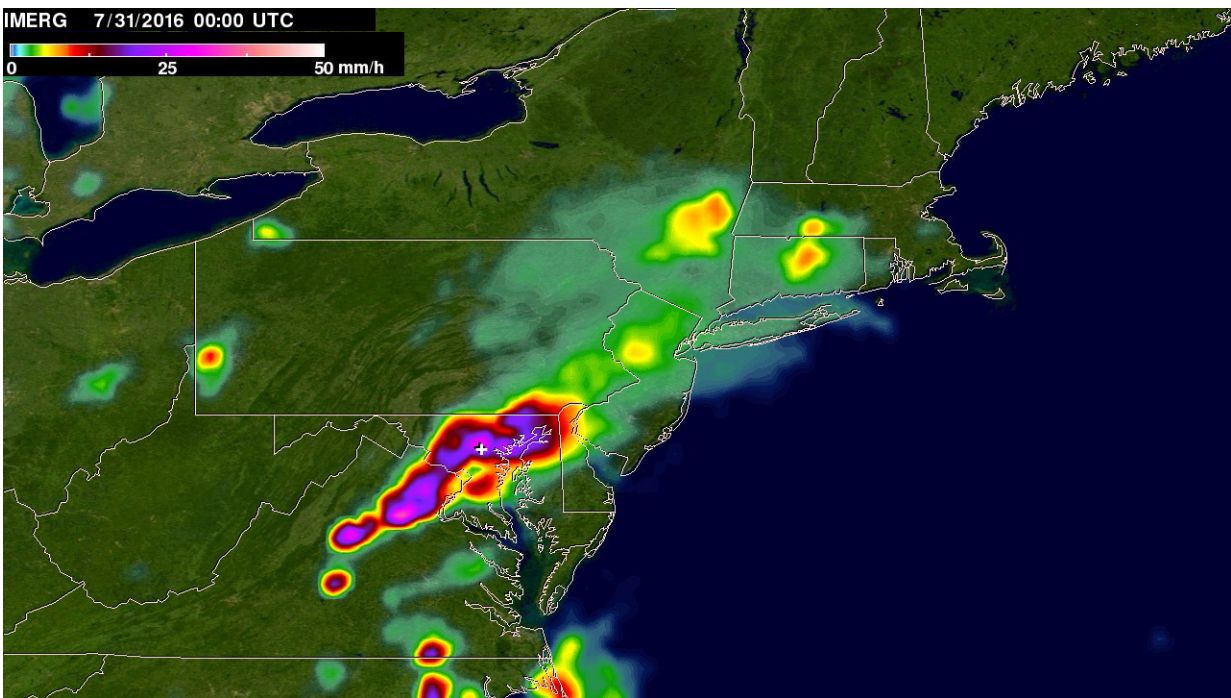


NASA looks at historic flooding from slow-moving Maryland storms

August 2 2016, by Rob Gutro



This image shows instantaneous IMERG-estimated rainfall rates at 8 p.m. EDT on July 30, 2016. It depicts a strong band of heavy rain (an inch per hour in purple areas) extending east-west over north-central Maryland extending southwestward into northern Virginia. Credit: NASA/JAXA/Hal Pierce

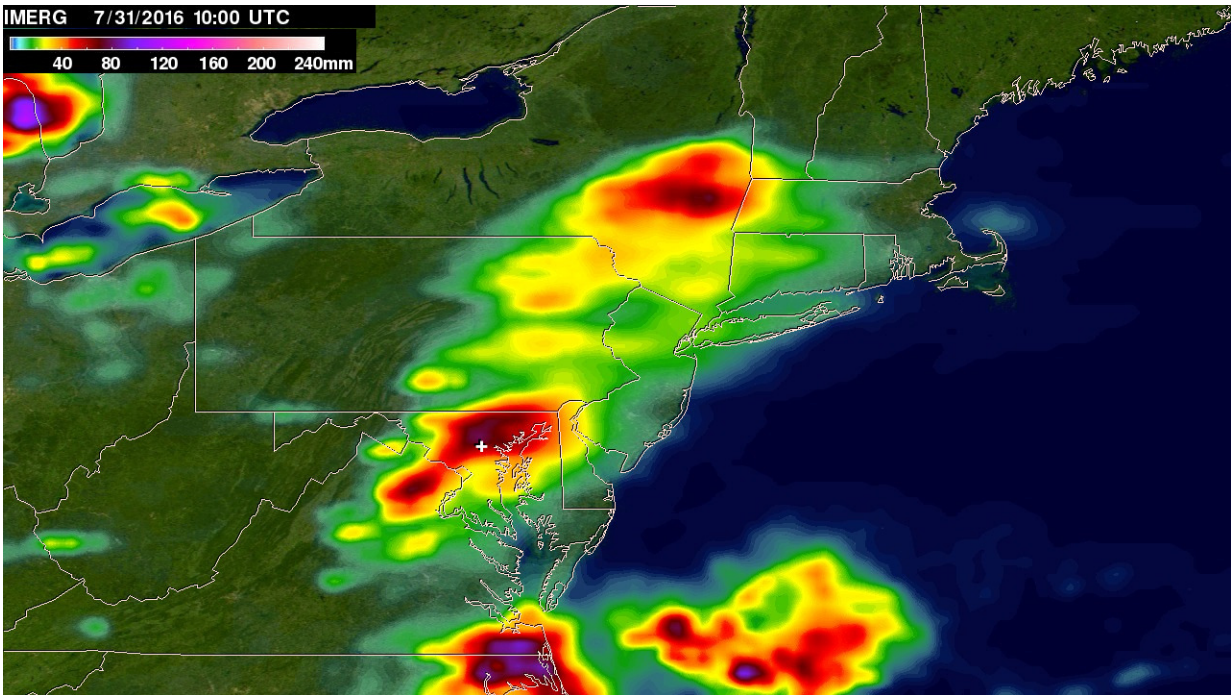
NASA analyzed rainfall data from slow-moving storms that triggered flash floods over parts of central Maryland and caused devastating flooding in historic Ellicott City, Maryland.

