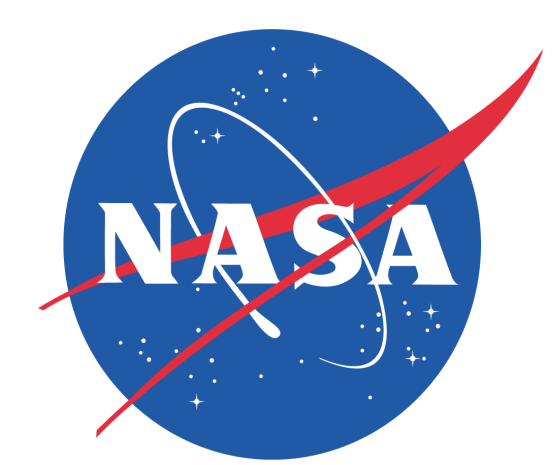




Explore GPM IMERG and Other Global Precipitation Products with GES DISC GIOVANNI



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NASA/Goddard EARTH SCIENCES DATA and INFORMATION SERVICES CENTER (GES DISC)

Newly released GIOVANNI facilitates exploration and comparison of GPM IMERG and other global precipitation products

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Abstract

New features and capabilities in the newly released GIOVANNI allow exploring GPM IMERG (Integrated Multi-satellite Retrievals for GPM) Early, Late and Final Run global half-hourly and monthly precipitation products as well as other precipitation products distributed by the GES DISC such as TRMM Multi-Satellite Precipitation Analysis (TMPA), MERRA (Modern Era Retrospective-Analysis for Research and Applications), NLDAS (North American Land Data Assimilation Systems), GLDAS (Global Land Data Assimilation Systems), etc. GIOVANNI is a web-based tool developed by the GES DISC (Goddard Earth Sciences and Data Information Services Center) to visualize and analyze Earth science data without having to download data and software. The new interface in GIOVANNI allows searching and filtering precipitation products from different NASA missions and projects and expands the capabilities to inter-compare different precipitation products in one interface. Knowing differences in precipitation products is important to identify issues in retrieval algorithms, biases, uncertainties, etc. Due to different formats, data structures, units and so on, it is not easy to inter-compare precipitation products. Newly added features and capabilities (unit conversion, regridding, etc.) in GIOVANNI make inter-comparisons possible. In this presentation, we will describe these new features and capabilities along with examples.

New Features and Highlights

The screenshot shows the GIOVANNI search interface. A table of results is displayed with columns for Variable Name, Source, Temp. Res., Spat. Res., Begin Date, End Date, Units, and Vert. Slice. Three rows are highlighted with red boxes and numbered 1, 2, and 3. A red box labeled 4 highlights the search filters at the top.

Variable Name	Source	Temp. Res.	Spat. Res.	Begin Date	End Date	Units	Vert. Slice
Multi satellite precipitation estimate with climatological gauge calibration - Early Run (GPM_3IMERGHE_v03)	GPM	Half-Hourly	0.1°	2015-04-01	2015-11-30	mm/hr	
Multi satellite precipitation estimate with climatological gauge calibration - Late Run (GPM_3IMERGHL_v03)	GPM	Half-Hourly	0.1°	2015-03-07	2015-11-30	mm/hr	
Multi satellite precipitation estimate with gauge calibration - Final Run (recommended for general use) (GPM_3IMERGHF_v03)	GPM	Half-Hourly	0.1°	2014-03-12	2015-07-31	mm/hr	

Highlights:

- 1 Facets: Search results can be filtered based on facets including disciplines, measurements, platform/instrument, spatial resolutions, temporal resolutions, wavelengths, depths, special features, and portals.
- 2 Unit conversion: Flexibility to choose preferred units such as mm/day or to compare with other similar products (NLDAS, MERRA, etc.) in GIOVANNI
- 3 Shapefiles: Countries, US states and major watersheds around the world. Coming soon: land/sea masks.
- 4 New functions and capabilities (zonal mean, histogram, etc.) are available and more are being added (check back often or subscribe to our mailing list for the latest information).

