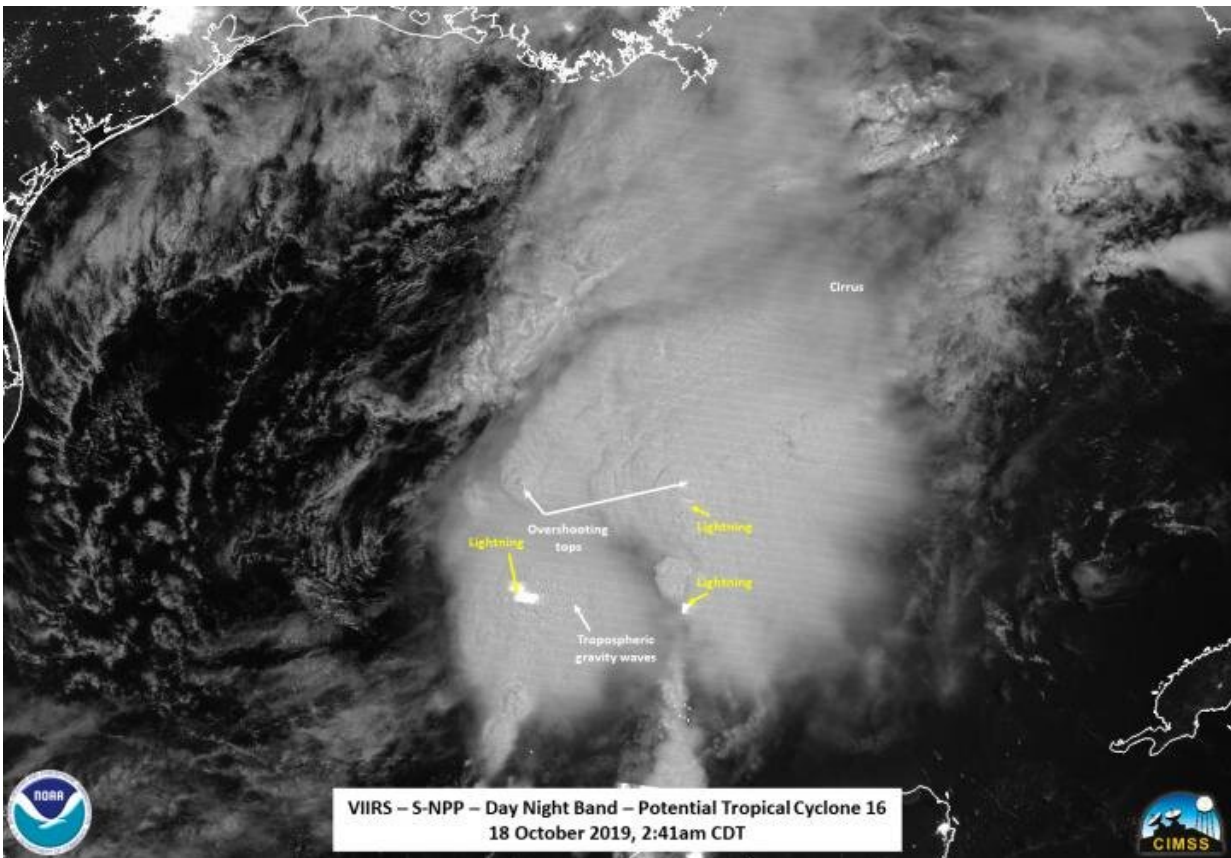


NASA-NOAA satellite finds overshooting tops, gravity waves in Tropical Storm Nestor

October 19 2019, by Rob Gutro



NASA-NOAA's Suomi NPP satellite provided a night-time view of developing Tropical Storm Nestor in the Gulf of Mexico on Oct. 18 at 3:41 a.m. EDT. The image revealed lightning, overshooting cloud tops into the stratosphere and gravity waves. Credit: NASA/NOAA/UWM-CIMSS, William Straka III

NASA-NOAA's Suomi NPP satellite provided night-time and infrared views of developing Tropical Storm Nestor in the Gulf of Mexico and found over-shooting cloud tops and gravity waves. When the satellite passed over the potential tropical depression early on Oct. 18, it was consolidating. Less than 12 hours later, it became a tropical storm.

The Visible Infrared Imaging Radiometer Suite (VIIRS) instrument aboard Suomi NPP provided a night-time and an infrared image of the [storm](#).

