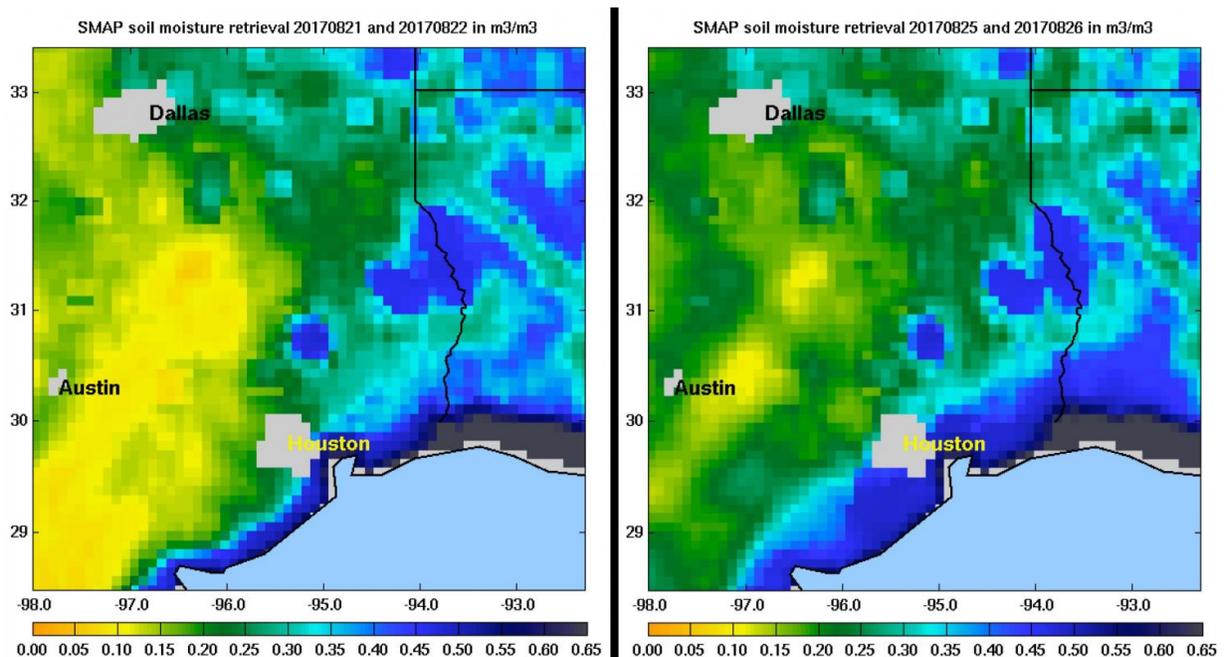


# NASA shows how Harvey saturated areas in Texas

August 30 2017, by Rob Gutro, Karen Boggs



SMAP observations in southeastern Texas on Aug. 21 & 22 show that soil surface conditions were very wet a few days before (left) Harvey made landfall, with moisture levels in the 20 to 40 percent range. After Harvey made landfall, the southwest portion of Houston became exceptionally wet (right) by Aug.25 & 26, signaling the arrival of heavy rains and widespread flooding. Credit: NASA JPL

NASA analyzed the soil moisture in southeastern Texas before and after Harvey made landfall and found the ground was already somewhat

saturated. NASA-NOAA's Suomi NPP Satellite provided a night-time look at Harvey after it moved into the Gulf of Mexico, and NOAA's GOES East satellite provided a look at the storm after it made its final landfall near the Texas-Louisiana border on Aug. 30.