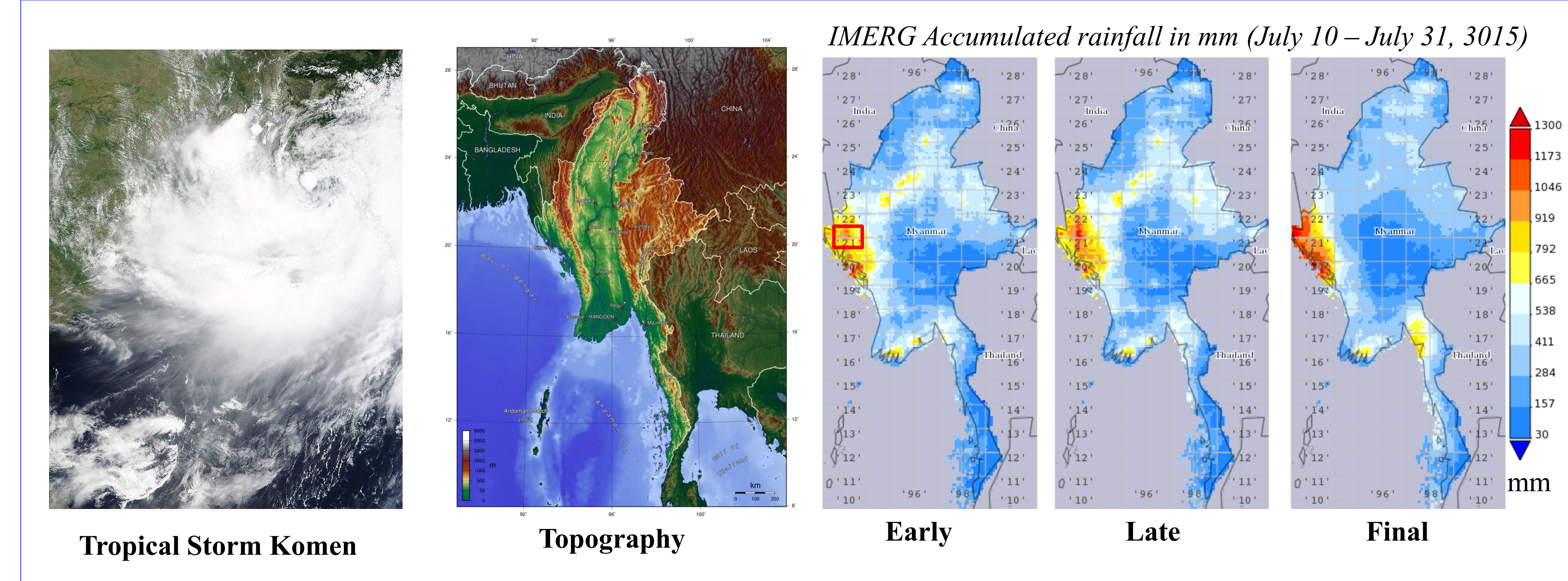
[http://giovanni.gsfc.nasa.gov/giovanni/#service=TmAvMp&starttime=&endtime=&bbox=-180,-90,180,90&data=GPM_3IMERGHHE_03_precipitationCal%2CGPM_3IMERGHHL_03_precipitationCal](http://giovanni.gsfc.nasa.gov/giovanni/#service=TmAvMp&starttime=&endtime=&bbox=-180,-90,180,90&data=GPM_3IMERGHHE_03_precipitationCal%2CGPM_3IMERGHHL_03_precipitationCal%2CGPM_3IMERGHF_03_precipitationCal)

Explore and compare IMERG and other monthly products

The screenshot shows the GIOVANNI search interface with search results for monthly precipitation products. A table of results is displayed with columns for Variable Name, Source, Temp. Res., Spat. Res., Begin Date, End Date, Units, and Vert. Slice. Three rows are highlighted with red boxes and numbered 1, 2, and 3.