Night-time Imagery of Nestor: Overshooting Tops, Gravity Waves

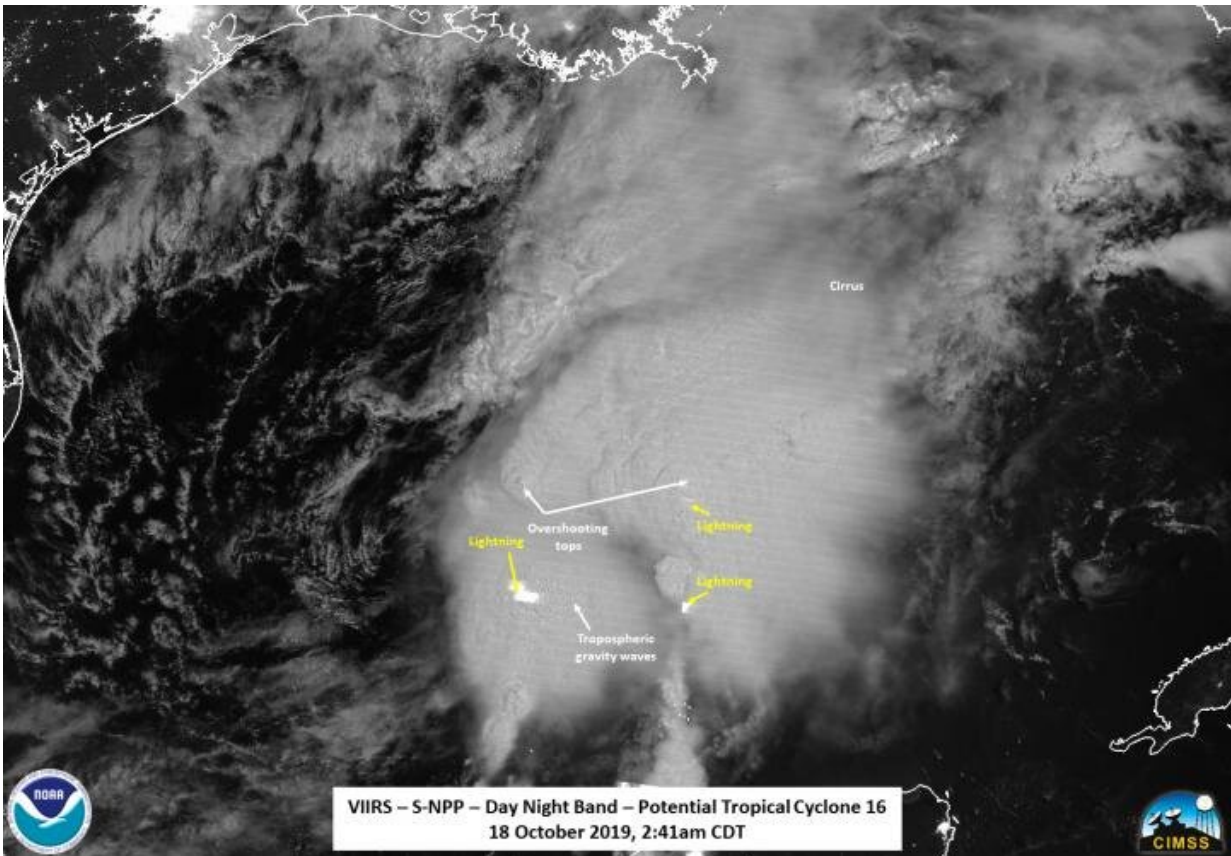
The night-time image was captured on Oct. 18 at 3:41 a.m. EDT and revealed lightning, overshooting [cloud tops](#) into the stratosphere and gravity waves. An overshooting cloud top is a dome-like protrusion above a cumulonimbus anvil cloud, often penetrating into the lower stratosphere. It indicates a very strong updraft in the convective cloud or thunderstorm.

Gravity waves are the mark of a powerful storm. They are created when air moving around the atmosphere gets pushed to another place as in the case of tropical cyclones. Powerful thunderstorms around a tropical cyclone's center can move air up and down and generate these waves in quick, short bursts. They can be seen as ripples in some imagery of [clouds](#) in a tropical cyclone.

Infrared Imagery Shows Very Cold Cloud Tops

The infrared imagery captured by Suomi NPP's VIIRS instrument on Oct. 18 at 3:41 a.m. EDT showed powerful thunderstorms with cloud tops colder than minus 112 degrees Fahrenheit (minus 80 degrees

Celsius) within the eastern part of the storm.



NASA-NOAA's Suomi NPP satellite provided an infrared view of developing Tropical Storm Nestor in the Gulf of Mexico on Oct. 18 at 3:41 a.m. EDT. Around the center of circulation cloud top temperatures were as cold as or colder than minus 112 degrees Fahrenheit (minus 80 Celsius) (n black). Credit: NASA/NOAA/UWM-CIMSS, William Straka III

Visible satellite imagery and data from an Air Force Reserve Hurricane Hunter aircraft also showed a rather large and elongated surface circulation.

Warnings and Watches

NOAA's National Hurricane Center or NHC said a Tropical Storm Warning is in effect from the Mississippi/Alabama border to Yankeetown, Florida and from Grand Isle, Louisiana to the Mouth of the Pearl River. A Storm Surge Warning is in effect from Indian Pass, Florida to Clearwater Beach, Florida.

Nestor's Status on October 18, 2019

At 2 p.m. EDT (1800 UTC), the center of Tropical Storm Nestor was located near latitude 26.3 degrees north and longitude 89.5 degrees west. That is 195 miles (315 km) south of the mouth of the Mississippi River. Nestor is moving toward the northeast near 22 mph (35 kph), and this general motion is expected to continue through Sunday, followed by a turn toward the east-northeast by early Monday. Maximum sustained winds are near 60 mph (95 kph) with higher gusts. Some strengthening is expected later today, with weakening forecast after Nestor moves inland. Nestor is expected to lose tropical characteristics and become post-tropical on Saturday. The estimated minimum central pressure is 1001 millibars.

Nestor's Forecast

The National Hurricane Center forecast calls for the center of Nestor to approach the northern Gulf Coast later on Oct. 18 and move inland across portions of the southeastern United States Saturday and Sunday as it becomes a post-tropical cyclone. Nestor is expected to move offshore of the coast of North Carolina into the western Atlantic by late Sunday.

Hurricanes are the most powerful weather event on Earth. NASA's expertise in space and scientific exploration contributes to essential

services provided to the American people by other federal agencies, such as hurricane weather forecasting.

Provided by NASA's Goddard Space Flight Center

Citation: NASA-NOAA satellite finds overshooting tops, gravity waves in Tropical Storm Nestor (2019, October 19) retrieved 3 May 2024 from <https://phys.org/news/2019-10-nasa-noaa-satellite-overshooting-tops-gravity.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.