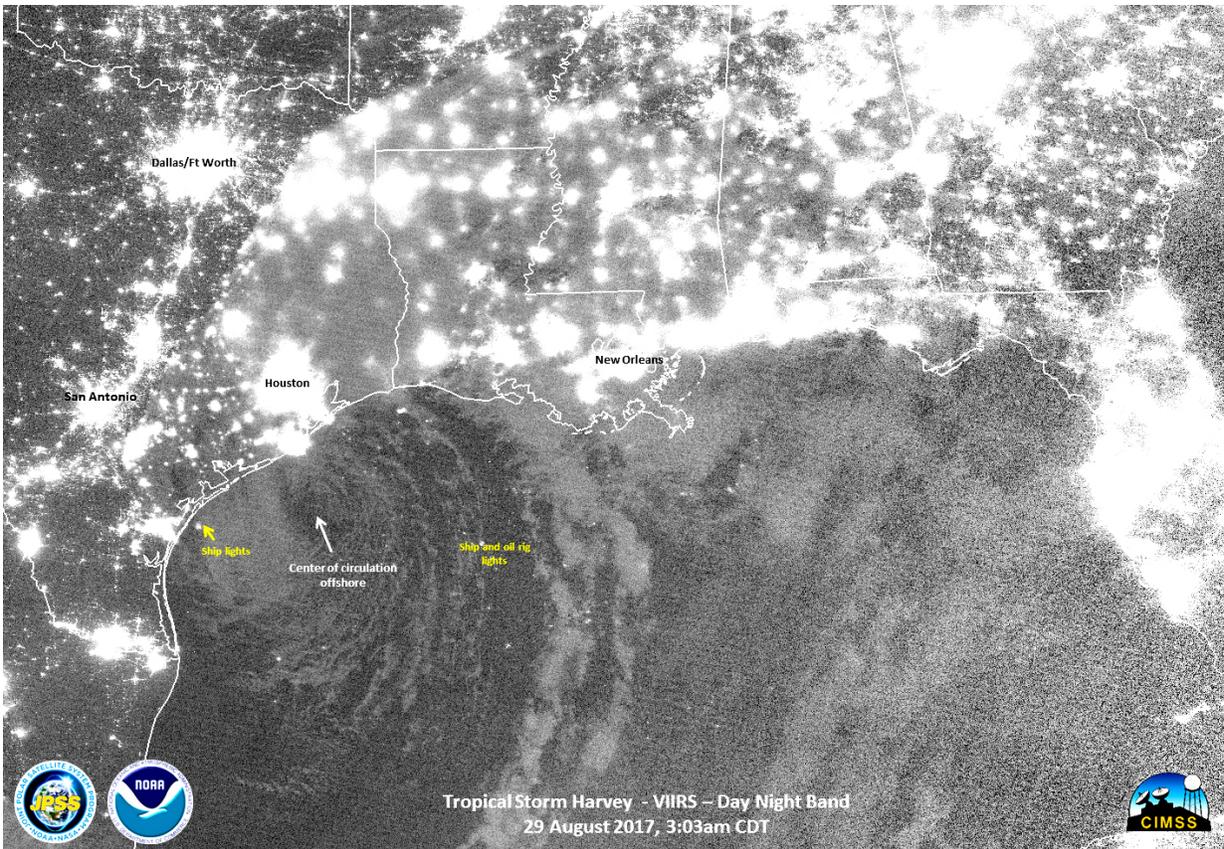
## **NASA Looks at Soil Moisture**

At NASA's Jet Propulsion Laboratory in Pasadena, Calif. images of [soil moisture](#) conditions in Texas near Houston, were generated using data from NASA's Soil Moisture Active Passive (SMAP) satellite. The images captured conditions before and after the landfall of Hurricane Harvey. The images can be used to monitor changing ground conditions due to Harvey's rainfall.

SMAP observations from Aug. 21 and 22 showed that soil surface conditions were already very wet a few days before the hurricane made landfall, with moisture levels in the 20 to 40 percent range. Such saturated soil surfaces contributed to the inability of water to infiltrate more deeply into soils, thereby increasing the likelihood of flooding. After Harvey made landfall, the southwest portion of Houston became exceptionally wet. SMAP captured data on Aug. 25 and 26 that signaled the arrival of heavy rains and widespread flooding.

