

Mission Elements:

- **GPM Core Satellite**
- **Constellation Satellite Members**
- **Precipitation Processing System (PPS)**
- **International Ground Validation (GV) Network & Research Program**
- **International Body of Science and Engineering Teams**

Building on the Rich Heritage of the Tropical Rainfall Measuring Mission (TRMM), the GPM Mission is....

- the Flagship Mission for Global Water and Energy Cycle (GWEC) research.
- an International Partnership Constellation Mission--Potential missions by ESA (E-GPM) and CNES-ISRO (Megha-Tropiques) are currently under consideration.
- an important contribution to the U.S. Climate Change Science Program (CCSP) and the U.S. Weather Research Program (USWRP).
- an outstanding example of peaceful uses of space, according to the United Nations, enabling important societal applications involving fresh water resources and environmental forecasting.
- a prototype for the emerging Global Earth Observation System of Systems (GEOSS), a coordinated international effort to provide comprehensive, long-term, and systematic observations of Earth.

*An International Partnership Mission
to Understand Global Precipitation and
Its Impact on Humankind*



NASA

www.nasa.gov

Science Mission Directorate

<http://science.hq.nasa.gov>

GPM

<http://gpm.gsfc.nasa.gov>

*One of the next generation of
systematic measurement missions
that will measure global precipitation,
a key climate factor, with improved
time resolution and spatial coverage.*

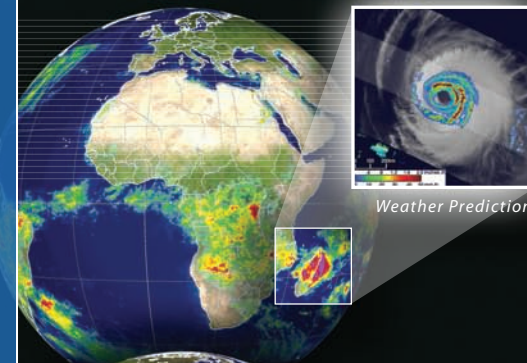


National Aeronautics and
Space Administration

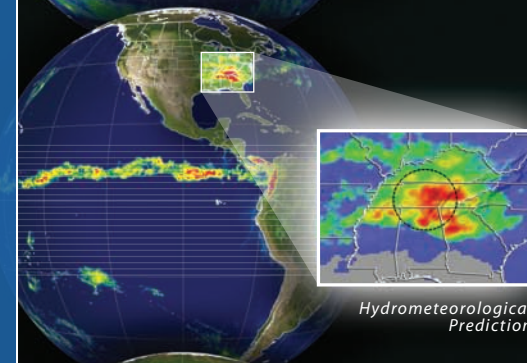


GLOBAL PRECIPITATION MEASUREMENT

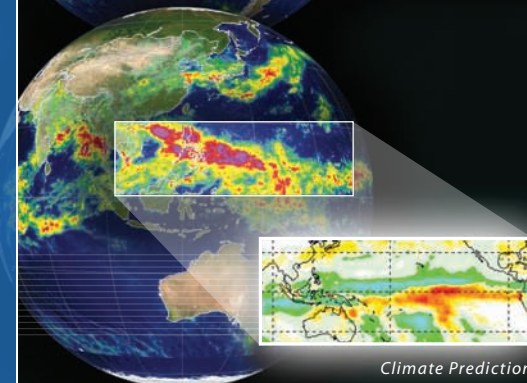
GPM



Weather Prediction



Hydrometeorological
Prediction

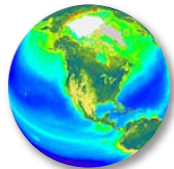
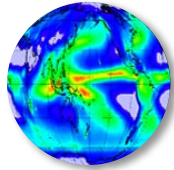
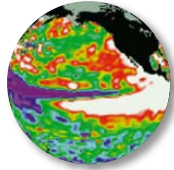


Climate Prediction

GLOBAL PRECIPITATION MEASUREMENT

Scientific Objectives:

Through more accurate, frequent (~3 hour), global, detailed measurements (i.e., in terms of resolution and physics) of precipitation, GPM will:



Water Cycle

Produce accurate representation of the water cycle and its key components like precipitation to enable more realistic diagnosis and prediction of Earth's water budget and related changes

Climate

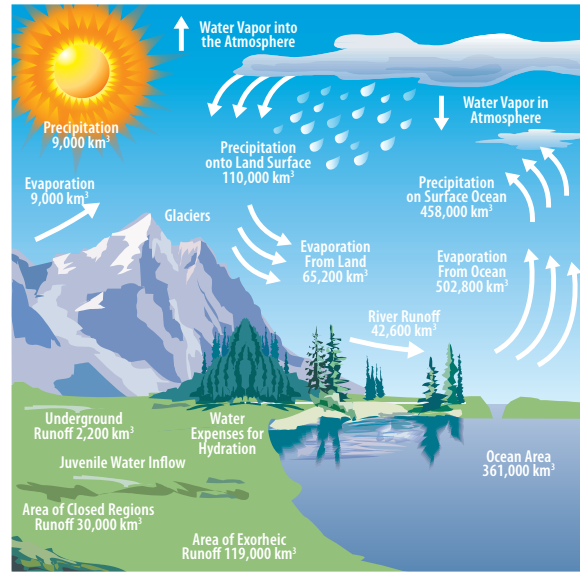
Establish a numerical relationship between global water cycle variability and global temperature change plus test the hypothesis that global warming accelerates the rate of water moving through Earth's system

Weather

Improve short to medium range weather forecasting and long-term climate simulations through improved integration of satellite precipitation data in computer model forecast systems

Hydrometeorological Applications

Improve predictions of floods, droughts, fresh water reserves, crop conditions, and other water-related applications



Precipitation links climate, weather, and surface water processes and is key to understanding how Earth's water cycle responds to their changes.

Global Precipitation Measurement Means Improvements In:

- Water Resource Management
- Agriculture
- Policy and Planning
- Transportation
- Forestry
- Natural Hazards Assessment
- Hydrology and Oceanography
- Weather Forecasting
- Homeland Security
- Energy Management
- Climate Change Assessment



Evolution of GPM Satellite Constellation

(Typical 3-hour Coverage Map)



Mission Assets: • TRMM
• DMSP-18
• DMSP-19

TRMM ERA



Mission Assets: • TRMM
• DMSP-18
• DMSP-19
• Aqua
• Coriolis

PRE-GPM ERA

Mission Assets: • GPM Core • NPOESS 1330 • Megha-Tropiques
• GCOM-W • NPOESS 1730 • NASA Constellation Member
• EGPM • NPOESS 2130



GPM ERA