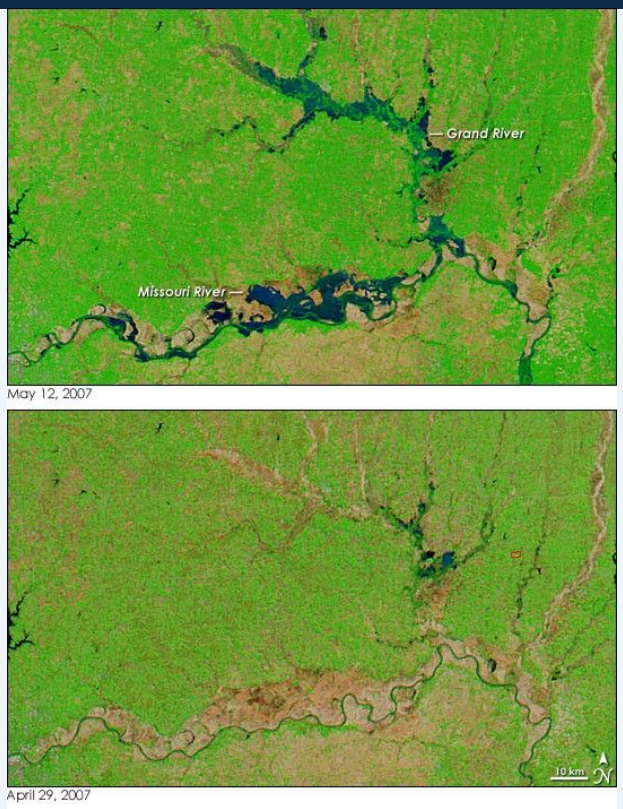
Where the Water Went

Six U.S. flood events through satellite evidence, 2007-2024



Terra MODIS, May 12, 2007. In this false-color image, water is dark blue or black, vegetation bright green and exposed ground tan-pink. Credit: NASA MODIS Rapid Response Team, NASA Goddard Space Flight Center.

Historical evidence. Better questions. Useful records.

Rainfall starts the story, but it does not show where water finally goes. These cases connect river stage, rain estimates and before-and-after imagery to reveal the importance of location, timing and the measurement itself.

What the records reveal

SCOPE AND METHOD

Six selected historical cases from NASA and USGS sources, reviewed November 11, 2026. They are examples of observation methods, not a ranking of the largest, deadliest or costliest floods. River stage is height above a local gauge datum, not water depth across a community; stages at different gauges are not directly comparable. Rainfall estimates are not flood depths or inundation maps. Satellite scenes reflect their acquisition times, and false-color processing makes features visible without reproducing natural colors. Early casualty totals are omitted rather than presented as final.

A COMPARISON WORTH MAKING

A rainfall map explains the input; a gauge describes one river location; an image shows surface conditions during an overpass. Together they tell a stronger story than any single number. The cases also show why an apparently clearer scene can arrive after a crest, and why vegetation, season and image processing need to be recorded before comparing flood outlines.

IMAGES AND UNCERTAINTY

Photographs and satellite views are historical agency imagery. Charts are drawn from cited observations or estimates, with units and dates preserved. A picture shows a place and moment; it does not prove an entire event boundary, impact or cause. This is a historical reference, not a live warning service.

IN THIS COLLECTION

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03 Front Range rainfall spreads into the South Platte 5

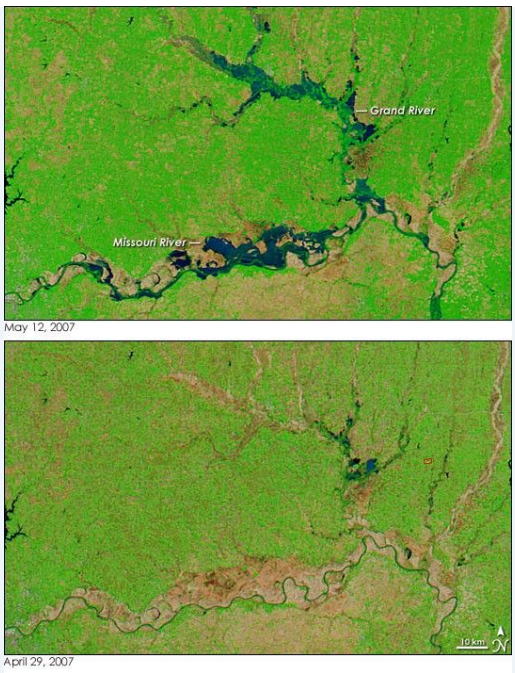
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Missouri River system: the first clear view came late

May 2007; image acquired May 12 | Missouri and Grand Rivers, Midwestern United States



Terra MODIS, May 12, 2007. In this false-color image, water is dark blue or black, vegetation bright green and exposed ground tan-pink. Credit: NASA MODIS Rapid Response Team, NASA Goddard Space Flight Center.

