

2023-03-21, Sentinel-2

The 2019 flooding around Plattsmouth, Nebraska, was a catastrophic event that brought immense devastation to the region. Triggered by a combination of factors, including heavy rainfall and snowmelt, the flooding inundated homes, farms, and infrastructure along the Missouri River.

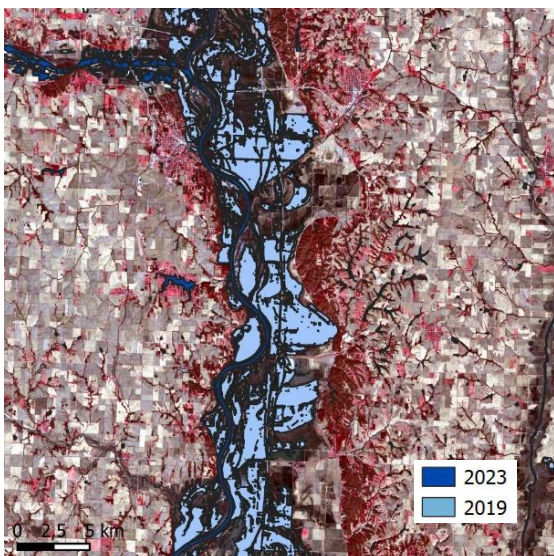
Climate change played a role in this event, as rising global temperatures are leading to more extreme weather patterns, with heavier precipitation and increased risk of flooding. In the case of Plattsmouth, the area experienced record-breaking rainfall, with some areas receiving over 50 cm of rain in a single month. This excessive rainfall, combined with the saturated ground from earlier precipitation, overwhelmed the river's capacity to contain water.



2019-03-31, Sentinel-2

The flooding affected over 2,000 homes and forced the evacuation of nearly 1,000 people in the Plattsmouth area. It caused millions of dollars in damages to homes, infrastructure, and agriculture, disrupting the lives of countless residents.

Satellite images captured the dramatic expansion of the floodwaters, which swallowed entire communities and vast swaths of farmland. Moreover, the data allow for accurately estimating the affected areas and the damage caused by the flood.



2019-03-31, Sentinel-2 (false colour infrared, water bodies 2023 - normal/2019 - flooded)

Exercises

- Look at the satellite image from 2023 and try to identify regions with different land cover.
- Look now at the satellite image from 2019, acquired during the flood. Try to assess the width of the flooded area.
- Try to identify the road network – why are large parts of the high-level road network not flooded? What does this tell us about the probability of floodings in this region?
- Look at the false-colour infrared image from 2019 combined with the water layer derived from this data.
- Look at the satellite image from 2023 again. What signs of recovery can you see?

Additional Material



Aerial view of the flooded region (photograph: US Army Corps of Engineers (Omaha))