From Satellites to Your Backyard

Dorian W. Janney, NASA "Global Precipitation Measurement" (GPM) mission Education and Outreach Coordinator

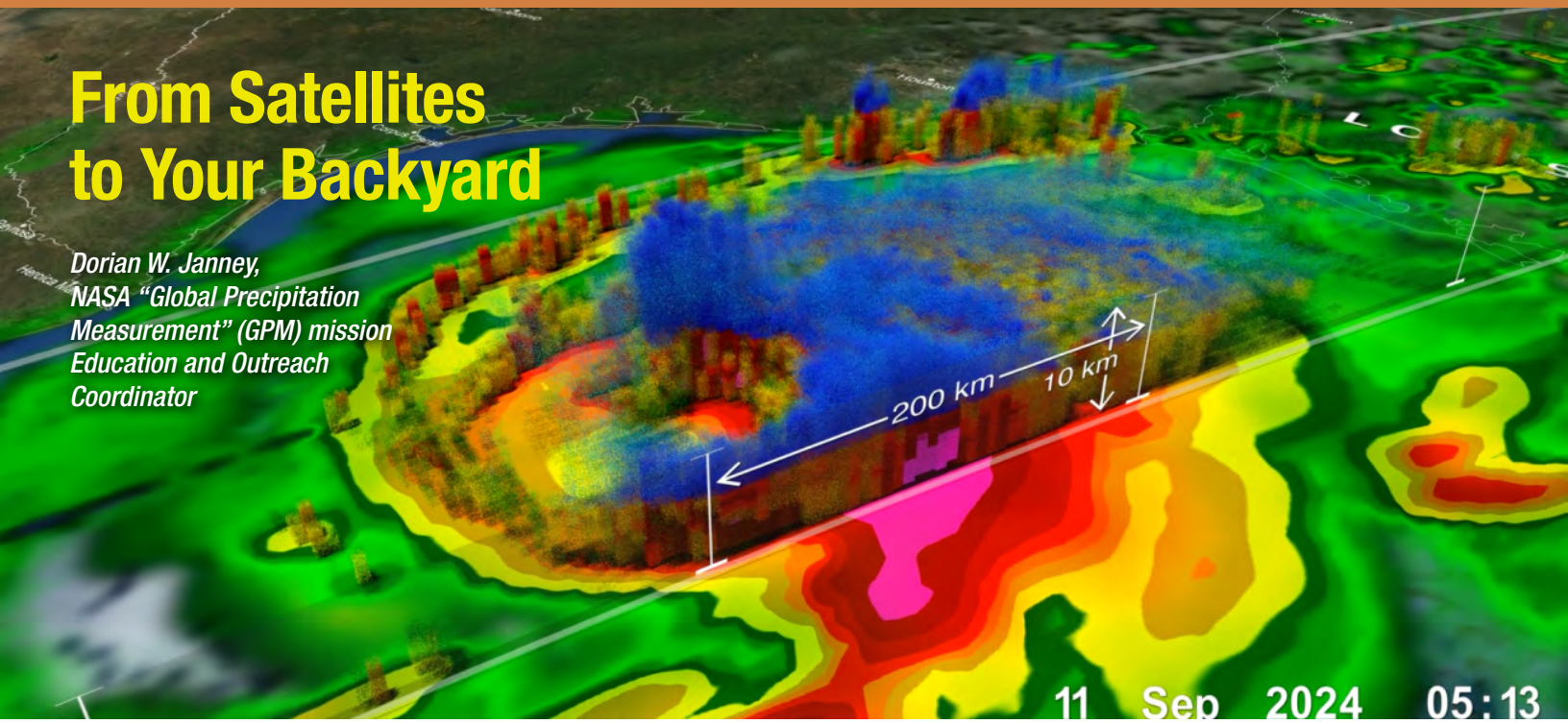


Image of Hurricane Francine from the GPM satellite. The hurricane made landfall on September 11, 2024 on the southern coast of Louisiana. Photo credit: NASA

NASA currently has two dozen Earth-observing satellite missions studying various aspects of Earth's system. NASA's Global Precipitation Measurement (GPM) mission is an international network of satellites that provides next-generation global observations of rain and snow.

