Satellite Colocated with AERONET stations: MAPSS Database

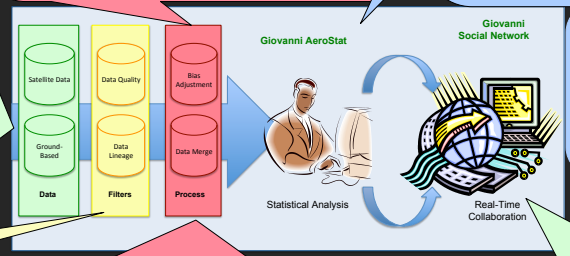


  - Cross Satellite Colocations: Near Neighbor Search

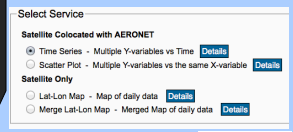



### Flowchart of Bias Adjustment using Neural Network (Details in Poster A53C-0371)

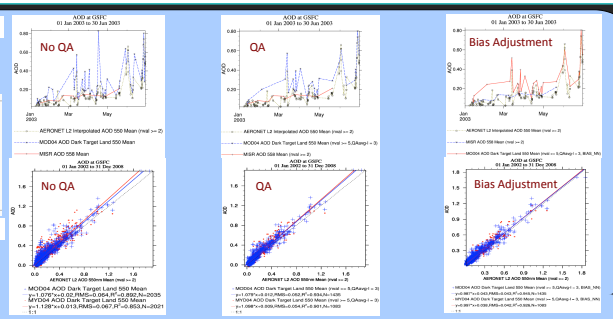



### Aerostat Giovanni Online Services



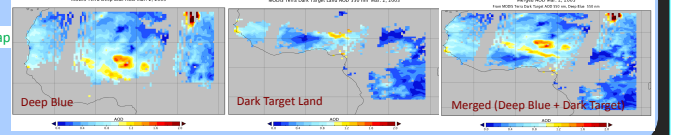

Time Series



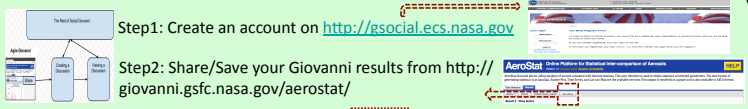

Scatter Plot




Lat-Lon Map



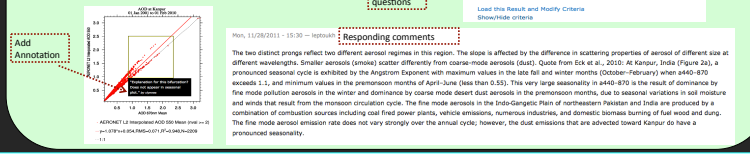

### How does Giovanni-Social work? (Details in Oral IN33E-05 at 2:40 – 2:55 pm Wednesday)



Step1: Create an account on http://gsocial.ecs.nasa.gov

Step2: Share/Save your Giovanni results from http://giovanni.gsfc.nasa.gov/aerostat/

Example of Giovanni-Social work via sharing:

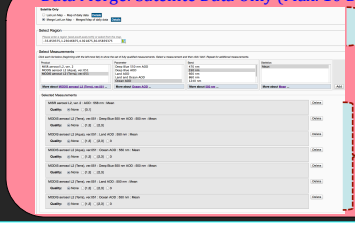



### Data Quality Filters

Default: Science Team Recommendation

Threshold

### Data Merge: Satellite Data Only (Max. 10 Days Period)

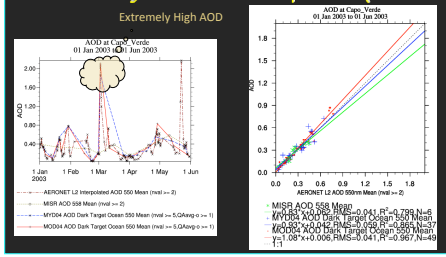


Max. bounding box is 50 degrees

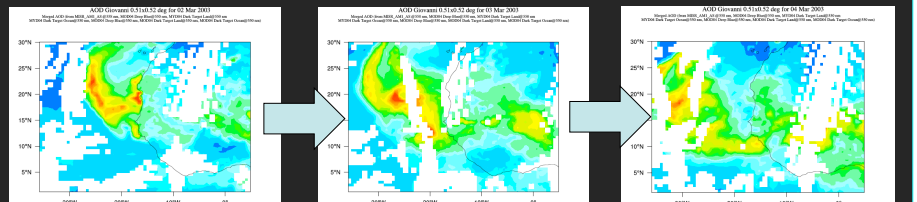
Allow up to 8 variables (including QA options)

### Case Study: Dust Storm Episode (March 1 ~ 5, 2003)

Extremely High AOD




Dust Storm Transport (Multi-sensors products merged)



## Down the Road:

- Add/Integrate bias adjustment for MISR colocated with AERONET data
- Add/Integrate bias adjustment for "Satellite Only" service
- Routinely process and ingest of colocated satellite and AERONET data
- Fold AeroStat Giovanni into main stream Giovanni
- Add new Giovanni features and services to AeroStat where applicable

http://giovanni.gsfc.nasa.gov/aerostat/

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