



Getting Inside the Storm

Engaging Applied Science User Communities to the General Public with GPM

Social Media

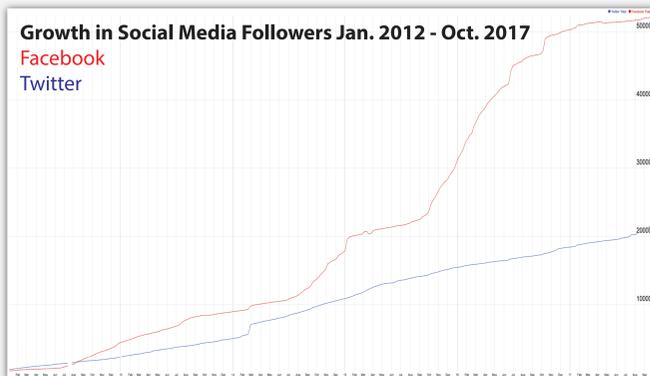
As people continue to spend more of their time online and attention spans are at a premium, social media has become an increasingly essential tool for reaching out to end users. GPM social media outlets consist of the @NASARain Facebook and Twitter accounts, both with a large and active following. These outlets are used to engage directly with the public and science communities and distribute the latest GPM data visualizations and news stories. Collaboration with other NASA social media accounts such as @NASAGoddard, @NASAEarth, and of course @NASA is essential to maximizing the impact of our message.



The screenshot to the left shows the @NASARain Twitter account's profile page, with some of the latest tweets highlighting data visualizations of thunderstorms in Alabama and IMERG data from the 2017 hurricane season.

@NASARain wants to share your research!
Email jacob.reed@nasa.gov

FOLLOW US!



This graph shows the growth in GPM's social media followers from 2012 - 2017. Each account has enjoyed sustained growth over the years, with certain events triggering periods of rapid growth. The NASARain Twitter account has **21,541 followers** and the Facebook account has **52,135 followers** as of October 1st 2017.

Overview

The GPM outreach and education team utilizes a broad portfolio of assets and activities to engage applied science user communities and the general public and educate them about how GPM data can benefit their work and their lives. The overarching goal is to increase awareness of GPM and TRMM applications by focusing on both broad areas and thematically focused communities. For the applied science community, trainings, workshops and case studies are utilized improve awareness and usage of GPM data and gain feedback in how data products are used for decision making and how our portfolio of resources can be improved. For the general public, GPM's social media accounts are an essential tool to reach out to users where they are already spending their time and educate them on the ways GPM is benefiting society. The Precipitation Measurement Mission website serves as a central hub for both the general public and the applied science communities to learn about the latest accomplishments of the GPM mission and obtain access and instructions for the multitude of resources we have made available. The Precipitation Education website is a valuable tool targeted at educators and students to engage young minds by teaching them the basics of Earth and atmospheric science and how missions like GPM can help benefit society. The GPM education team also engages with education communities directly through classroom visits and other science events, and expands their effectiveness by collaborating with other science education programs such as GLOBE. GPM data visualizations and a growing suite of interactive visualization tools are an essential asset to visually communicate GPM research to the public, the media, and science communities and to demonstrate conceptually challenging subjects in an easily understandable fashion. Through utilizing this multitude of tools and outreach outlets we are able to expand public awareness of the GPM mission and its importance to society and increase the usage and effectiveness of GPM resources within the applied science community.

Visualization



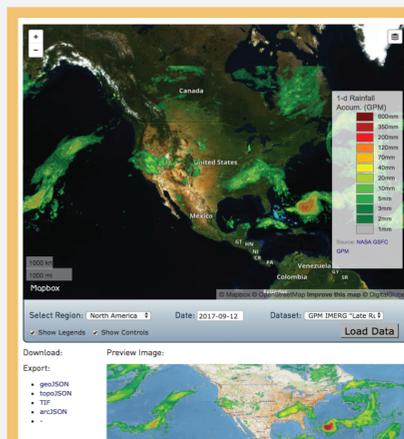
svs.gsfc.nasa.gov/Gallery/GPM.html

The NASA Goddard Scientific Visualization Studio works with GPM to create high quality data visualizations and edited features. These videos look inside some of the powerful storms from the past several years and demonstrate complex scientific topics in a way the general public can understand.