Flood image
May 12, 2007

Reference image
April 29, 2007

Instrument
Terra / MODIS

Observed phase
Floodwaters already subsiding

WHAT HAPPENED

After roughly two weeks of cloud and rain, Terra MODIS obtained a clear view of flooding in the Missouri River system on May 12. The Missouri and Grand Rivers still spread beyond their banks even though the waters had begun to fall. Images on May 13 and 14 showed continued drainage; an April 29 scene provided a pre-flood reference.

WHAT THE DATA REVEALS

The best-looking image may miss the peak. Recording the river's rising or falling phase prevents a clear satellite scene from being mistaken for the event's maximum inundation.

READ WITH CARE

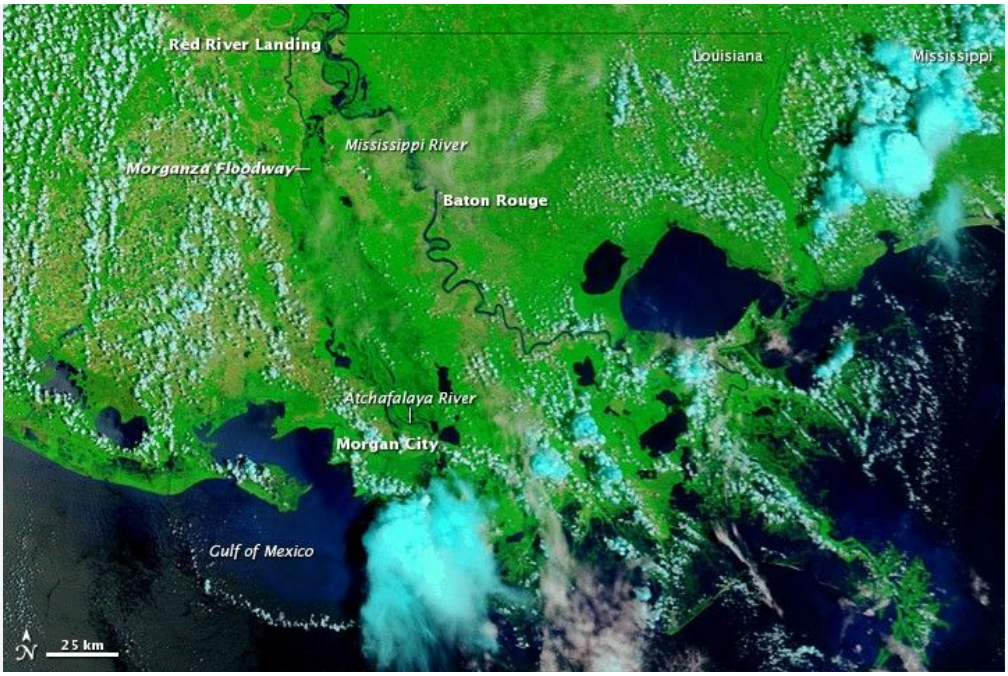
The visible-and-infrared composite emphasizes water, vegetation and soil; it is not a water-depth or damage map. Rain also increased vegetation growth between the comparison dates, so not every color change represents flooding.

Source 1 >

Visual / data >

High water lingered along the lower Mississippi

June 8-9, 2011 | Mississippi and Atchafalaya Rivers, Louisiana



Terra MODIS, June 8, 2011. False-color water appears navy blue; high water is visible near Red River Landing and the Morganza Floodway. Credit: NASA MODIS Rapid Response Team, Goddard Space Flight Center.

Baton Rouge stage

40.13 ft at 2 p.m. local, June 9

Red River Landing stage

57.97 ft at 1 p.m. local, June 9

Morgan City stage

8.74 ft at 2 p.m. local, June 9

Flood image

Terra MODIS, June 8, 2011

WHAT HAPPENED

Flooding persisted into early June along Louisiana's Mississippi and Atchafalaya Rivers. NASA's June 8 image highlights high water near Red River Landing and the Morganza Floodway. The following day, the National Weather Service reported major flooding at Baton Rouge and moderate flooding at Red River Landing and Morgan City, with levels expected to decline gradually.

