Online Tools to Investigate Uncertainties in Satellite-derived Global Precipitation Products

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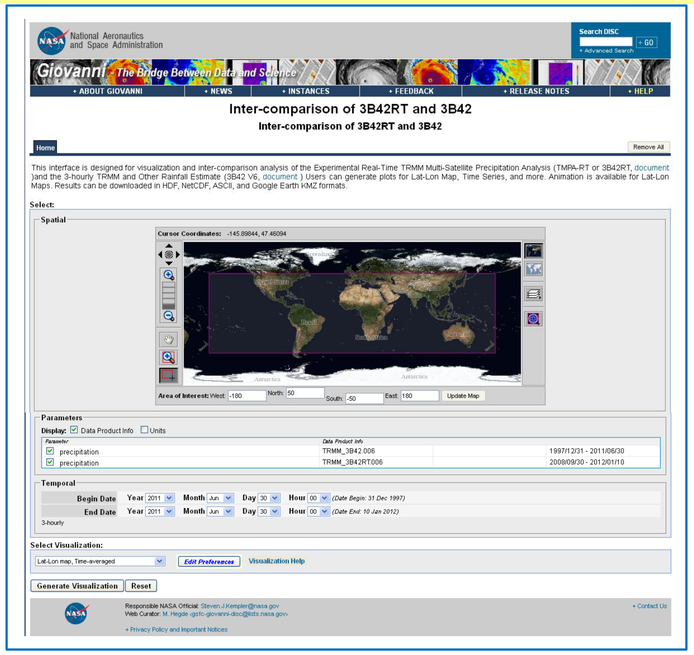
Inter-comparison of TRMM Multi-satellite Precipitation Analysis Products (TMPA 3B42RT and 3B42)

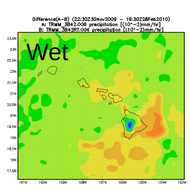
http://gdata1.sci.gsfc.nasa.gov/daac-bin/G3/gui.cgi?instance_id=rt_intercomp

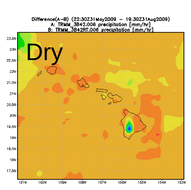


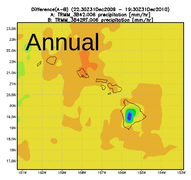
Available functions:

- Animation
- Overlay of Lat-Lon Maps
- Correlation map
- Lat-Lon map of time-averaged differences
- Scatter plot
- Scatter plot, time-averaged
- Time series
- Time series, area-averaged differences
- Time series, area statistics

The tool for inter-comparison of 3B42 and 3B42RT provides application users the ability to inter-compare near-real-time (3B42RT) and research quality (3B42) rainfall products for product adjustments (i.e., biases).







Large differences between 3B42 and 3B42RT are found over the "Big Island" of Hawaii during the wet and dry seasons of 2009.

URL: http://disc.sci.gsfc.nasa.gov/precipitation/tovas

ABSTRACT

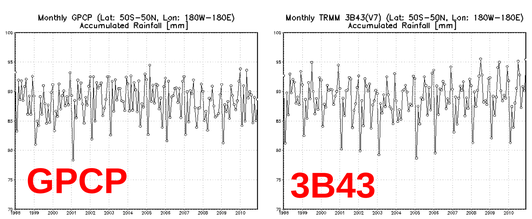
Precipitation is an important atmospheric variable that affects our daily lives. Each year severe droughts and floods happen around the world and often result in heavy property damage and human causalities, such as, a devastating flood in August 1975 in Henan Province, China where ~230,000 people lost their lives and over 11 million people were displaced when No 3 Typhoon became a hovering tropical depression in the area and its associated heavy rain caused a dam to burst. Accurate measurement and forecast are important for mitigation and preparedness efforts. Over the past decade significant progress has been made in satellite-derived precipitation product development. In particular, products' spatial and temporal resolutions as well as timely availability have been improved by blended techniques. Satellite-derived precipitation products are widely used in various research and applications. However biases and uncertainties are common among precipitation products and an obstacle exists in quickly gaining knowledge of product quality, biases and behavior at a local or regional scale, namely user defined areas or points of interest. To address this issue, we have developed prototypes to inter-compare satellite-derived products in the TRMM Online Visualization and Analysis System (TOVAS). In this poster, we present two new tools:

•Inter-comparison of TMPA 3B42RT and 3B42
•Inter-comparison of V6 and V7 TRMM L-3 monthly products

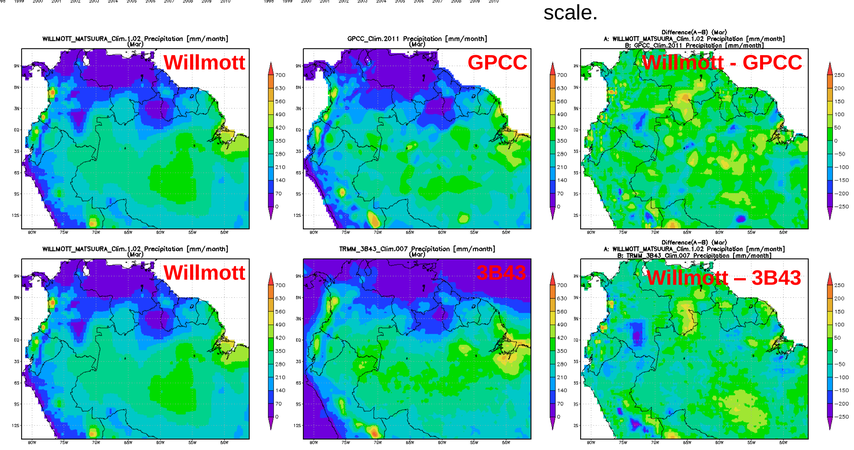
Future plans: Integrate IPWG (International Precipitation Working Group) validation algorithms/statistics and expand the current 3-hourly, daily products, monthly and their climatology products.