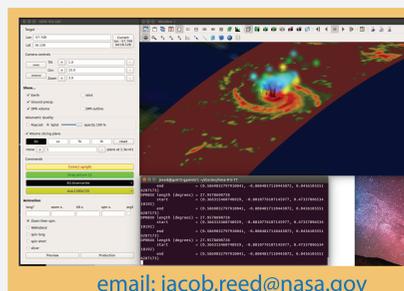
storm.pps.eosdis.nasa.gov

STORM Virtual Globe, developed by the NASA Precipitation Processing System augments the STORM data download service and allows for rapid in-browser visualization of GPM datasets on a 3D globe. Tutorial: pmm.nasa.gov/data-access/tutorials



pmm.nasa.gov/precip-apps

The GPM Precipitation & Applications Viewer allows for quick visualization and download of near-realtime IMERG datasets and flood and landslide products. A Javascript API allows for automated data retrieval.



email: jacob.reed@nasa.gov

A custom "GPMViz" toolset has been developed for in-house rapid generation of print-quality images & animations. Contact Jacob Reed for more details

PMM Website

The **Precipitation Measurement Missions website** serves as the central hub for distributing information, news, resources, and documentation related to the GPM and TRMM missions.

Near realtime precipitation data from the **IMERG Early Run** dataset is prominently featured on the front page, along with the latest analysis of extreme weather events, and highlights of recent featured articles developed by the Goddard communications team.

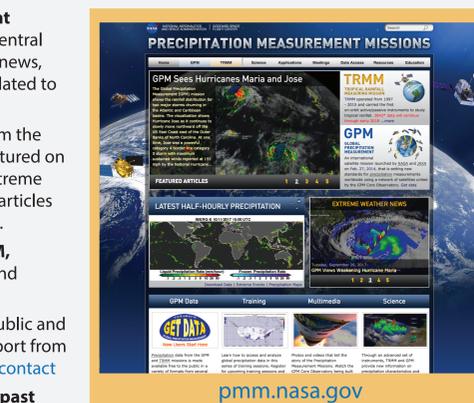
The site is divided into 7 focus areas: **GPM, TRMM, Science, Applications, Meetings, Data Access, and additional Resources.**

An online contact form allows members of the public and science communities to directly reach out for support from GPM scientists, and is available at: pmm.nasa.gov/contact

The site has received **571,460 pageviews in the past year** (Oct 2016 - 2017).



pmm.nasa.gov/data-access



pmm.nasa.gov

The **Data Access Portal** on the PMM website serves as an essential resource for end users to obtain instructions, training, and documentation on working with GPM and TRMM datasets.

News on GPM data processing, errors, outages and more is available at: pmm.nasa.gov/data-access/data-updates

The **GPM and TRMM Data Download Directories** attempt to exhaustively catalog the multitude of datasets generated by the Precipitation Measurement Missions. These directories provide information on the spatial & temporal resolution, coverage, latency, and the multiple data formats and download sources available for each dataset.

pmm.nasa.gov/data-access/downloads/gpm
pmm.nasa.gov/data-access/downloads/trmm

As each dataset is complex and developed by a different team, we need your help to correct any inaccuracies in this table! Please review the entries for datasets you have expertise in, and email jacob.reed@nasa.gov for any additions or corrections.

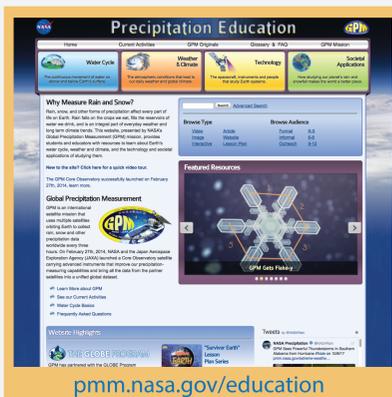
Education

During 2017, we have reached **over 10,000 formal and informal educators** and **over 1,500,000 students** and other learners with our efforts described below. This is in addition to the educators who use our resources on the Precipitation Education website.

