

NASA looks inside and outside of Tropical Cyclone Pam

March 10 2015, by Rob Gutro



The MODIS instrument aboard NASA's Terra satellite captured this visible image of Tropical Cyclone Pam in the South Pacific Ocean on March 9 at 23:00 UTC. Credit: NASA Goddard MODIS Rapid Response Team

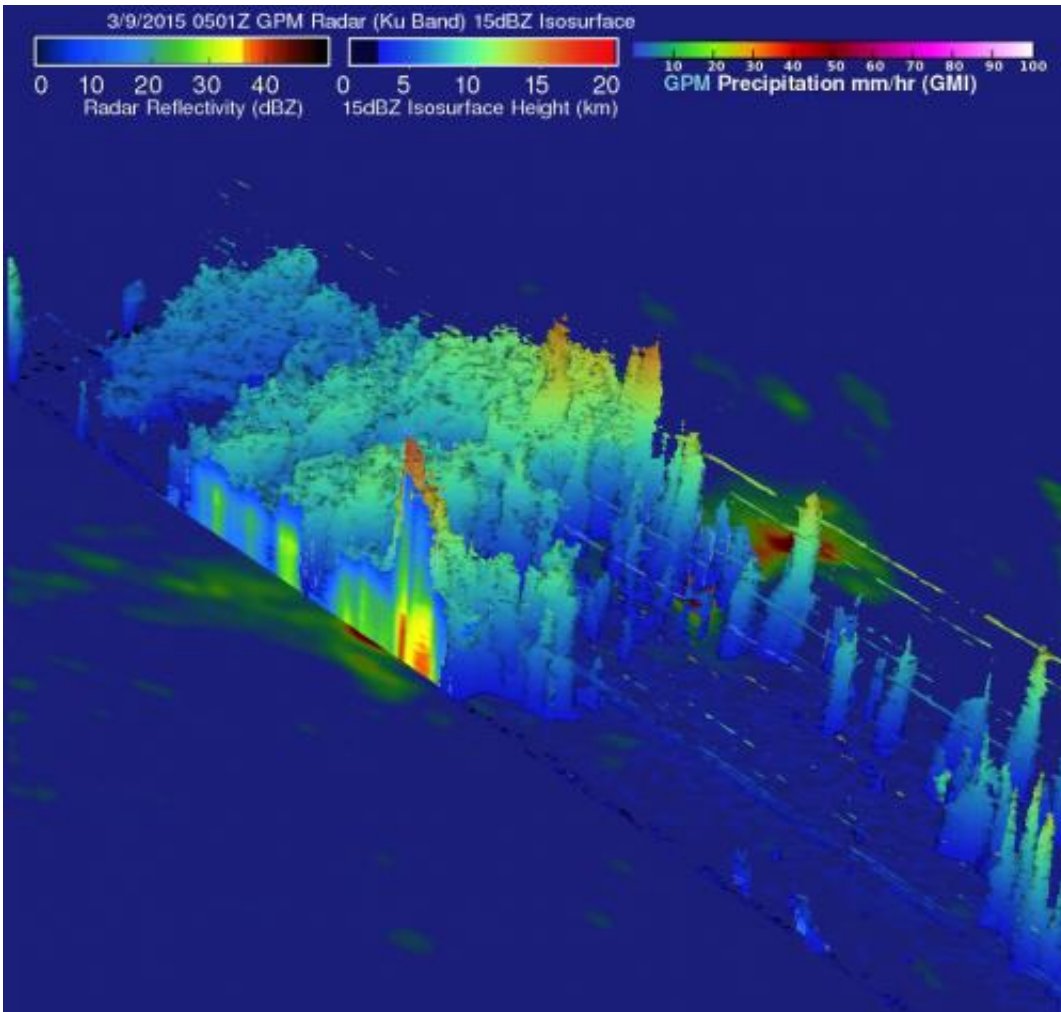
NASA's Terra satellite provided an outside look at Tropical Cyclone Pam while the RapidScat instrument that flies aboard the International

Space Station provided an inside look at the surface winds generated by the storm. The GPM core satellite provided another inside look at Pam and provided data on where the heavy rainfall was occurring within the storm.

On March 9 and 10, Tropical Cyclone Pam strengthened to hurricane-force as it neared Vanuatu in the Southern Pacific Ocean.

On March 10 (11 p.m. local time), the Vanuatu Meteorology and Geo-Hazards Department (VMGD) issued a Severe Weather Warning Bulletin for the Northern Islands of Vanuatu. The warning noted that Tropical Cyclone Pam was located northeast of the Torba province, and was slowly moving in a south southeasterly direction. The VMGD forecast noted: Heavy rainfall expected to affect Torba, Sanma and Penama. Flash floods and expansion of river banks possible. People in these affected areas are advised to take extra precautions, especially those areas close to river banks and in low lying areas. For updated warnings, visit: <http://www.meteo.gov.vu/>.

