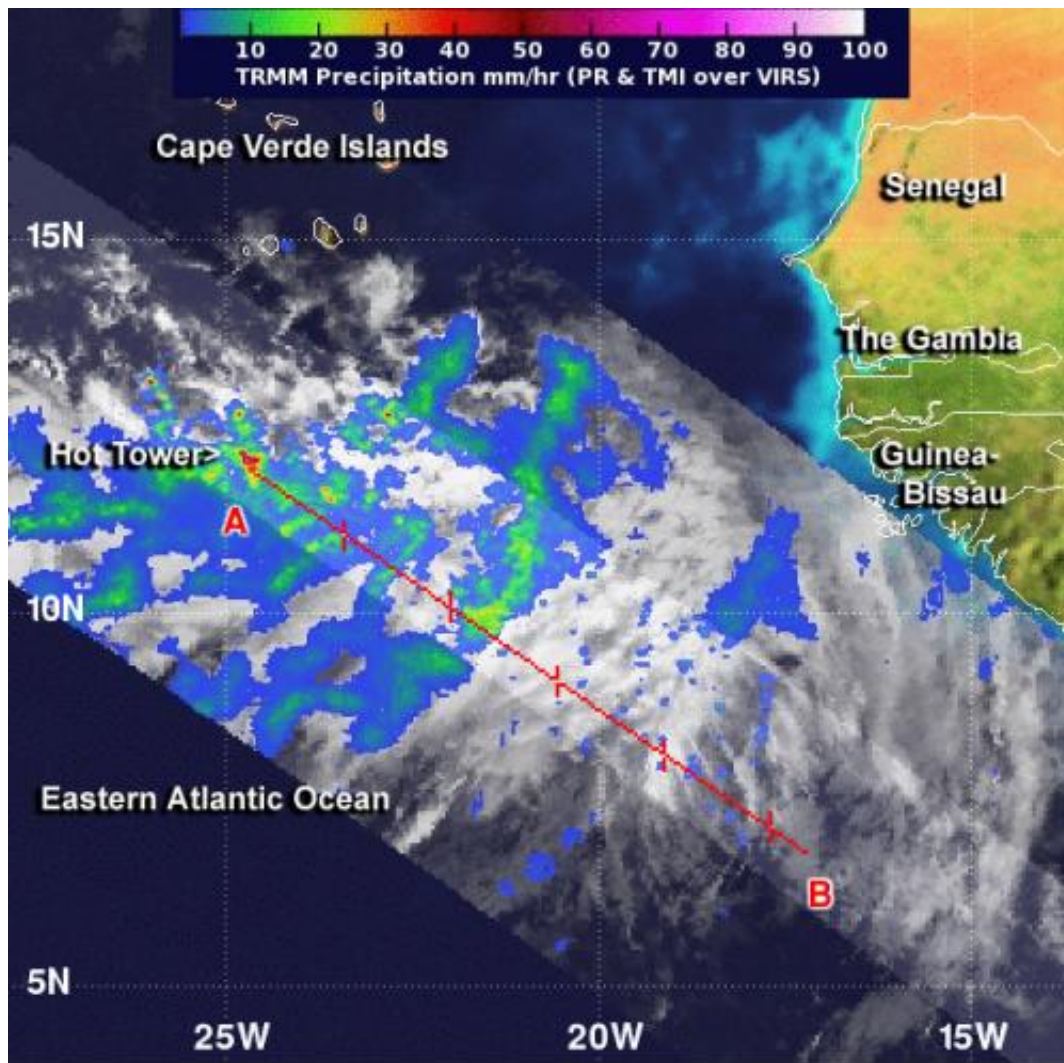


NASA data showed Tropical Storm Erin forming

August 15 2013, by Rob Gutro



NASA's TRMM satellite took this image of Erin's rainfall on Aug. 14 before it strengthened into a tropical storm. Red areas are heavy rain. Green and blue are light-to-moderate rainfall. Credit: SSAI/NASA, Hal Pierce

