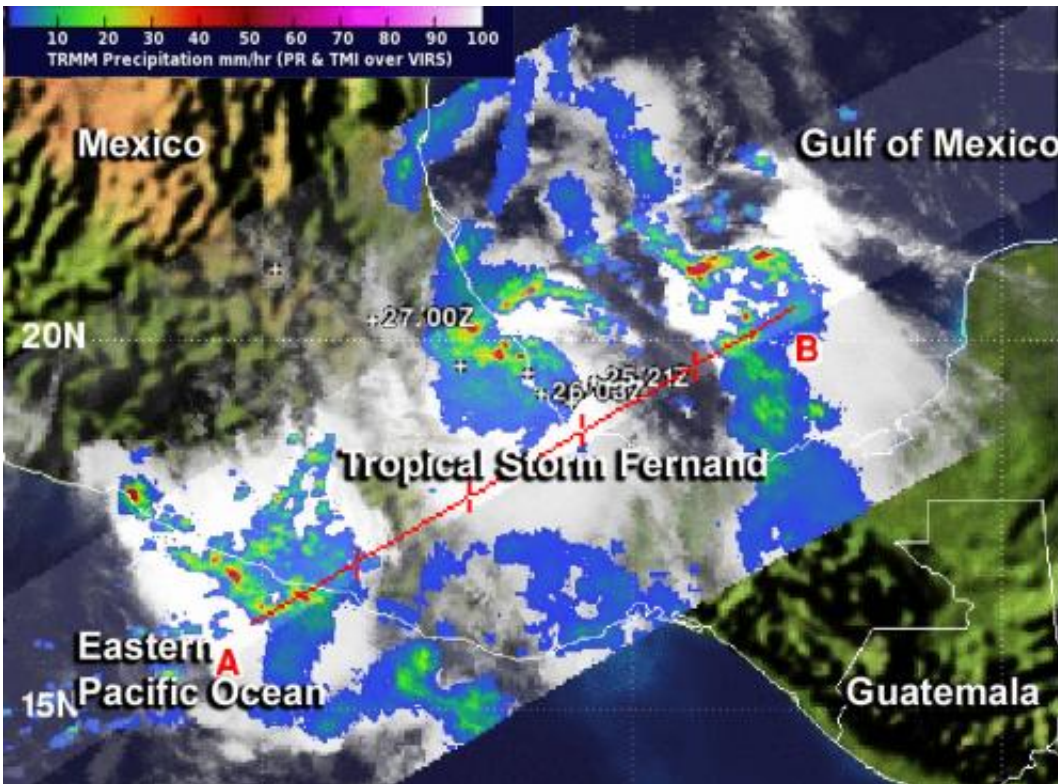# NASA sees quick forming Tropical Storm Fernand soaking Mexico

August 26 2013

NASA's TRMM satellite passed over Fernand on Monday, Aug. 26 at 1:34 a.m. EDT. Data showed "hot towers" and rainfall exceeding 2 inches/50 mm per hour (red). Credit: SSAI/NASA, Hal Pierce.

During the week of Aug. 18, the low pressure area designated as System 95E was lingering in the western Caribbean Sea and moved into the southwestern Gulf of Mexico, where it exploded into Tropical Storm

Fernand late on Aug. 25. On Aug. 26, NASA's TRMM satellite saw towering thunderstorms in Fernand were still raging over mainland Mexico, dropping heavy rainfall.

On Sunday, Aug. 25 at 5:00 p.m. EDT, System 95E organized quickly into a tropical depression six, and by 7:00 p.m. EDT, the depression strengthened into Tropical Storm Fernand. Fernand was centered in the Bay of Campeche and by 12:25 a.m. EDT on Aug. 26, Tropical Storm Fernand made landfall about 25 miles/40 km north-northwest of Veracruz, Mexico.

At landfall, Fernand's maximum sustained winds were near 50 mph/85 kph. It came ashore near 19.5 north and 96.3 west. Fernand is now moving toward the north-northwest over mainland Mexico dumping heavy rainfall to eastern portions of the country.

A tropical storm warning is in effect for Veracruz northward to Barra de Nautla.

NASA's Tropical Rainfall Measuring Mission satellite called TRMM can measure rainfall rates from space. When TRMM passed over Fernand on Monday, Aug. 26 at 05:34 UTC/1:34 a.m. EDT, data showed that "hot towers" or towering thunderstorms that stretch to the top of the troposphere were flaring around the storm's center. TRMM data showed rainfall rates exceeding 2 inches/50 mm per hour.

This image of Fernand was taken from NOAA's GOES-East satellite at 7:45 a.m. EDT on Aug. 26, and shows that Fernand expanded after making landfall. Credit: NASA GOES Project

A "hot tower" is a tall cumulonimbus cloud that reaches at least to the top of the troposphere, the lowest layer of the atmosphere. It extends approximately nine miles (14.5 km) high in the tropics. The hot towers in Fernand were as high as 11.1 miles (18 km) high! These towers are called "hot" because they rise to such altitude due to the large amount of latent heat. Water vapor releases this latent heat as it condenses into liquid. NASA research shows that a tropical cyclone with a hot tower in its eye wall was twice as likely to intensify within six or more hours, than a cyclone that lacked a hot tower.

Those hot towers also drop heavy rainfall, and the National Hurricane Center expects Fernand to produce 4 to 8 inches of rain over Veracruz, Hidalgo, northern Puebla, southern Tamaulipas and eastern San Luis Potosi, Mexico today, Aug. 26. Isolated maximum amounts of up to 12

inches are possible, and Fernand's rainfall could cause life-threatening flash floods and mud slides.

At 8 a.m. EDT, the center of Tropical Storm Fernand was lLocated near latitude 20.1 north and longitude 97.2 west. That puts Fernand's center about 95 miles/150 km northwest of Veracruz, Mexico and just 65 miles/100 km south-southeast of Tuxpan, Mexico. The National Hurricane Center (NHC) noted that Fernand is moving toward the northwest near 9 mph/15 kph and this general motion is expected to continue for the next day or so with a slight decrease in forward speed. Fernand is expected to remain over Mexico tonight, Aug. 26 into Aug. 27.

Maximum sustained winds have decreased to near 40 mph/65 kph, but weakening will continue while the system moves over land. The NHC expects Fernand to become a depression later today.

Provided by NASA's Goddard Space Flight Center