Aqua and Terra Direct Broadcast Activities at the University of Wisconsin Cooperative Institute for Meteorological Satellite Studies (CIMSS)

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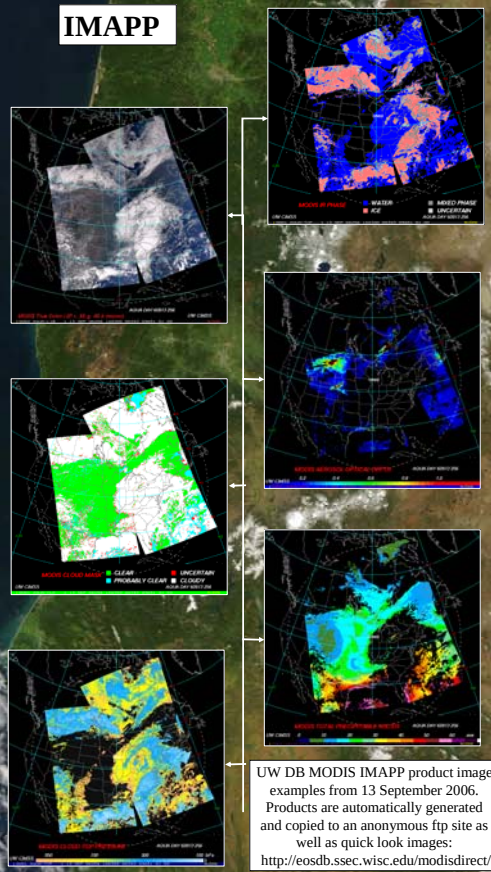
Introduction

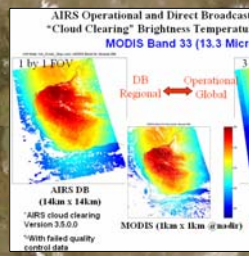
Direct Broadcast Aqua and Terra data are being acquired and used in a variety of environmental monitoring and weather forecasting applications at the University of Wisconsin- Madison. The high quality and timeliness of the data make them useful for research as well as short – term decision making applications.

IMAPP

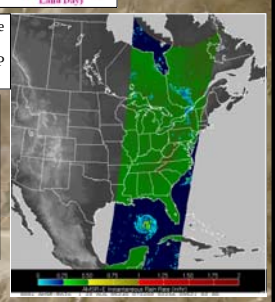
- IMAPP Software is freely distributed via download from: http://cimss.ssec.wisc.edu/~gumley/IMAPP/
- Funded by NASA
- Fosters international compatibility and ease of use of data
- Consists of software to turn direct broadcast MODIS, AIRS AMSU, and AMSR-E data into useful science products. The current suite of products consists of:
- L1B calibrated, geolocated radiances
  - MODIS AIRS AMSU AMSR-E
- MODIS Level 2 products
  - Cloud Mask (MOD35)
  - Cloud Top Properties (MOD06)
  - Infrared Cloud Phase (MOD06)
  - Atmospheric Profiles (MOD07)
  - Sea Surface Temperatures
    - 1 km product (non-DAAC algorithm)
  - Aerosol Retrieval (MOD04)
  - Near Infrared Water Vapor Retrieval (non-DAAC algorithm)
- AIRS Level 2 products
  - Atmospheric Profiles, Surface Properties Retrieval Product
    - 3x3 FOV cloudy and clear sky 28 levels (L2.RetStd)
    - single FOV clear sky only 101 levels
- AMSRE Level 2 products
  - Rain Rate and Rain Type (AMSR_E_L2_Rain)
  - Soil Moisture (AE_Land)
- Tutorial describing how to create MODIS True Color Images
- Products accessible via DODS and ADDE servers from UW



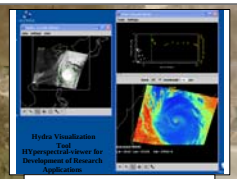
UW DB MODIS IMAPP product image examples from 13 September 2006. Products are automatically generated and copied to an anonymous ftp site as well as quick look images: http://eosdb.ssec.wisc.edu/modisdirect/



AIRS Level 2 Retrievals from both the DAAC JPL and UW Value Added Product. Both are now distributed as part of IMAPP.