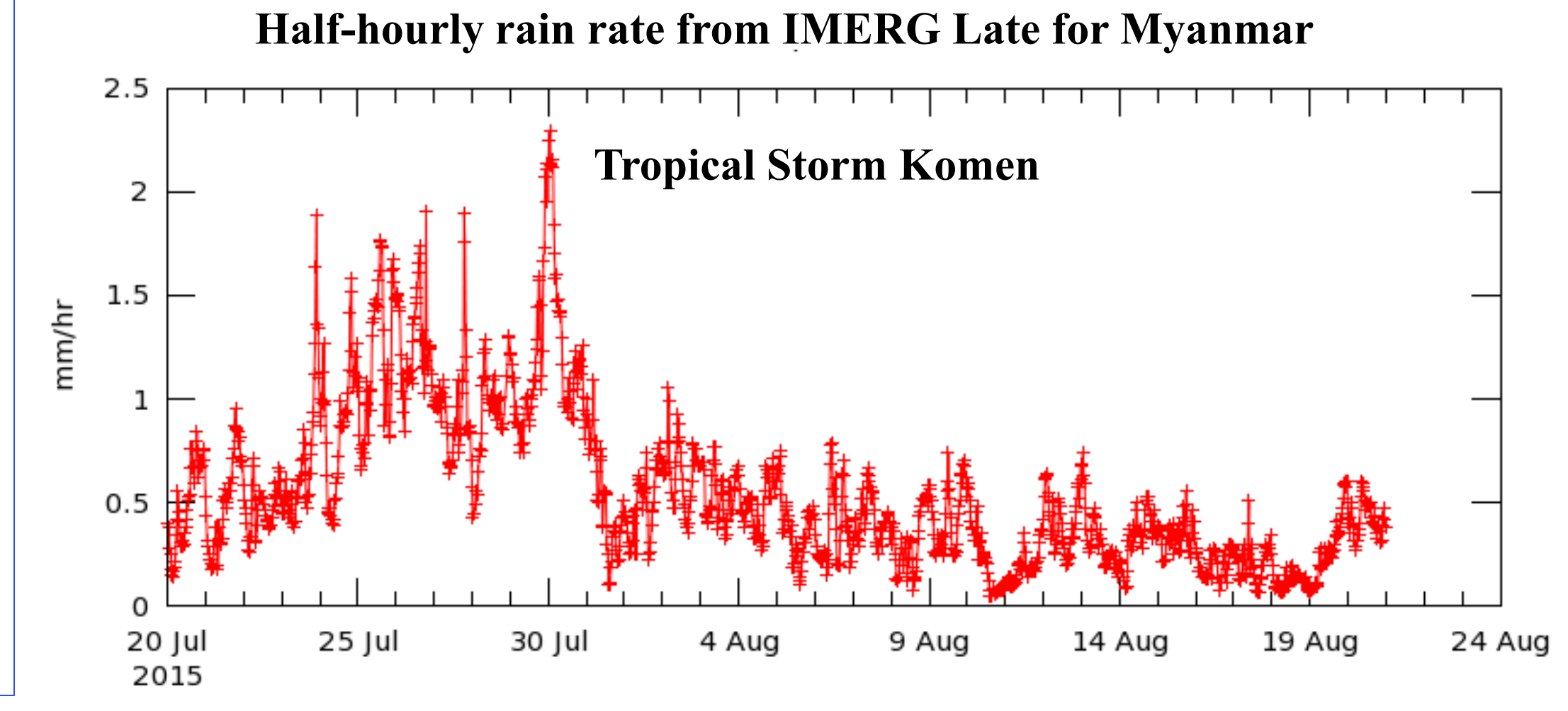
Variable Name	Source	Temp. Res.	Spat. Res.	Begin Date	End Date	Units	Vert. Slice
Precipitation Rate (TRMM_3B43_v7)	TRMM	Monthly	0.25°	1998-01-01	2015-02-28	mm/month	
Merged satellite gauge precipitation estimate - Final Run (recommended for general use) (GPM_3IMERGM_v03)	GPM	Monthly	0.1°	2014-04-01	2015-12-02	mm/month	
Precipitation Total (NLDAS_FORA0125_M_v05Z)	NLDAS Model	Monthly	0.125°	1979-01-01	2015-12-02	mm/month	