The MODIS or Moderate Resolution Imaging Spectroradiometer instrument aboard NASA's Terra satellite captured a visible image of Tropical Cyclone Pam in the South Pacific Ocean on March 9 at 23:00 UTC (7:00 p.m. EDT). The image showed that Pam's center had consolidated within the previous 24 hours and was represented by a tight band of [thunderstorms](#) circling it. A wide band of fragmented thunderstorms in the northern and western quadrants of the storm were wrapping into the center from the north. Another thick, fragmented band of thunderstorms curved from the east to the south and west, where it wrapped into the center of circulation.



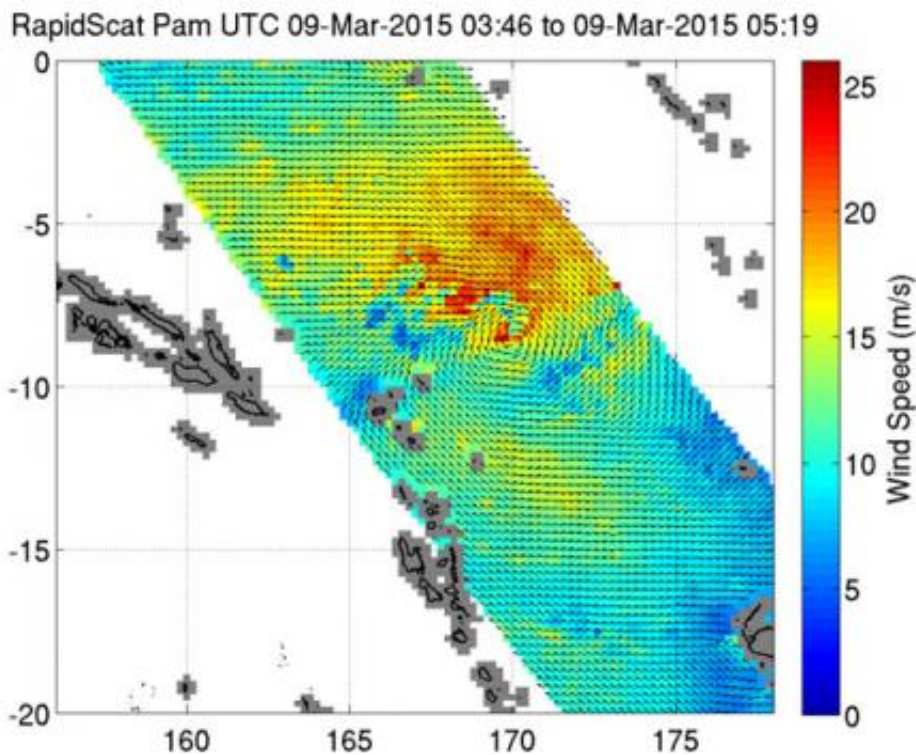
The GPM satellite showed that Pam was dropping rain at a rate of 133.5 mm (5.26 inches) per hour and thunderstorm tops reached heights over 16.6 km (10.3 miles). Credit: NASA/JAXA/SSAI, Hal Pierce

The MODIS image showed that the southern band of thunderstorms were over Gaua and Vanua Lava, the largest and second largest of the Banks Islands in Torba Province, Vanuatu.

The GPM or Global Precipitation Mission's Core Observatory flew over Pam on March 9, 2015 at 0501 UTC (1:01 a.m. EDT). Pam formed earlier in the day in the Solomon Islands in the Southern Pacific Ocean.

Rainfall from GPM's Microwave Imager (GMI) showed that Pam was dropping rain at a rate of 133.5 mm (5.26 inches) per hour.

A 3-D image of the thunderstorms that make up Pam was created at NASA's Goddard Space Flight Center in Greenbelt, Maryland. In the 3-D image, very powerful thunderstorms measured by GPM's Radar (Ku Band) reached heights of over 16.6 km (10.3 miles). The precipitation within these tall storms are providing energy called latent heat that drives the circulation of the storm. Usually, the more heat that is being released, the more intense the storm will become. This heating works best when it occurs near the center of the storm.



On March 9, RapidScat revealed sustained winds over 56 mph/90 kph/25 meters per second, occurring near the center and northern quadrant of Tropical Cyclone Pam. Credit: NASA JPL, Doug Tyle

The International Space Station's RapidScat instrument captured a look at Tropical Cyclone Pam's surface winds. RapidScat measured the winds from March 9 at 3:46 to 5:19 UTC. Measurements revealed that sustained winds at the surface were as high as 56 mph/90 kph/25 meters per second, near the center and northern quadrant of the storm.

On March 10 at 1500 UTC (11 a.m. EDT), Pam's maximum sustained winds had increased to 80 knots (92 mph/148.2 kph). Pam was centered near 10.8 south latitude and 170.2 east longitude, about 651 nautical miles (749.7 miles/ 1,206 km) northwest of Suva, Fiji. Pam has tracked south-southwestward at 4 knots (4.6 mph/7.4 kph).

The Joint Typhoon Warning Center (JTWC) predicts that Pam will be increasingly powerful and become a dangerous category five tropical cyclone on the Saffir-Simpson wind scale. JTWC expects Pam's winds to strengthen to about 140 knots (161.1 mph/259.3 kph) in the next couple of days as it continues in a southerly direction through the Southern Pacific Ocean.

Provided by NASA's Goddard Space Flight Center

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