Building upon the success of the Tropical Rainfall Measuring Mission (TRMM), which launched in 1997 and was in operation through 2015, GPM uses advanced instrumentation to measure how much precipitation is falling from the clouds to the ground for almost every location on Earth and it does this every thirty minutes.

We can now measure how much and what kinds of precipitation are falling as well as look back and see how much fell in almost any location on Earth for the past twenty-four years.

Educators can take advantage of a website that helps students understand how and why we measure

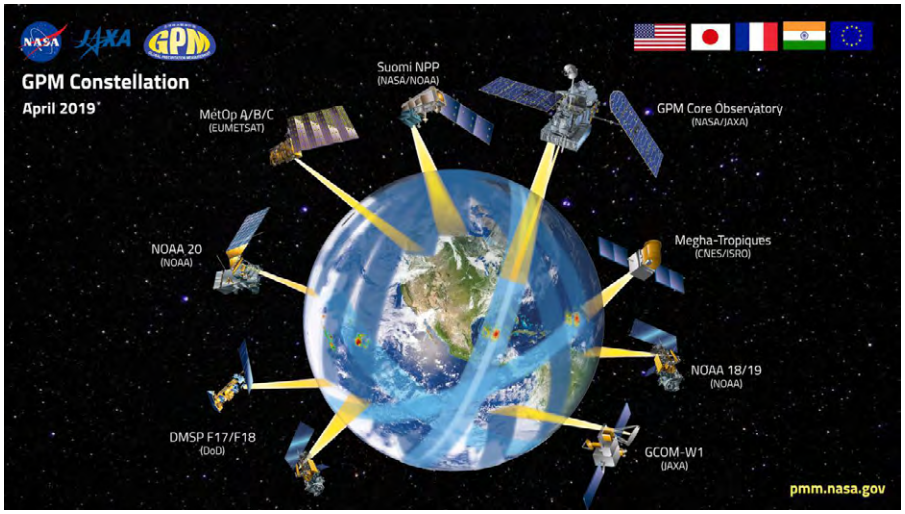
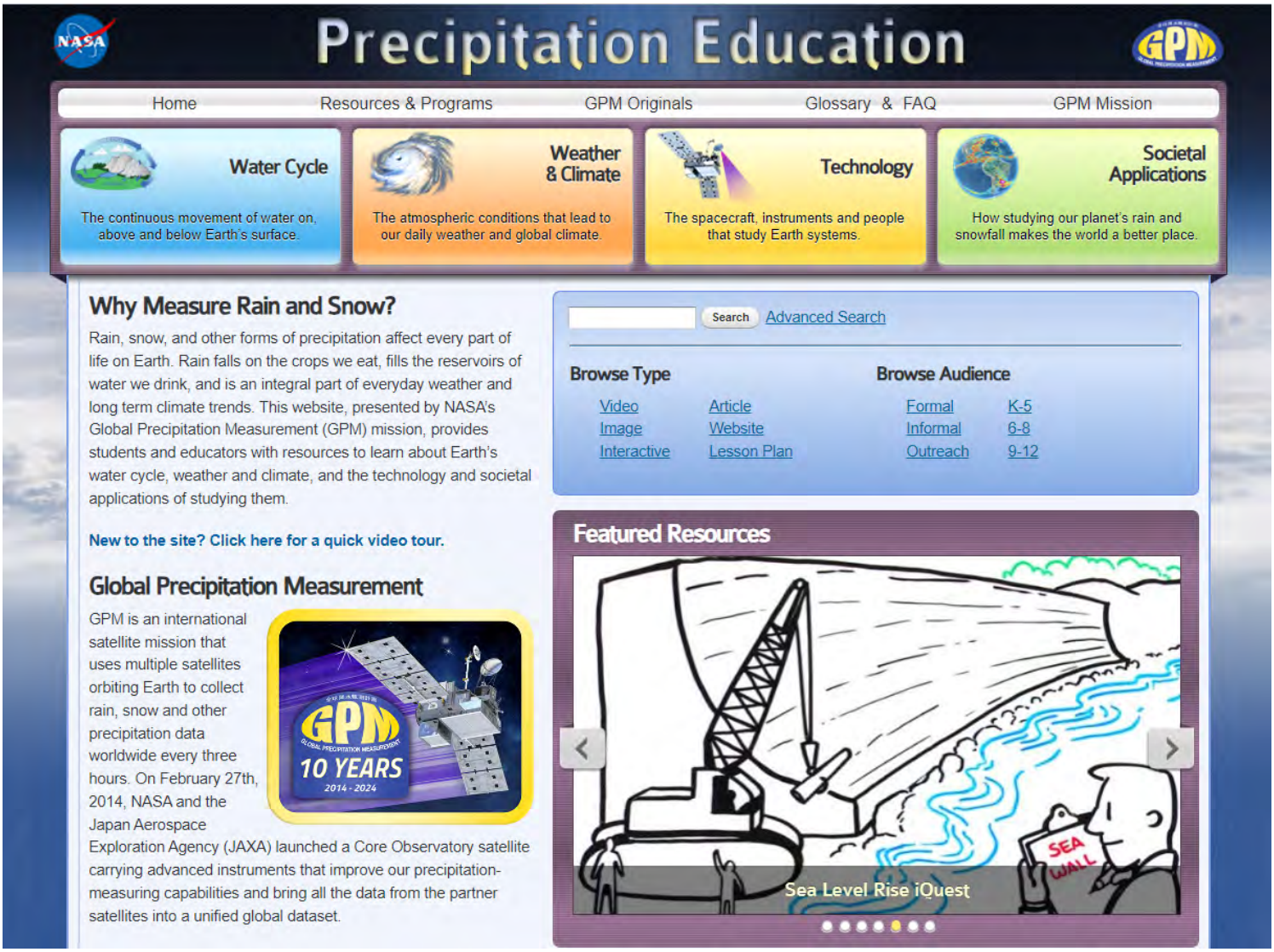


