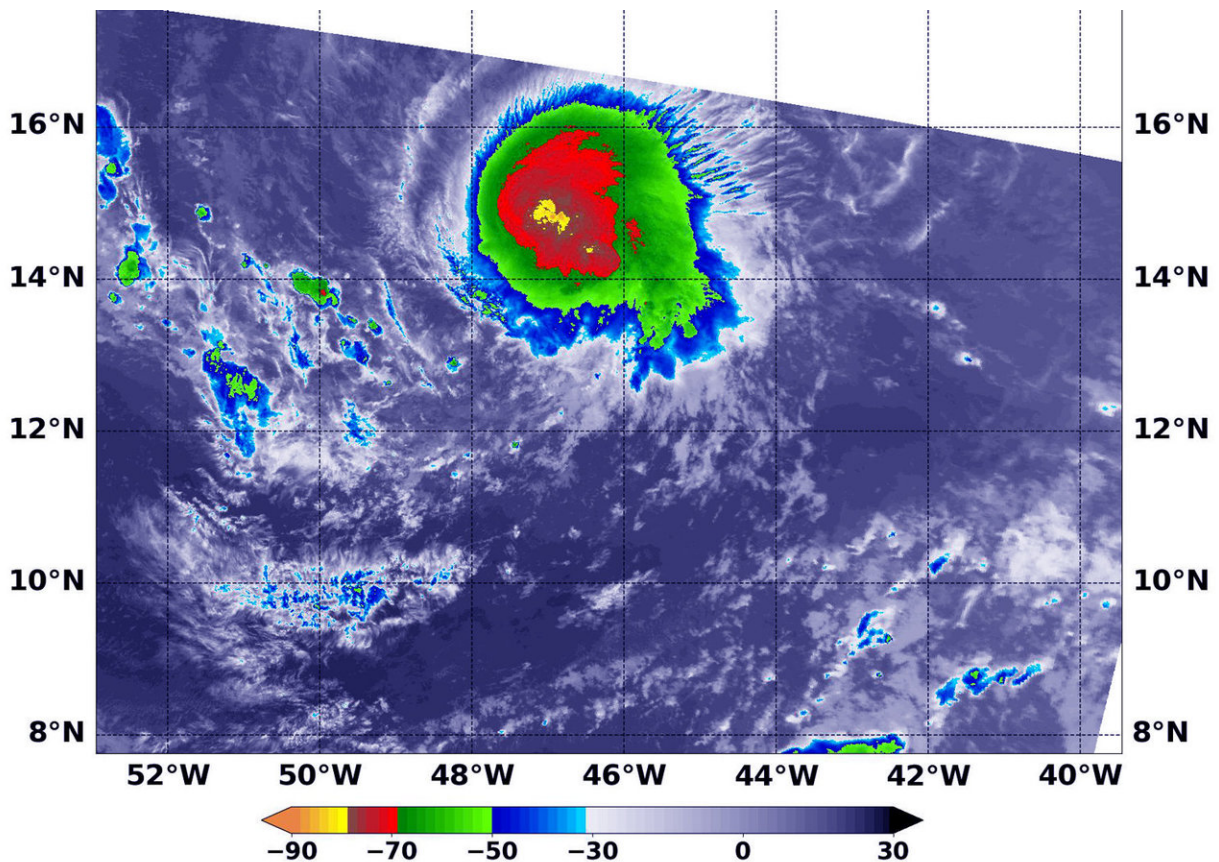


NASA finds wind shear pushing on Tropical Storm Isaac's center

September 11 2018



At 1 a.m. EDT (0500 UTC) on Sept. 11, 2018 the MODIS instrument aboard NASA's Aqua satellite looked at Tropical Storm Isaac in infrared light. MODIS found coldest cloud top temperatures off-center as cold as or colder than minus 80 degrees (yellow) Fahrenheit (minus 112 degrees Celsius). Those most powerful storms were embedded in strong storms with cloud tops as cold as or colder than minus 70 degrees (red) Fahrenheit (minus 56.6 degrees Celsius).
Credit: NASA/NRL

NASA's Aqua satellite provided an infrared look at Tropical Storm Isaac that revealed its circulation center was displaced from the bulk of clouds and precipitation. That's an indication that wind shear is affecting the storm.

What is Vertical Wind Shear?

In general, [wind shear](#) is a measure of how the speed and direction of winds change with altitude. In order to understand how it affects a tropical cyclone or hurricane, think of a tropical cyclone as a series of vertically stacked tires, all rotating. As you go up from the ground, each tire represents the rotation of the storm's center at a higher level in the atmosphere. The different levels of rotating winds in the center of Tropical cyclones need to be stacked on top each other to strengthen. If there are winds higher up that push some of the tires askew near the top, it affects the balance and rotation of the tires below. That's what happens when [vertical wind shear](#) pushes against a storm. It pushes the center and weakens (or wobbles) the rotation of all of the tires.

The Satellite Data Reveal

The National Hurricane Center or NHC noted "Satellite images indicate that the strong tropical [storm](#) still has a central dense overcast pattern and a limited amount of outer bands [of thunderstorms]. Earlier microwave data indicated that the center was not located in the middle of the convection, however, likely due to some westerly [[wind](#)] shear."

At 2:30 a.m. EDT (0630 UTC) on Sept. 11, the Moderate Resolution Imaging Spectroradiometer or MODIS instrument aboard NASA's Aqua satellite analyzed Tropical Storm Isaac in infrared light. MODIS found

coldest cloud top temperatures off-center were as cold as or colder than minus 80 degrees Fahrenheit (minus 112 degrees Celsius). Those most powerful storms were embedded in strong storms with cloud tops as cold as or colder than minus 70 degrees Fahrenheit (minus 56.6 degrees Celsius).

NASA research has found that cloud top temperatures as cold as or colder than the 70F/56.6C threshold have the capability to generate heavy rainfall.

Isaac's Stats on September 11, 2018

At 5 a.m. EDT (0900 UTC), the center of Tropical Storm Isaac was located near latitude 14.6 degrees north and longitude 48.1 degrees west. That's about 880 miles (1,420 km) east of the Lesser Antilles.

Isaac is moving toward the west near 14 mph (22 kph). This general motion is expected to continue through the end of the week. Maximum sustained winds remain near 70 mph (110 kph) with higher gusts. Little change in strength is forecast during the next few days, but Isaac is forecast to be at or near hurricane strength as it approaches the Lesser Antilles.

Rainfall Anticipated in Leeward and Windward Islands

NHC said that Isaac is expected to produce total rainfall accumulations of 2 to 4 inches with isolated amounts near 6 inches across the Leeward Islands late this week, with 1 to 2 inches anticipated across the Windward Islands.

Isaac's Forecast Path

On the forecast track, Isaac should move across the Lesser Antilles and into the eastern Caribbean Sea on Thursday.

Provided by NASA's Goddard Space Flight Center

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