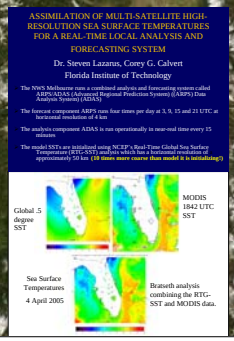


AMSR-E Rain Rate image of Hurricane Katrina. Data was collected and processed at UW Madison using IMAPP software.

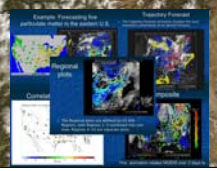


Hydra Visualization Tool allows free viewing and interrogating of MODIS and AIRS IMAPP DB data sets

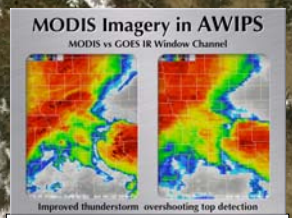
Short Term Decision Making



MODIS IMAPP direct broadcast SST product is being assimilated as part of a high-resolution forecast model at Florida Institute of Technology. The data is being used by Melbourne Florida NWS personnel.



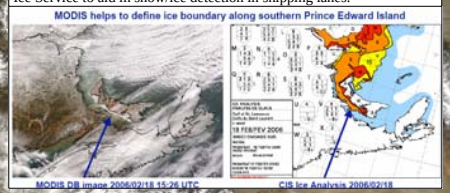
IDEA Project uses combination of MODIS DB data from UW and forecast model data to run trajectory aerosol forecast to assist EPA air quality forecasters.

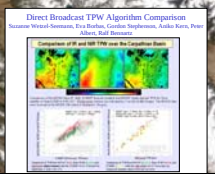


Direct feed into US NWS Visualization System pipeline of MODIS data and products to supplement GOES data and products

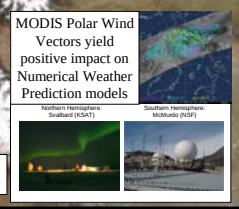
Assisted the Local NWS in identifying the path and width of an F3 tornado.

GeoTIFF images are created in near real-time to support NOAA's Coach Watch program which has statutory responsibilities in estuarine and marine science living marine resource protection, and ecosystem monitoring and management. The images are also used by he Canadian Ice Service to aid in snow/ice detection in shipping lanes.





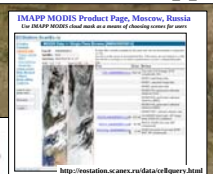
Two complimentary TPW algorithm retrievals. Hungary, 2006



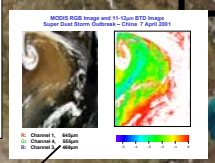
MODIS Polar Wind Vectors yield positive impact on Numerical Weather Prediction models

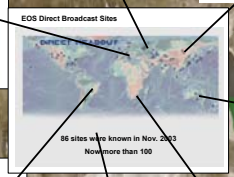
Northern Hemisphere: Svalbard (KSAT) Southern Hemisphere: McMurdo (NSF)

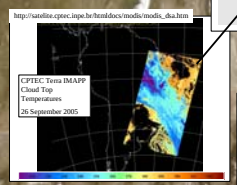
International IMAPP Applications



Mediterranean Agency for Remote Sensing and Environmental Control (MARSec) Benevento, Italy







Remote Sensing Workshop Pretoria, South Africa, April 2006

Future Goals

- More IMAPP products will be released through 2006 - 2007
  - AMSR-E Ocean Winds, SST, and Snow/Water Equivalent
  - AIRS/MODIS combined products - cloud clearing, cloud properties
  - MODIS – Surface Reflectance, Cloud Optical Properties, Cloud Classification
- IMAPP Workshops will be held in India and Russia in 2007
- We intend to follow on with the International Polar Orbiter Processing Package (IPOPP)

International TOVS Study Conference, 15th, ITSC-15, Maratea,Italy, 4-10 October 2006
Madison, WI, University of Wisconsin-Madison, Space Science and Engineering Center, Cooperative Institute for Meteorological Satellite Studies, 2006.