A-TRAIN DATA DEPOT(ATDD)

(http://disc.gsfc.nasa.gov/atdd/index.html)

Providing users with convenient display and download services for A-Train instrument data

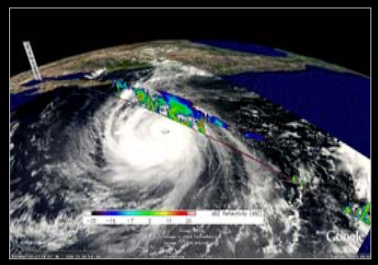
Peter M. Smith, Steven Kempler, Gregory Leptoukh, Andrey Savtchenko, Robert Kummerer, Arun Gopolan

GSFC Earth Sciences (GES)
Data and Information Services Center (DISC)
Peter.M.Smith@nasa.gov

AGU 2008 Fall Meeting, December 15-19, 2008

ATDD is a web based tool which provides collocated data and display products for a number of A-train instruments Cloudsat, Calipso, OMI, AIRS, MODIS, MLS, POLDER-3, & ECWMF model data. Products provided include Clouds, Aerosols, Water Vapor, Temperatures and trace gases. All input data is online and in HDF4, HDF5 format. Display products include curtain images, horiz. strips, line plot overlays, GE kmz files. Sample products are shown for two type of events. Hurricane event, Norbert, Oct 8, 2008 and a dust storm event over the Arabian Sea, Nov 13-14, 2008.

Hurricane Norbert, October 8, 2008



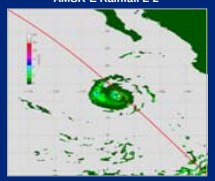
Hurricane Norbert track Oct. 2008

Satellite Images of Hurricane Norbert October 8, 2008

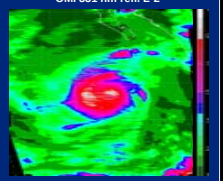
Images for Norbert, a category 4 hurricane on October 8, 2008, are shown for the instruments MODIS, POLDER-3 (true color) and AIRS, AMSR, OMI and TRMM (false color) and cover a spectral range from the microwave through the UV.

MODIS L-1b

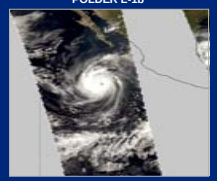
AMSR-E Rainfall L-2



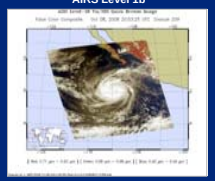
OMI 331 nm refl. L-2



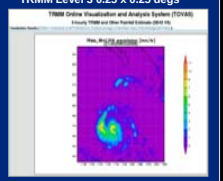
POLDER L-1b



AIRS Level 1b



TRMM Level 3 0.25 x 0.25 degs



ATDD simplifies collocating , subsetting, displaying and inter-comparing A-train instrumental data

- Instrument data are pre-subsetted about the Cloudsat track and reside online.
- Subsets are downloadable by FTP and vastly simplify time-series analysis studies. All original parameters are preserved in these subsets.
- A much smaller set of these parameters are made available for manipulation and display using our Giovanni web-based application. Curtain displays, horizontal swath images and line plot overlays are provided.
- Data for any portion of any orbit for any data day for the period June 2008 through the present may be selected, displayed, inter-compared and downloaded for further analysis. Display products are made available as PNG files or Google Earth kmz files.
- For datasets where distribution is restricted, links are provided back to the original archives
- Documentation of the parameters supported, mission operational status, science examples and useful related URLs are provided on our ATDD portal site.

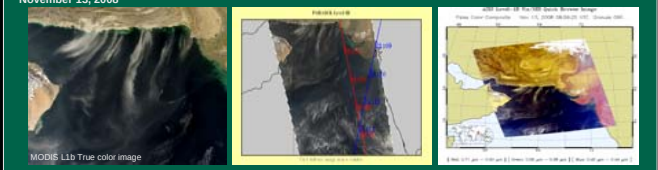
Download Products

- HDF4 data files of collocated data
- PNG image files of curtains and strips
- KMZ Google-Earth files
- Time-series data from FTP archives

Dust Storm over Arabian Sea , Nov. 13-14 2008

The images below show a dust storm over the Arabian sea as seen by MODIS/ AQUA , AIRS, OMI and Polder-3 for Nov 13-14, 2008 day time. The same event is shown for Calipso. A Calipso image for a night-time overpass is also shown, when Calipso was in the best position to view the dust storm. The dust is clearly visible and has separated into two distinct layers. This Calipso image is also shown in Google Earth.