Compare New GPM IMERG Early, Late and Final products

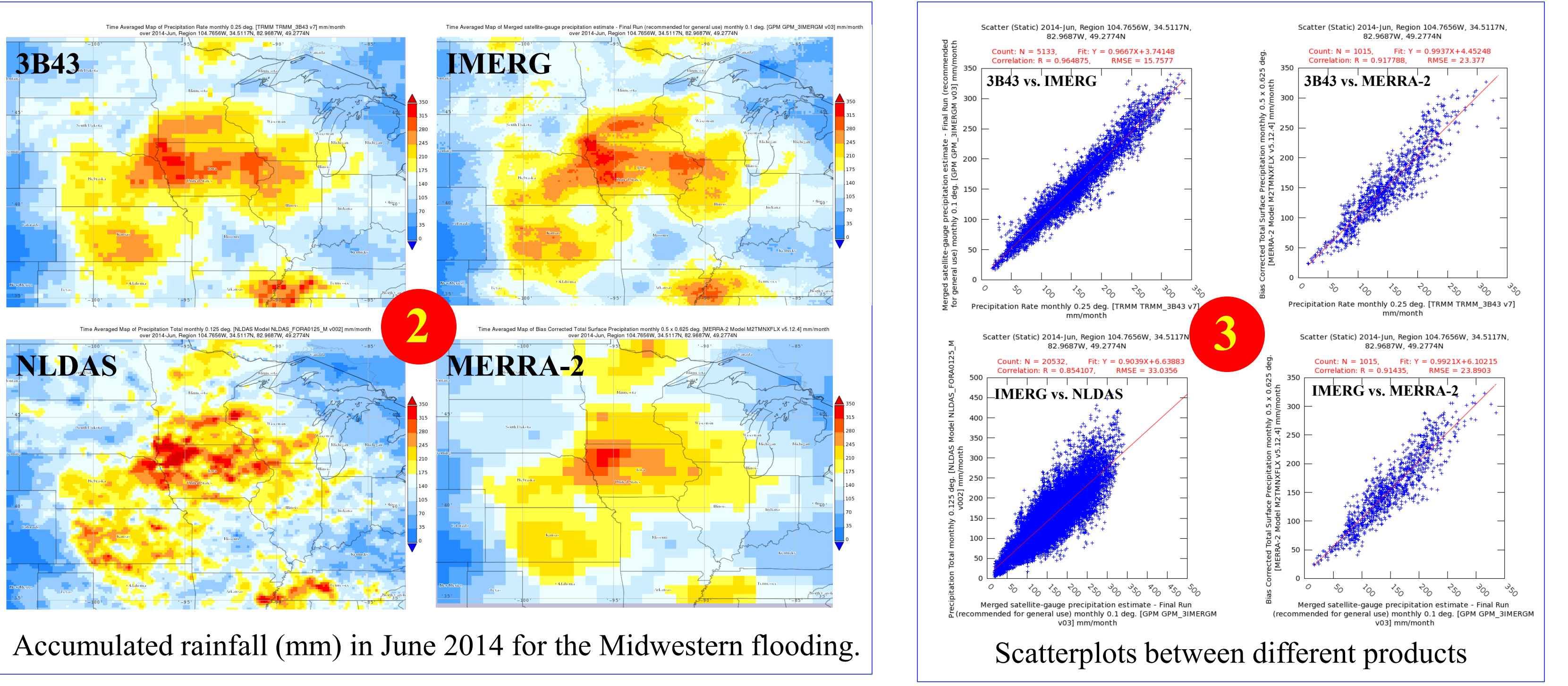


Flooding in Myanmar (Burma) in July 2015

Tropical Storm Komen (see below) and above-normal monsoon rain caused extensive flooding in low lying areas in Myanmar, resulting in over 100 deaths and up to 1 million people affected.