## **A Night-time View**

On Aug. 29 at 3:03 a.m. CDT the Visible Infrared Imaging Radiometer Suite (VIIRS) instrument aboard NASA-NOAA's Suomi NPP satellite captured a night-time image of Harvey that showed the center of circulation had moved back into the Gulf of Mexico.



On Aug. 29 at 3:03 a.m. CDT the VIIRS instrument aboard NASA-NOAA's Suomi NPP satellite captured a night-time image of Harvey that showed the center of circulation had moved back into the Gulf of Mexico. Credit: NASA/NOAA/UWM-CIMSS, William Straka III

## Harvey Makes Another Landfall

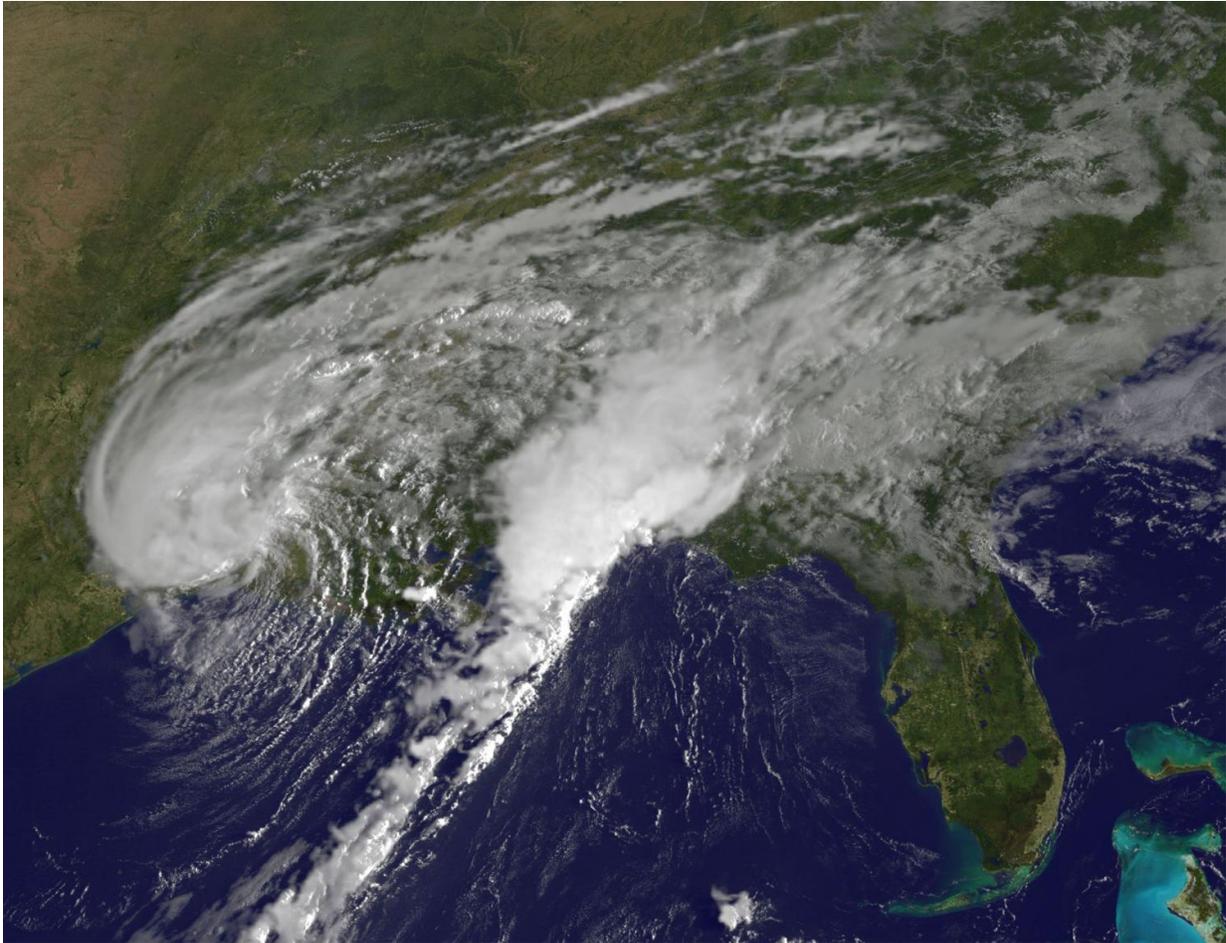
NOAA's GOES-East satellite provided a visible-light image of Tropical Storm Harvey on Wednesday, August 30, 2017 at 7:30 a.m. EDT (1230 UTC), hours after it made landfall at 4 a.m. CDT just west of Cameron, Louisiana. At the time of the image, the bulk of showers and thunderstorms around Harvey seemed to stretch from the northern to southwestern quadrants of the storm.