Acknowledgement: "Integrate IPWG Validation Algorithms into TRMM Online Visualization and Analysis System (TOVAS)." This project is part of NNH10ZDA001N-ESDRERR, "Earth System Data Records Uncertainty Analysis." Special thanks to the GES DISC Giovanni development team.

Samples of Precipitation Uncertainty:



Intercomparison of climatology products derived from different precipitation datasets (satellite and gauge combined: GPCP, 3B43; gauge only: Willmott, GPCC). In general, all products look similar, however, large differences are found at local scale.

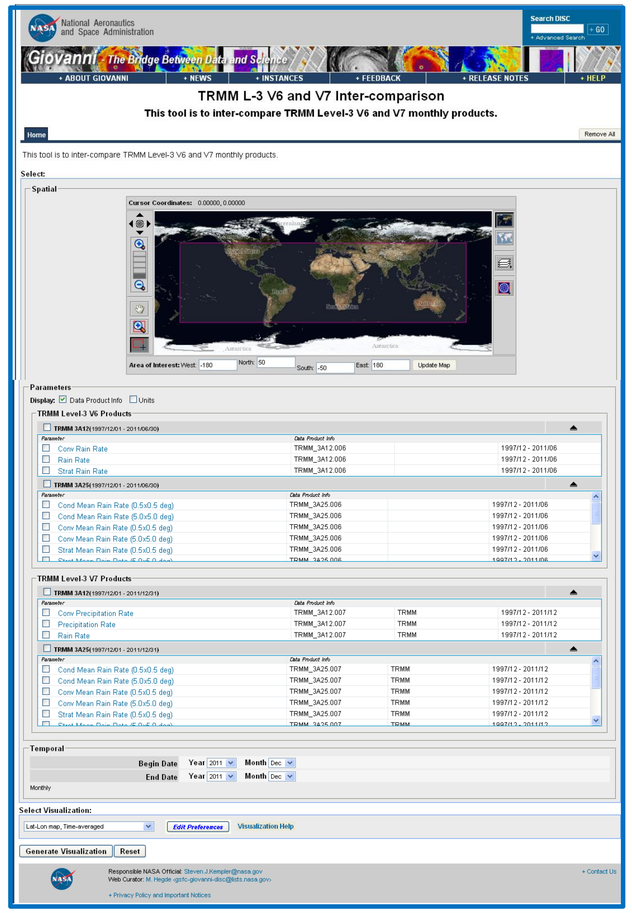


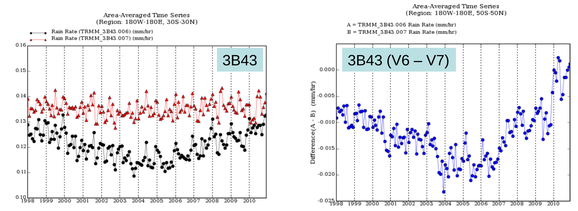
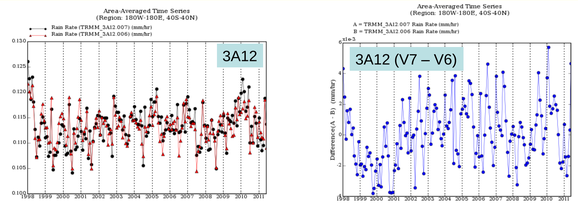
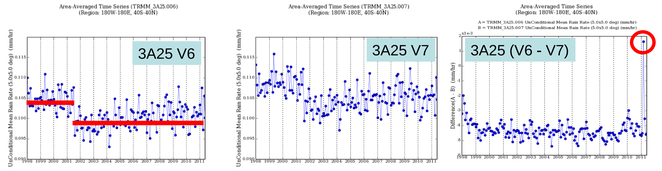
- TOVAS: http://disc.sci.gsfc.nasa.gov/precipitation/tovas
- Mirador: http://mirador.gsfc.nasa.gov/
- GPCP 2.2 in TOVAS: http://disc2.nascom.nasa.gov/Giovanni/tovas/rain.GPCP.shtml
- PDISC Portal: http://disc.sci.gsfc.nasa.gov/precipitation
- Hurricane Data Analysis Tool: http://disc.sci.gsfc.nasa.gov/daac-bin/hurricane_data_analysis_tool.pl
- TRMM Near-real-time Product in USDA Crop Explorer: http://www.pecad.fas.usda.gov/cropexplorer/mpa_maps.cfm
- Current Rainfall Conditions: http://disc.sci.gsfc.nasa.gov/agriculture/additional/tools/current_conditions.shtml

TOVAS

Inter-comparison of TRMM V6 and V7 Monthly Products

http://gdata1.sci.gsfc.nasa.gov/daac-bin/G3/gui.cgi?instance_id=TRMM_L3_comp





This tool allows investigation of local and global changes in characteristics associated with the product version change.