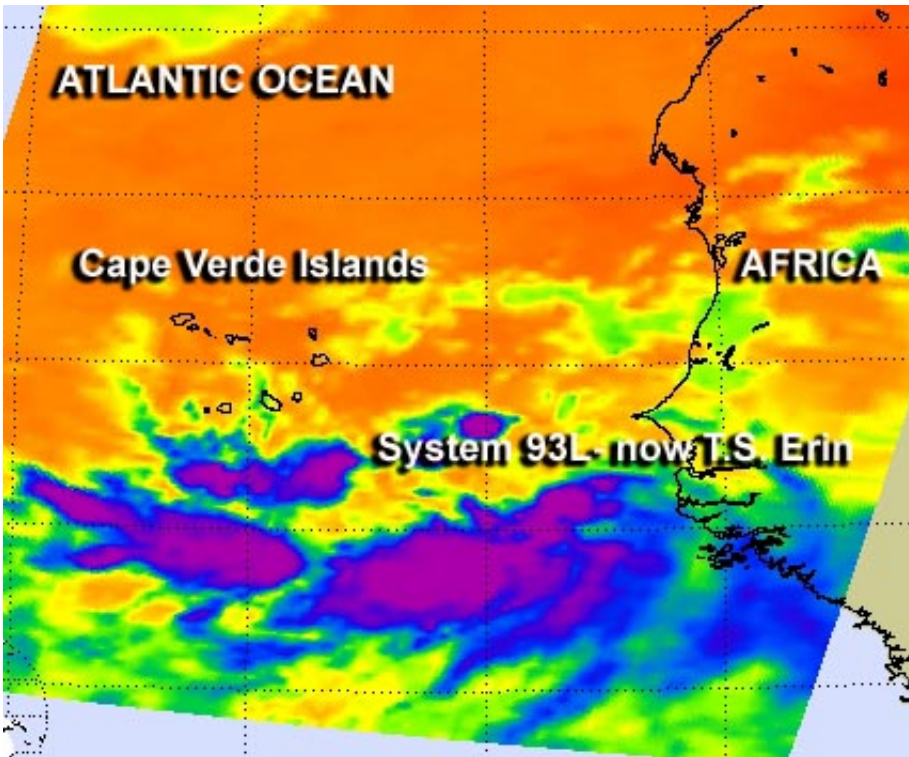
Infrared data from NASA's Aqua satellite showed strong thunderstorms had developed in the eastern Atlantic low pressure system that grew into Tropical Storm Erin. NASA's TRMM satellite noticed a "hot tower" in the storm's center, and research has shown tropical cyclones that have them will intensify as this storm did.

The low pressure area called System 93L in the far eastern Atlantic Ocean consolidated and organized during the overnight hours of Aug. 14 and 15 and became Tropical Depression 5L. During the early morning hours of Aug. 15 the depression strengthened further and became Tropical Storm Erin.

Erin is southwest of the Cape Verde Islands and has [maximum sustained winds](#) near 40 mph. The National Hurricane Center expects further strengthening over the next few days.

Because Erin is close to the Cape Verde Islands, tropical storm warnings were in effect early on Aug. 15 for the southern Cape Verde Islands of Maio, Santiago, Fogo and Brava, but were dropped by 12 p.m. EDT as Erin continued moving away from the islands.

NASA's Aqua satellite passed over Erin on Aug. 14 when it was just a low pressure area called System 93L. It quickly intensified into a [tropical depression](#) and tropical storm. The Atmospheric Infrared Sounder or AIRS instrument aboard Aqua captured an [infrared image](#) of System 93L that showed there were areas with strong thunderstorms reaching high into the troposphere. Cloud-top temperatures in those thunderstorms were colder than -63F/-52C, which also indicated heavy rainfall from them. On Aug. 15, [infrared data](#) showed that the coldest and highest [cloud tops](#) were around the center and south of the center of circulation.



NASA's AIRS satellite took this infrared image of System 93L on Aug. 14 showing strong thunderstorms with cold cloud top temperatures (purple) reaching high into the troposphere. Credit: NASA JPL, Ed Olsen

NASA's Tropical Rainfall Measuring Mission satellite known as TRMM captured a look at System 93L's rainfall on Aug. 14 at 1524 UTC (11:24 a.m. EDT) before it strengthened into a tropical storm. In addition to noticing that most of the rainfall was light-to-moderate, TRMM noticed a few areas of heavy rainfall, where rain was falling at a rate of more than 2 inches/50 mm per hour. TRMM data indicated that one of those areas had a "hot tower" in it.

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 tower in System 93L was near 9.3 miles (15 km) high. These towering clouds 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.

At 11 a.m. EDT, Erin was centered near 14.4 north latitude and 26.5 west longitude, about 115 miles/185 km west-southwest of Brava in the Cape Verde Islands and moving away. Erin is moving to the west-northwest at 15 mph/24 kph.

Over the next couple of days, Erin will be in an environment favorable for development, according to the National Hurricane Center. Warm sea surface temperatures and low wind shear will allow for some strengthening until Erin runs into more stable and drier air which should result in weakening.

Provided by NASA's Goddard Space Flight Center

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