WHAT THE DATA REVEALS

A useful collection records each gauge separately. The large numerical difference between Red River Landing and Morgan City does not by itself mean one community had proportionally deeper floodwater.

READ WITH CARE

These are dated gauge-stage observations above local reference levels, not comparable community-wide depths or event crests. The image predates the listed readings; the June 2010 reference scene also differs in conditions beyond river height.

Source 1 >

Visual / data >

Front Range rainfall spreads into the South Platte

September 9-15, 2013 | Northern and eastern Colorado; South Platte River near Greeley



Aqua MODIS false-color view, mid-September 2013. Source date conflict: image labels say September 13; the narrative says September 14. Pale blue includes sediment-laden water and muddy ground. Credit: NASA LANCE/EOSDIS MODIS Rapid Response Team, NASA Goddard Space Flight Center.

Reported rain maximum

Up to 18 in, September 9-15; local reports

South Platte peak stage

18.79 ft near Greeley, September 13

Flood stage at that gauge

10 ft

Pre-flood reference

Terra MODIS, September 7, 2013

WHAT HAPPENED

Intense rain along Colorado's Front Range and farther east produced destructive flooding in mid-September. NASA cited local reports of up to 18 inches during September 9-15. The South Platte near Greeley peaked at 18.79 feet on September 13, above its 10-foot flood stage. A break in the weather allowed MODIS to observe swollen waterways and muddy ground.

WHAT THE DATA REVEALS

The gauge anchors the timing while the image supplies spatial context. Pairing them helps explain why a broad flood scene can persist after a river has already begun to fall.

READ WITH CARE

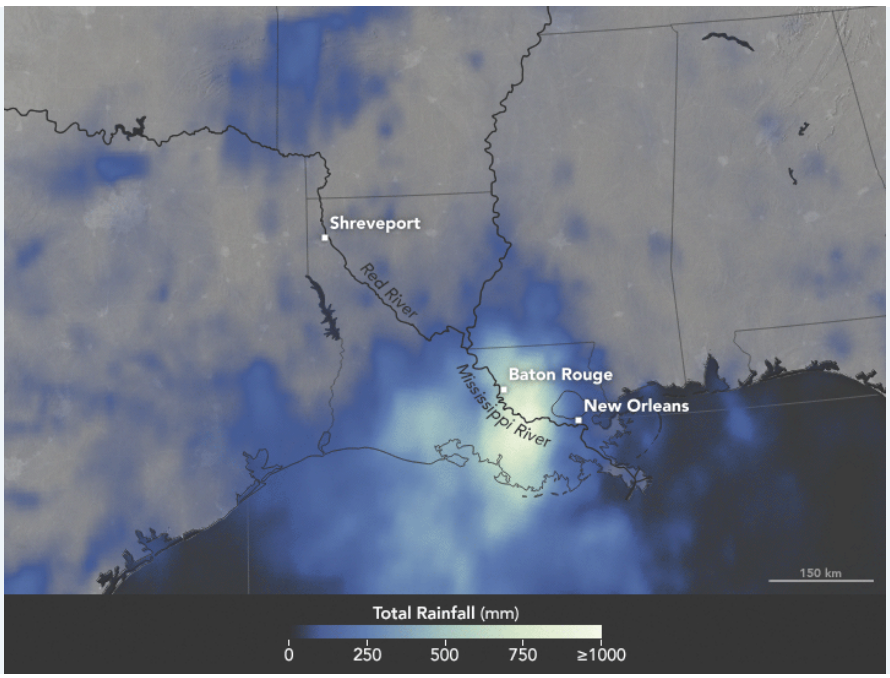
NASA's page labels the flood image September 13 but describes acquisition on September 14; it is captioned mid-September here. Light-blue sediment and wet ground must not be treated as a precise boundary of standing water.

Source 1 >

Visual / data >

Louisiana: rainfall accumulation is not a flood outline

August 12-14, 2016 | Southern Louisiana and adjacent southern United States



Final frame of NASA's GPM IMERG accumulation animation for August 12-14, 2016. Legend: total rainfall (mm), 0 to ≥1000; this is precipitation, not inundation. Credit: NASA Earth Observatory / Joshua Stevens; IMERG data from the GPM Science Team's Precipitation Processing System. Final animation frame extracted by Dattle without cropping.