NHC noted "Although the rain has ended in the Houston/Galveston area, the Beaumont/Port Arthur area was particularly hard hit overnight, with about 12.5 inches reported at the Jack Brooks Regional Airport since 7 p.m. CDT on Aug. 29."

The NASA/NOAA GOES Project at NASA's Goddard Space Flight Center in Greenbelt, Maryland created an image. NOAA manages the GOES series of satellites and the NASA/NOAA GOES Project creates images and animations from the data.

## **Warnings and Watches in Effect on Aug. 30 at 7 a.m. CDT**

The National Hurricane Center (NHC) said a Storm Surge Warning is in effect for Holly Beach, Louisiana to Morgan City, Louisiana. A Storm Surge Watch is in effect from east of High Island, Texas to west of Holly Beach, Louisiana. A Tropical Storm Warning is in effect from east of High Island, Texas to Grand Isle, Louisiana. Catastrophic and life-threatening flooding continues in southeastern Texas and portions of southwestern Louisiana.



NOAA's GOES-East satellite provided a visible-light image of Tropical Storm Harvey on Wednesday, August 30, 2017 at 7:30 a.m. EDT (1230 UTC) after it made landfall at 4 a.m. CDT just west of Cameron, Louisiana. Credit: NASA/NOAA GOES Project

### **Harvey's Location on Aug. 30 at 7 a.m. CDT**

At 7 a.m. CDT (1200 UTC), the center of Tropical Storm Harvey was located over southwestern Louisiana near 30.2 degrees north latitude and 93.6 degrees west longitude.

Harvey has been moving toward the north at about 9 mph (14 kph) for the past several hours. The storm is expected to move north-northeastward later this morning, and then a northeastward motion at a faster forward speed is expected through Thursday night. On the forecast track, the center of Harvey will move across the Lower Mississippi Valley and Tennessee Valley through Thursday.

Maximum sustained winds are near 45 mph (75 km/h) with higher gusts. Tropical-storm-force winds extend outward up to 80 miles (130 km) from the center. Gradual weakening is forecast as the center moves farther inland, and Harvey is expected to become a tropical depression by tonight. The estimated minimum central pressure based on surface observations is 992 millibars.

## **More Heavy Rainfall Expected**

NHC said Harvey is expected to produce additional rainfall accumulations of 3 to 6 inches from southwestern Louisiana and the adjacent border of eastern Texas northeastward into western Kentucky through Friday with isolated amounts up to 10 inches. The expected heavy rains spreading northeastward from Louisiana into western Kentucky may also lead to flash flooding and increased river and small stream flooding.

Elsewhere, the outer bands of Harvey are expected to produce additional rainfall amounts of 3 to 6 inches over portions of the central and eastern Gulf States and 2 to 4 inches farther north into parts of the Tennessee Valley through Friday, Sept. 1. These rains may lead to flooding concerns across these areas.

NHC noted "While the threat of heavy rains has ended in the Houston/Galveston area, catastrophic and life-threatening flooding will continue in and around Houston eastward into southwest Louisiana for

the rest of the week."

Provided by NASA's Goddard Space Flight Center

Citation: NASA shows how Harvey saturated areas in Texas (2017, August 30) retrieved 13 May 2024 from <https://phys.org/news/2017-08-nasa-harvey-saturated-areas-texas.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.