Global Precipitation Measurement

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GPM Data and PPS Status

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GPM Data Versions Since Launch

- V03 At-Launch version
  - Used pre-launch information
  - Started upon instrument turn-on in March 2014
- V04 started March 2016
  - Only GPM in this release
  - All products started at same time and had same version
- V05 started May 2017
  - First to incorporate TRMM into the GPM data suite
  - GPM GMI, radar and combined started May 2017
  - TRMM L1 and TRMM-era constellation started in Oct 2017
  - TRMM L2-L3 constellation GPROF started in Feb 2018
  - JPST identified some issues with the radar products and directed a new reprocessing of radar and combined products
- V06 started 4 October 2018
  - TRMM L2-L3 PR V06 actually started earlier than GPM--May 2018
  - Production and NRT Radar and Combined at V06

Current GPM Version Status

- Radiometer data products at V05
  - No plans to change: radiometers current at V05
  - GPM and GPM era constellation radiometers
  - TRMM and TRMM era constellation radiometers
  - GPROF V05 apriori databases are based on V04 Ku/Combined
- Radar based V06 status
  - GPM DPR and Combined reprocessing has begun (back to March 2014)
  - GPM SLH reprocessing has begun (back to March 2014)
  - TRMM SLH reprocessing is complete
  - TRMM PR all reprocessed using algorithm based on GPM V06 Ku
  - TRMM combined using the GPM combined algorithm has currently not started and is still being analyzed
  - TRMM version 7 2B31 will remain available in both original HDF4 and HDF5
  - In November 2018 PPS will reprocess SSMI 1C products starting with 1987 (i.e., before the TRMM era)
- All subsequent versions will always start in Dec 1997

Current GPM Version Status (2)

- Gridded GPM and TRMM satellite text products V06
  - Core satellite (GPROF, KU, DPR, COMBINED) have started reprocessing with March 2014 data
  - TRMM satellite (old 3G68) will start reprocessing at V06 once the TRMM V06 combined has been approved by the JPST

HDF Potential Issue

- The group developing HDF has commercialized itself
  - They have created two branches:
    - Community branch that is free and will be updated as possible
    - "For pay" branch that will be the main focus of development
    - This begins with the 1.10 branch
    - Will no longer support the 1.8 branch
  - Currently python, MatLab nor IDL can read 1.10 HDF5 files
  - There now is a way that HDF5 1.10 can create 1.8 type files so for V07 we will use HDF5 1.10 in this mode (unless support improves)
- Real issue is whether commercial vendors will be charged a fee if they want to use the latest HDF5
- PPS is currently looking at changing to netCDF4 which has promised to be free and open regardless of HDF5 status.
  - netCDF4 uses HDF5 structures to store its data
  - They have agreed to keep the same interface to users and be compatible regardless of HDF5 changes
- If a change happens, it would be at V08

IT Security Problem

- The IT security people are selling the HTTPS protocol for everything
  - HTTPS is a hypertext transport protocol secure that is made for displaying webpage-based data
  - It is not a File Transport Protocol (FTP), secure File Transport Protocol (SFTP) or File Transport Protocol Secure (FTPS)
  - NASA has mandated that only HTTPS will be used to provide to the outside world
  - One needs to do screen scraping techniques using curl or wget
    - No simple list of files but webpages are returned
    - No wildcard for file retrieval
    - ETC
- Has major implications for users getting lots of data routinely
- Currently there is no web server at all on the NRT because these servers generally have major security holes and need to be continuously patched
- PPS is operating under a waiver as file retrieval is anonymous ftp
- If lose waiver then major impact to users especially operational users

Collaborations with PMM Science Team Members

- PPS produces the Precipition Features (PF) products
  - Coordination with University of Utah and Texas A&M – Corpus Christi
  - Support through the partner science team member
  - TRMM and GPM
  - Radiometer only based PF
  - Currently reprocessing to V06
  - URI: atmos.tamucc.edu/trmm
- PPS produces special Ku based analyzed subsets
  - Coordination with the University of Washington
  - Allows identification of structures of targeted reflectivity echoes
  - Currently have produced files based on GPM Ku V05
  - Initially done for TRMM version 7
  - URI: gpm.atmos.washington.edu

Collaborations with PMM Science Team Members (2)