Map accumulation window

72 hours, August 12-14, 2016

Original animation interval

3 hours

Measurement product

GPM / IMERG satellite rainfall estimates

Map legend unit

Total rainfall in millimeters

WHAT HAPPENED

A slow-moving weather system brought persistent heavy rainfall to southern Louisiana, filling rivers and flooding communities. The source animation accumulates satellite-estimated rain every three hours through a 72-hour window. Its final frame shows where rainfall concentrated, while separate NOAA aerial photography documented flooding along the Amite River near Port Vincent.

WHAT THE DATA REVEALS

A rainfall total answers how much water fell, not which house or road was submerged. Store precipitation estimates and observed inundation as different evidence layers, linked by the event and their acquisition times.

READ WITH CARE

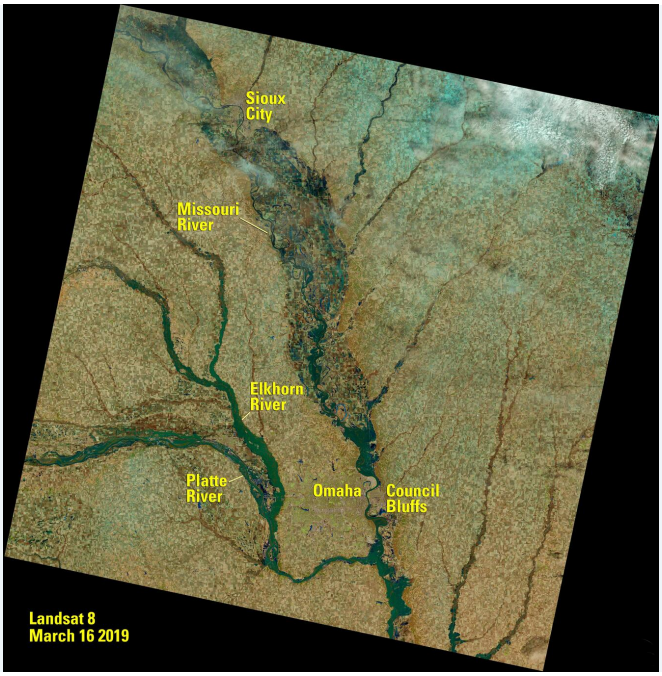
IMERG is a regional remote-sensing estimate; local ground measurements can be higher. This extracted final frame is a rainfall map, not a map of damage, flood extent or water depth. Its legend is in millimeters, not inches.

Source 1 >

Visual / data >

Late-winter flooding links the Missouri and its tributaries

March 2019; image acquired March 16 | Missouri, Platte and Elkhorn Rivers, Nebraska and Iowa



Landsat view of the Missouri River system, March 16, 2019, spanning the Sioux City-Omaha region and tributaries. Full source image retained. Credit: USGS Earth Resources Observation and Science Center; USGS/NASA Landsat. Source labels the imagery public domain.

Flood image
March 16, 2019

Reference scene
March 2018

Primary imagery
USGS/NASA Landsat

Mapped reach
North of Sioux City to south of Omaha

WHAT HAPPENED

Heavy snowfall and frigid weather preceded a mid-March storm that contributed to widespread flooding in Nebraska and Iowa. Landsat and Sentinel obtained clear views on March 16. The Landsat scene covers the Missouri, Platte and Elkhorn Rivers and their surrounding developed and agricultural land, making the interconnected floodplain visible at regional scale.

WHAT THE DATA REVEALS

Follow the tributaries, not only the named main river. A collection organized by watershed can connect conditions upstream and downstream while preserving the specific location of each image or gauge.