A slow-moving line of heavy thunderstorms dumped as much as 6 to 7 inches of rain in about two hours' time during the evening of Saturday, July 30, over parts of Howard County in central Maryland, resulting in severe local flash flooding.

The hardest hit area was the historic town of Ellicott City, where two people were trapped in their cars and drowned. The town suffered substantial damage to many buildings, numerous cars were tossed about, and around 150 people had to be rescued from the downtown area. The heavy rains and flooding were a result of successive waves of rather slow moving storms that merged over the area.

NOAA's National Weather Service (NWS) in Baltimore issued a public information statement about the flooding on July 31, calling it "historic heavy rainfall Saturday in Ellicott City." NWS noted that extremely heavy rain fell and a rain gauge provided by Howard County to the National Weather Service measured 6.5 inches.

A warm, humid air mass, a stationary frontal boundary, and rather weak winds aloft set the stage for the slow-moving storms. Earlier in the afternoon, storms formed up and organized along the Appalachian Mountains before moving slowly out across the Piedmont. The Piedmont is a plateau area between the Atlantic coastal plain and the Appalachians.



IMERG was also used to estimate rainfall totals for the period from July 30 at 4 p.m. EDT (8 p.m. UTC) to July 31 at 6 a.m. EDT (10 a.m. UTC). Rainfall totals across central Maryland were on the order of more than 70 mm (about 3 inches, shown in brown). The white crosses denote the location of Ellicott City, Md.
Credit: NASA/JAXA/Hal Pierce

This slow-moving line triggered new storms along its leading edge and was eventually overtaken by a second line of successive storms moving out from the Appalachians. The result was a mass of heavy raining thunderstorms across central Maryland that slowing moved eastward before weakening over the northern Chesapeake Bay.

NASA's Integrated Multi-satellite Retrievals for GPM, or IMERG, is used to make estimates of precipitation from a combination of passive microwave sensors, including the GMI microwave sensor on board the GPM, or Global Precipitation Measurement, mission satellite, and

geostationary IR (infrared) data. These data were used to create images and animations at NASA's Goddard Space Flight Center in Greenbelt, Maryland. GPM is a joint mission between NASA and the Japan Aerospace Exploration Agency.

One image created showed instantaneous IMERG-estimated rainfall rates at 8 p.m. EDT on July 30 (12 a.m. UTC on July 31), 2016. IMERG showed a strong band of heavy rain extending east-west over north-central Maryland extending southwestward into northern Virginia. Within this band, rain rates are generally on the order of an inch per hour with localized areas of higher rates.

IMERG was also used to estimate rainfall totals for the period from July 20 at 4 p.m. EDT (8 p.m. UTC) to July 31 at 6 a.m. EDT (10 a.m. UTC). Rainfall totals across central Maryland were on the order of more than 3 inches (70 mm).

On Aug. 1, 2016, because of the severity of the flooding, Howard County Maryland Executive Allan H. Kittleman signed an executive order closing a portion of Ellicott City to all but emergency vehicle and pedestrian traffic. For updated information from Howard County, visit: <https://www.howardcountymd.gov/>.

Provided by NASA's Goddard Space Flight Center

Citation: NASA looks at historic flooding from slow-moving Maryland storms (2016, August 2) retrieved 20 April 2024 from <https://phys.org/news/2016-08-nasa-historic-slow-moving-maryland-storms.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.