The GPM education team works closely with the **GLOBE Program** (Global Learning and Observations to Benefit the Environment) on two fronts: both the formal GLOBE Program and the Citizen Science GLOBE Observer effort. With GLOBE, we have been assisting with the ENSO Student Research Campaign by inviting GPM Science team members to present during our monthly webinars. With the **GLOBE Observer App**, (observer.globe.gov) we have included GPM content in many of the outreach webinars and social media posts.

Over the years we have given many presentations to educators and students to share information about the GPM mission's science, technology, and applications. These presentations have included the **National Science Teacher Association Annual Convention**, the **Maryland Environmental Outdoor Education Association**, the **Chesapeake Bay Watershed Education Working Group**, and many others.

We assist the **Museum Alliance**, **Solar System Ambassadors Program**, **International Association of Science Centers and Museums**, the **CoCoRaHS Program**, the **National Association of Interpreters**, and the **Earth to Sky Program** with responding to requests for presentations, resources, and webinars, and telecons.



pmm.nasa.gov/education

The **Precipitation Education Website** serves as portal for students and educators to obtain NASA learning resources focused on 4 subject areas: **the water cycle, weather & climate, technology, and societal applications.**

The website currently hosts **315 pieces of educational content** and has received **1,221,945 pageviews in the past year** (Oct 2016 - 2017)

A scalable user-friendly interface allows for quick searching and browsing by age-group, keyword, or content type (lesson plan, video, etc...)



Applied Science Community

The GPM Agricultural Applications Workshop

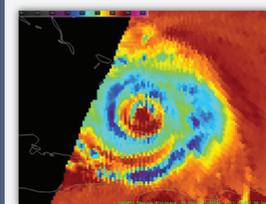
On August 1st, 2017 NASA and the World Resources Institute co-hosted a one-day workshop
The focus was on current applications, and potential opportunities for the use of satellite-based water resource data and other tools to support decision making in the context of agricultural management and food security
The workshop hosted 80 participants from across a broad spectrum of organizations including government, private companies, NGOs (Field to Market, OXFAM), and other organizations including the Gates Foundation
The workshop consisted of an introductory session and three panel discussions focused on disaster response and relief aid, supply chain management, and water resource management
Breakout discussions convened in the afternoon along the same thematic topics.
The agenda, presentations and follow up materials on this workshop are available at: pmm.nasa.gov/meetings/2017-gpm-agricultural-applications-workshop



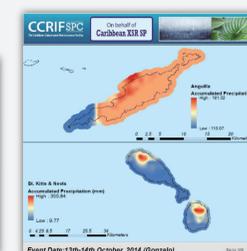
ARSET Trainings

Quarterly webinars (2 per day) from Dec. 2015 to Sept. 2016. Webinars were recorded and are available at: pmm.nasa.gov/training
Topics included GPM mission updates, data products, demonstrations of how to find, download and use GPM data in various formats (e.g. ArcGIS)
329 participants (213 distinct individuals) attended
Participants represented 30 U.S. states and 41 non-U.S. countries.

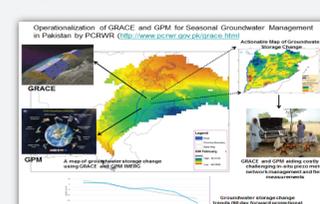
Example Outcomes:



Imagery from the GMI was used by the National Hurricane Center to understand the state of Irma on Friday, September 8 2017 as it moved north of Cuba.



Reinsurance company Swiss Re is using TRMM data coupled to a portfolio of country-wide exposure to estimate potential loss from heavy rainfall events.



GPM and GRACE data is used to empower the National Water Agencies of Pakistan and Nepal. Over 10,000 farmers in the Indus basin receive information on water resources in their area on their cell phones.