READ WITH CARE

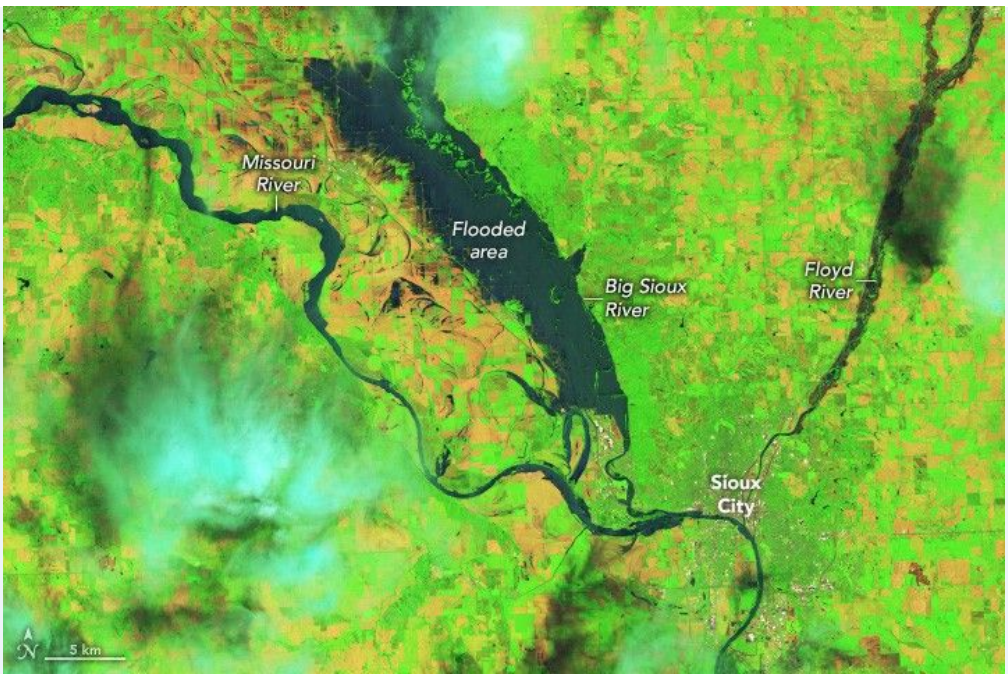
The imagery shows conditions on one date and does not provide a damage total or measured flood depth. USGS's comparison with summer 2011 also changes season, vegetation and water appearance; color alone is not a reliable measure of severity.

Source 1 >

Visual / data >

Saturated ground and record rain along the Big Sioux

June 20-24, 2024 | Sioux City, Iowa; Big Sioux River and southeastern South Dakota



Landsat 8 OLI, June 24, 2024, near Sioux City. The false-color image emphasizes water in dark blue; the source pairs it with a June 9 pre-flood scene. Credit: NASA Earth Observatory / Wanmei Liang; Landsat data from the U.S. Geological Survey.

Mitchell rainfall

6.5 in total, June 20-21

Sioux Falls rainfall

7.7 in total, June 20-21

Sioux City river stage

Almost 45 ft on June 23; source report

Flood image

Landsat 8 OLI, June 24, 2024

WHAT HAPPENED

Two days of heavy rain fell on already wet ground in southeastern South Dakota and northwestern Iowa. Mitchell and Sioux Falls reported their wettest two-day totals in records dating to 1893. By June 23, the Big Sioux at Sioux City reached almost 45 feet in NASA’s account. Landsat on June 24 showed water beyond the riverbanks and across adjacent farmland.

WHAT THE DATA REVEALS

Antecedent conditions belong in the record. Comparing rainfall with existing soil moisture and river level gives a clearer explanation of the response than treating the two-day rain total as the whole story.

READ WITH CARE

The river number is a site-specific stage, not depth across the floodplain. The June 24 false-color image follows the June 23 reading, and its water pattern should not be assumed to represent the maximum extent.

Source 1 >

Visual / data >

From examples to observations

A USEFUL RECORD KEEPS ITS EVIDENCE

Keep the time, place, measurement method, unit, source and uncertainty with every observation. Separate what you saw from an estimate or interpretation. Repeat observations consistently, and retain the original evidence when updating a record.

SUGGESTED DATTLE FIELDS

- Event name, date range and watershed
- Observation time and time zone
- Site or gauge identifier and location
- River stage, unit, datum and whether rising or falling
- Rainfall amount, accumulation window and measured or estimated method
- Satellite or camera, acquisition date and resolution if known
- Before-event comparison image and date
- Flood extent versus rain, wet soil or cloud classification
- Observed impacts with source and report date
- Image credit, source URL and known uncertainty

AI AS AN ACCELERATOR

Use this prompt to draft a collection structure, then review it. AI can organize the questions and fields; it cannot supply missing observations or replace source verification.

> Create a Dattle for flood observations with watershed, event dates, observation time, location, image and credit, rainfall amount and accumulation window, river gauge ID, stage and datum, rising or falling trend, before-event reference image, observed impacts, source links and uncertainty. Keep rainfall, river stage, flood depth and mapped flood extent as separate fields.

Explore Dattle at dattle.com. Availability, features and plan limits are described on the website.

Sources and image credits

Primary references checked November 11, 2026. Records and estimates can be revised. Every case page links to its evidence; full addresses are retained here for reuse.

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