## Scientific Objectives

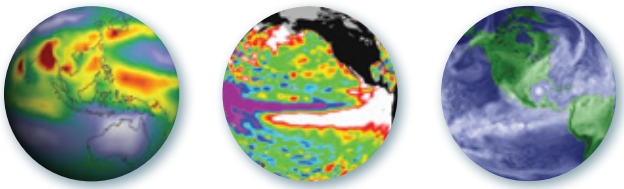
**Precipitation Remote Sensing**
New reference standards for precipitation measurements from space

**Water Cycle**
Better understanding of precipitation physics, water cycle variability, and freshwater availability

**Weather**
Improving numerical weather forecasting skill

**Climate**
Advancing climate modeling and prediction capabilities

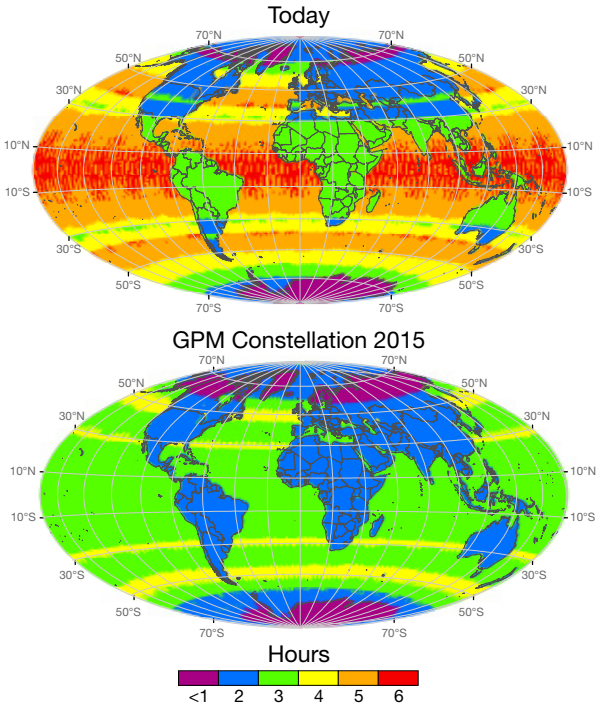
**Hydrometeorology**
Enabling monitoring and forecasting of floods, landslides, and freshwater resources



**GPM will offer a new generation of space-borne precipitation measurements through:**

- Precipitation measurements every 2-4 hours anywhere on the globe
- Unified precipitation estimation from a network of satellites
- Greater measurement sensitivity to light rain and falling snow
- More accurate precipitation information in near real-time using advanced active/passive microwave sensors

Knowing when, where, and how much it rains or snows is vital to understanding how the Earth system functions and advancing societal applications.




*Comparison of mean revisit times (in hours) of current capabilities (top) and the GPM constellation in 2015 (bottom). Sampling over land includes contributions from microwave humidity sounders.*

### A Satellite Mission for the Benefit of All Nations

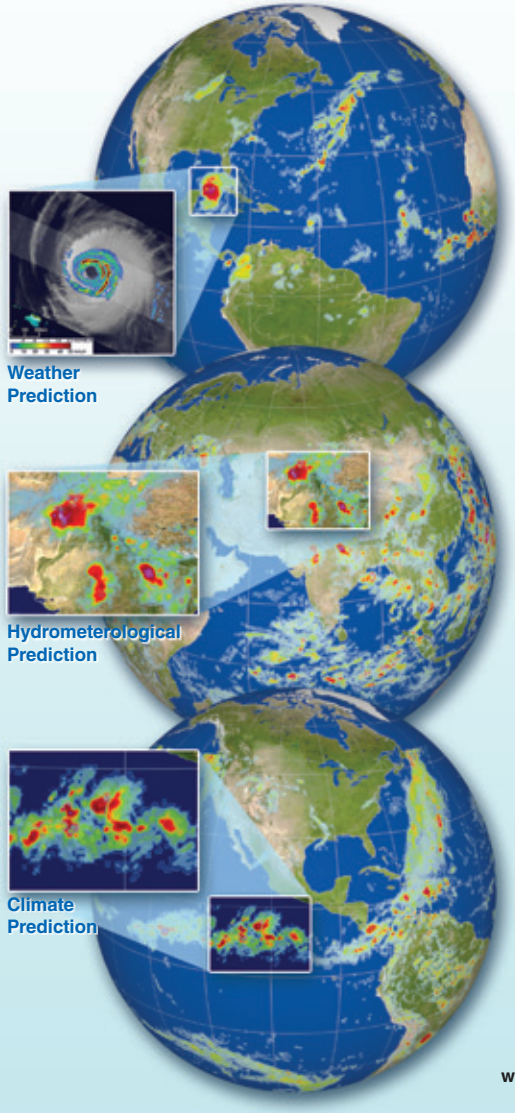
GPM will provide the cornerstone for the development of the Committee on Earth Observation Satellites (CEOS) Precipitation Constellation to meet the societal needs identified by the Group on Earth Observations (GEO).

**GPM**
**http://gpm.nasa.gov**

National Aeronautics and Space Administration

# GPM

**An international satellite mission to unify and advance precipitation measurements from space for scientific research and societal applications**




global precipitation measurement

www.nasa.gov

## GPM Constellation

**The GPM mission will unify precipitation measurements from an array of participating satellites:**

- GPM Core Observatory (NASA/JAXA)
- GPM Low-Inclination Observatory (NASA/partner)
- GCOM-W1 (JAXA)
- Megha-Tropique (CNES, ISRO)
- DMSP-F Series (DOD)
- NOAA-19 (NOAA)
- METOP Series (EUMETSAT)
- JPSS series (NASA/NOAA)
- DWSS (DOD)

GPM Core and Constellation Satellites

## GPM Core Spacecraft

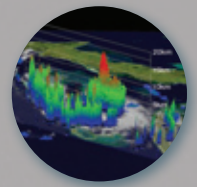
NASA and JAXA will deploy a Core satellite that will function as a precipitation physics observatory and establish a transfer standard for GPM constellation sensors. The Core Observatory, to be launched in July, 2013 will carry:

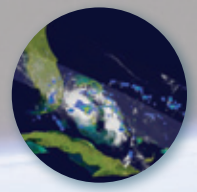
- The first space-borne Dual-frequency Precipitation Radar (DPR), comprising a Ka-band radar at 35.5 GHz and a Ku-band radar at 13.6 GHz
- Multi-channel (10-183 GHz) GPM Microwave Imager (GMI)

NASA will also provide a second GMI onboard a partner-provided GPM Low-Inclination Observatory (LIO) to be launched in 2014.

## GPM Science Contributions

- Comprehensive description of space-time variability of global precipitation
- Improved knowledge of the Earth's water cycle and its link to climate change
- New insights into storm structure and large-scale atmospheric processes
- Improved understanding of climate sensitivity and feedback processes





### Societal Benefits

- Extending current capabilities in monitoring and prediction of hurricanes and other extreme weather events
- Improved forecasting capabilities for natural hazards, including floods and landslides
- Enhanced numerical weather prediction skills
- Agricultural crop forecasting and monitoring of freshwater resources