- NASA MEaSURES data sets “archive”
  - Partnered with the Colorado State University
  - Radiometer rainmaps based on GPROF 2010v2
  - URI: rain.atmos.colostate.edu/RAINMAP10v2
- Colorado River Basin (CRB) GPROF data sets
  - Partnered with Colorado State University
  - Produced in near-realtime as regular GPROF data sets are products
  - Use special code and special database over the CRB area of interest
  - Available for retrieval within 1 hour of data collection

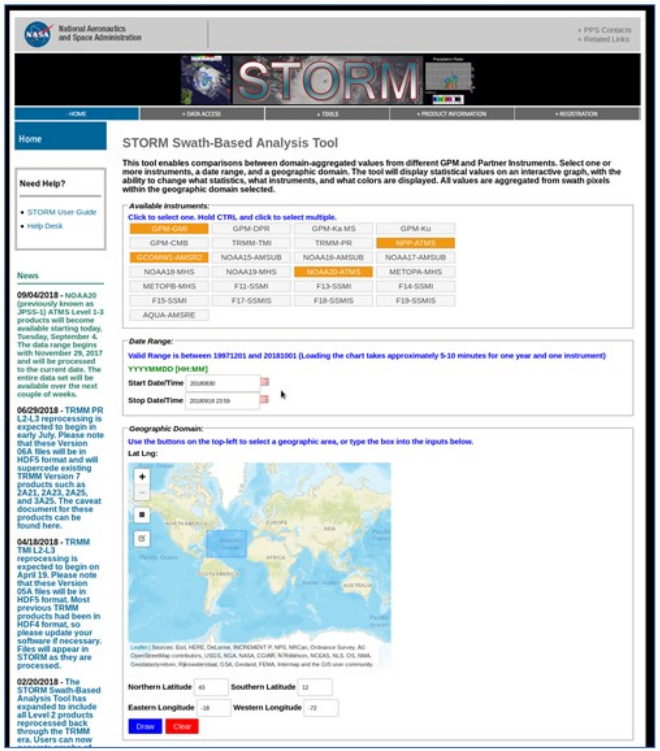
New Formats for Ordering

- GPM 1C and 2A GPROF files can be ordered in BUFR format
  - WMO approved format
  - WMO approved table
- GPM IMERG can be ordered in GRIB2 format
  - WMO approved format
- As part of parameter subsetting in STORM can order most variables of a L3 product output as a geoTIFF file
- Can use STORM to aggegrate GPM core gridded text products
  - ASCII text period gzipped for distribution
  - Any time period
  - Retain the hourly grids or collapse all hours into a single grid

Example of order data via analysis

https://storm.pps.eosdis.nasa.gov/storm/Analysis.jsp

Example query for Hurricane Florence data from GPM, GCOMW1, NOAA20 (JPSS-1), and SUOMI-NPP



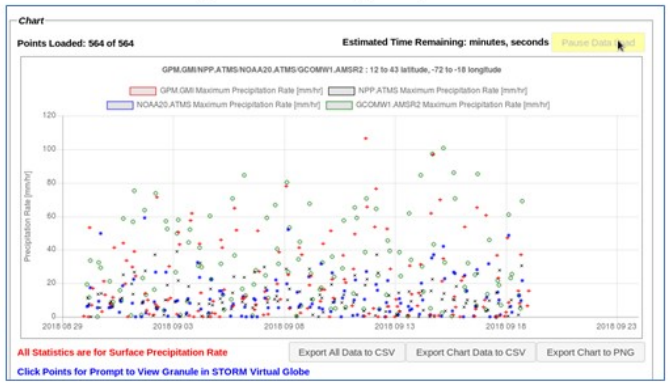
Graph begins loading data for one instrument onto chart. Pausing allows customization mid-load.

Example of order data via analysis (2)

https://storm.pps.eosdis.nasa.gov/storm/Analysis.jsp

During pause, you can add more instruments, add more variables, or change chart appearance.

Resuming data load allows the chart to finish analyzing all of the overflights. Here again you can customize the chart.



Clicking on the points connects you to THOR Online, STORM Virtual Globe, or directly downloading the file for that overflight.

At the bottom of the page, you can create a geographically subset order that only contains granules exceeding a statistical threshold.