Figure 1. Diagram of the GPM satellite constellation as of early 2019. Credit: NASA GSFC



precipitation from space and how these data are being used to improve life around the globe. "Precipitation Education" is a collection of ready-to-go classroom materials aligned to Next Generation Science Standards (NGSS, 2013).

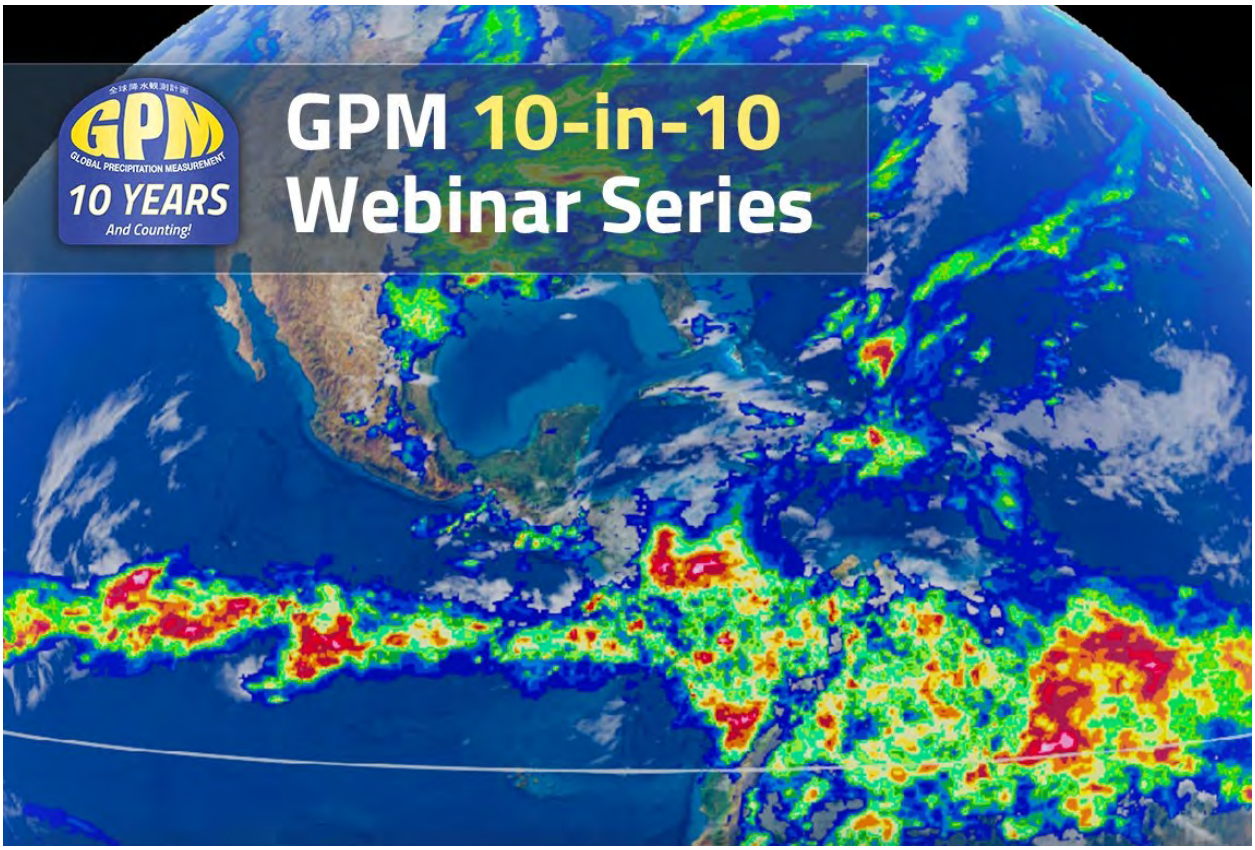
A video tour provides helpful information on how to search for content in four key themes: Water Cycle, Weather and Climate, Technology, and Societal Applications. Each theme includes lesson plans, videos, articles, interactives, WebQuests and more.

One of these lessons, From Satellites to Your Backyard, has directions for anyone to find the precipitation data for their "backyard" by simply entering their longitude and latitude and using one of NASA's free data portals. The lesson also has a Story Map that shows longitudinal seasonal precipitation data for many locations around the world and helps analyze this data to help "unpack" it. Real-world applications showing how TRMM and GPM data are being used to bring about positive change are highlighted in Societal Applications. Lessons include:

- Safe Drinking Water is Essential
- Science for a Hungry World: Growing Water Problems
- Satellite Data Empowers Farmers

The site includes video interviews with scientists who are using GPM's data to assist famers with reducing the amount of freshwater they are using and obtain low-cost insurance policies to guard against losing everything when there is too much or too little precipitation. Lessons plans entitled "Water for Wheaties?" that have been aligned to NGSS, include assessments and rubrics, as well as videos and PowerPoint slides. Finally, there are STEM interviews with end-users to have them describe how and why they went into their chosen careers.

To celebrate the tenth anniversary of the launch of the GPM Core Observatory, the GPM Outreach team has hosted a series of "10-in-10" webinars for the public. Each webinar includes a "Resource Packet" full of detailed information and educational resources.



About the Author

Dorian W. Janney has a passion for sharing the wonders of NASA's science and exploration with others across all age levels. For over three decades, she taught public school in both special and general education settings across all grade levels. She was an Einstein Fellow Finalist and achieved National Board Certification in Science Education, served on numerous education working groups, and wrote science curriculum for the country. She now serves as NASA's "Global Precipitation Measurement" (GPM) mission's Education and Outreach Coordinator, and she develops resources to help share the science, technology, and real-world applications of GPM with others. She is a Mentor GLOBE trainer, a member of the GLOBE Education Working Group, and supports the GLOBE field campaigns. Her most recent project is leading an effort to engage lifelong learners with The GLOBE Campaign's Citizen Science efforts. She can be reached at dorian.w.janney@nasa.gov.