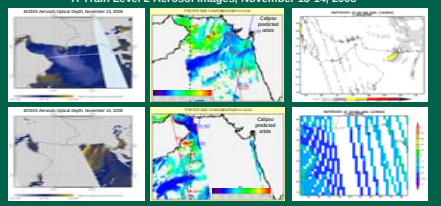
November 13, 2008



November 14, 2008

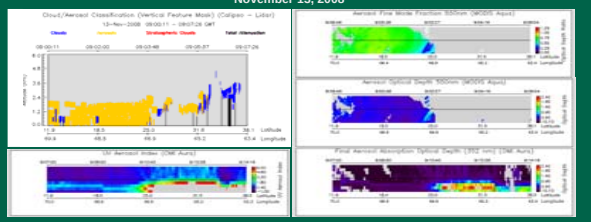
Level 1b images for MODIS/Aqua, AIRS and POLDER-3 clearly all capture this huge dust storm event. CALIPSO's ascending orbital track passes to the East, West of the main storm. The descending orbit for Nov. 16 views the storm region.

A-Train Level 2 Aerosol Images, November 13-14, 2008



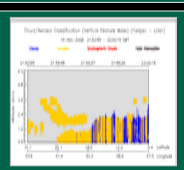
OMI clearly identifies the aerosols for Nov 13 but does not detect the aerosol layer on Nov 14. MODIS reports very high aerosol values for NOV 13, but sun glint contaminates the west side of the image POLDER has flagged the higher valued aerosol values and does not report the dust plumes as aerosols for NOV 13.

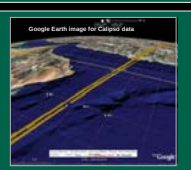
November 13, 2008



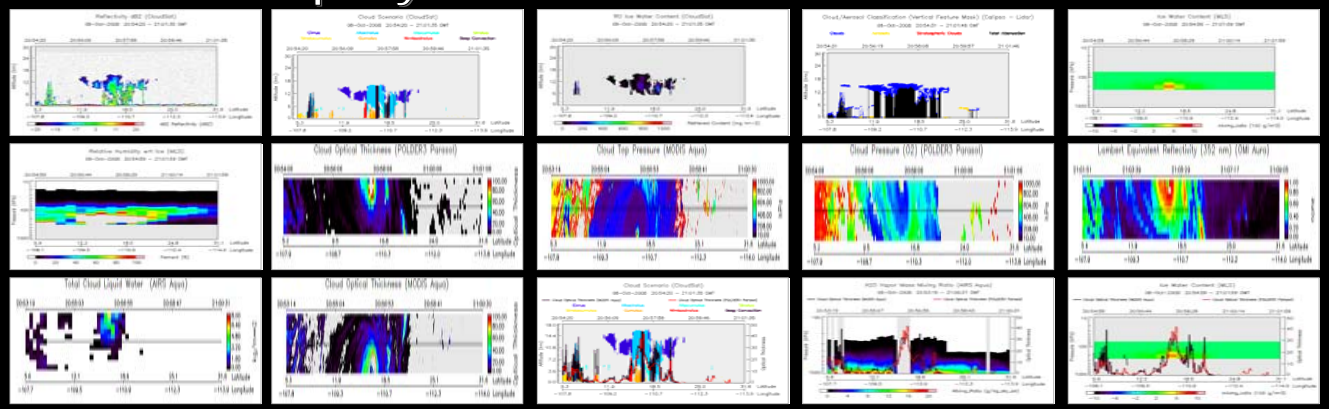
ATTD products for Nov 13 ascending orbit. Calipso and MODIS both detect the aerosols layer

A night time overpass for Calipso (Nov. 14) detects aerosols up to 3.4 km in altitude. This same data is shown displayed in Google Earth. The aerosols shown here clearly emanate from the dust storm shown in the level 1b images.





ATDD Display Products for Hurricane Norbert



ATDD images show instrument data collocated with the Cloudsat track. The vertical structure of the storm's convective activity is clearly captured by Cloudsat and Calipso. Cloudsat penetrates more deeply into the storm than Calipso but the latter instrument is much more sensitive to thin cirrus cloud. Ice water content (Cloudsat, MLS), humidity (AIRS) correlate well with and cloud-top pressure and cloud optical thickness provided by AIRS, MODIS and POLDER-3.

Credits

- NOAA National Hurricane Center, hurricane track
- ICARE, Lille, France POLDER-3 browse image products.
- MODIS Rapid Response System MODIS Level 1b images
- GES DISC Giovanni tool display products