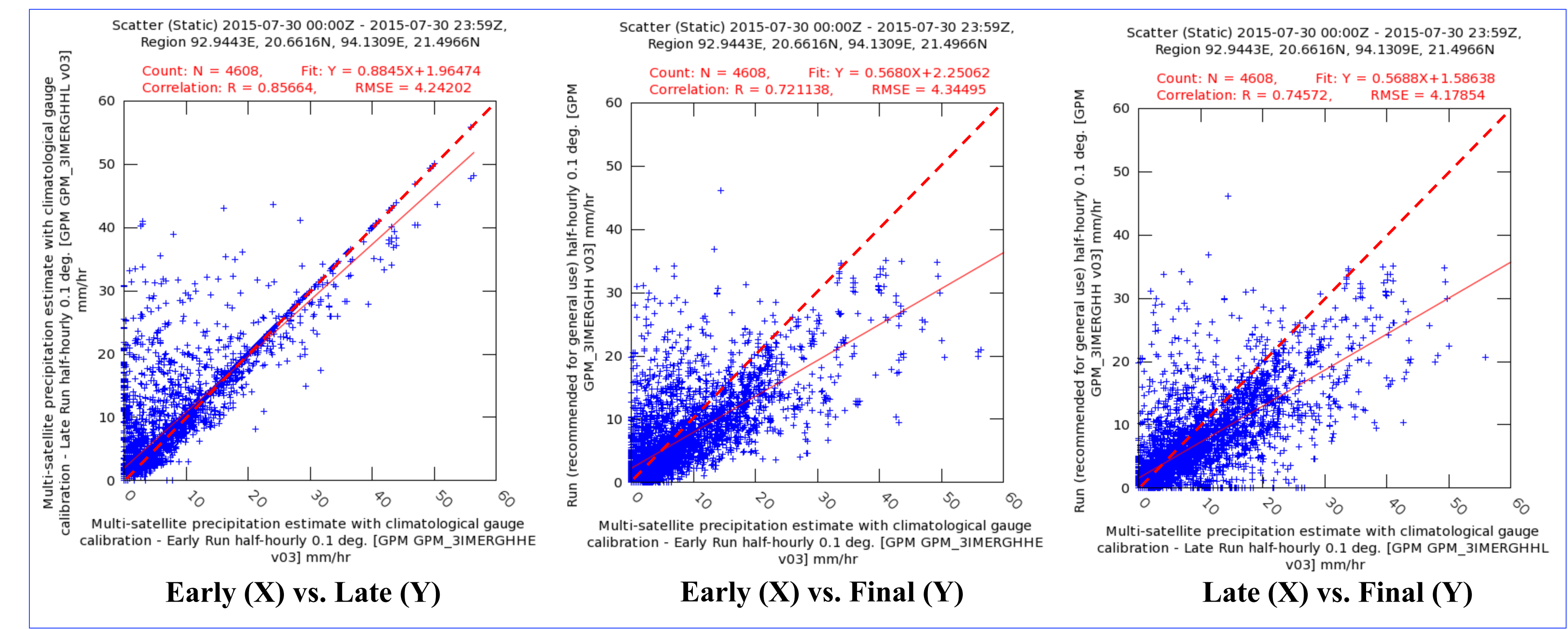


Time series of the half-hourly IMERG Late product for Myanmar, showing the heavy rain on July 30th during the landfall of Komen.



- 1 Similar products can be grouped together. This example shows 4 monthly precipitation products from TMPA, IMERG, NLDAS and MERRA in the same units.
- 2 Monthly accumulated rainfall (mm) from TMPA, IMERG, NLDAS and MERRA-2 in June 2014, showing heavy rainfall in the Midwest, USA.
- 3 Scatterplots of monthly accumulated rainfall (mm) between different precipitation products in the Midwestern USA.

Left to right: Tropical Storm Komen seen from NASA MODIS; The topography of Myanmar; The accumulated rainfall maps (the small rectangular box in the heavy rain area is for the scatterplots on the left) during July 10-31 in Myanmar using the shapefile feature in GIOVANNI.



Scatterplots of rain rate in mm/hr on July 30. From left to right: Early vs. Late; Early vs. Final and Late vs. Final.

Related URLs:

- Giovanni: <http://giovanni.gsfc.nasa.gov>
- GES DISC: <http://disc.gsfc.nasa.gov>
- Suggestions or subscription to our mailing list: gsfc-help-disc@lists.nasa.gov

Related Talk: Online tools for uncovering data quality (DQ) issues in satellite-based global precipitation products. IN006: Approaches to Improved Collection and Dissemination of Earth Science Data Quality Information, Moscone West – 2020 Mon. 14 Dec. 2015, 17:30-17:45