



MISSISSIPPIVIEW 2021 - 2022

AmericaViewSM
Empowering Earth Observation Education
americaview.org

MISSISSIPPIVIEW 2021 - 2022 ACTIVITIES

MississippiView was established in 2003 and is led by the Mississippi Mineral Resources Institute (MMRI) at the University of Mississippi. We promote and facilitate geospatial data usage, research, and collaboration among the geospatial community in Mississippi while fostering national and international cooperation.

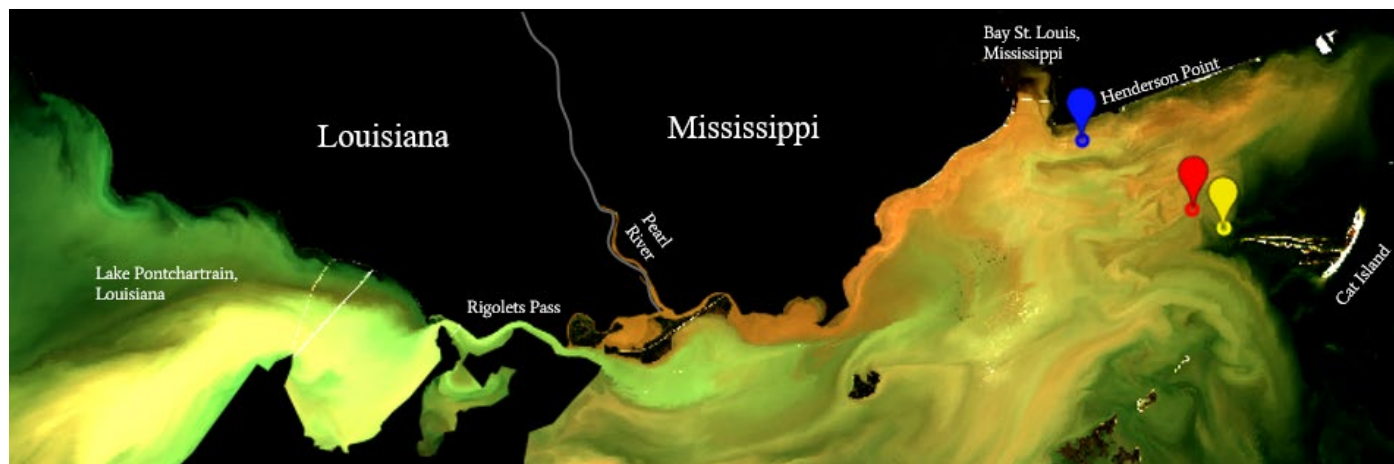
Our high impact activity (HIA) involved studying the impact of sediment and freshwater influx on the ecosystem of the Mississippi Sound estuary. If salinity plunged below 1 gram per 1,000 grams of seawater, mega-fauna (dolphins and turtles) dies and the oyster reefs are decimated. Freshwater flushing into the Mississippi Sound can cause this die off. In 2005, Mississippi harvested nearly 500,000 bags of oysters and only 10,000 bags in 2018.

Due to record flooding in much of the Mississippi River valley, the Bonnet Carré spillway was opened in both 2018 and twice in 2019 to relieve flooding pressure on levees in New Orleans. This unprecedented event resulted in a large influx of freshwater into the Mississippi Sound through Lake Pontchartrain. This was a unique opportunity to study the recovery of an estuarine ecosystem from a major event. The fresh, sediment-laden water from the Mississippi River flowed into Lake Pontchartrain, mixed with the brackish water of the lake and then flowed through Rigolets Pass into the western Mississippi Sound.



Gulf Coast oysters are an important economic agricultural product of Mississippi. Source: Gulf Coast Mariner

Using Landsat and Sentinel-2 satellite imagery, and in situ water quality monitoring, researchers were able to observe movement of sediment in coastal waters. The Sentinel-2 image BELOW acquired in 2021 shows the different colors of sediment coming from Lake Pontchartrain and Pearl River basin. Dark to black is land or deeper water. The blue, red, and yellow markers are locations of monitored oyster beds.



MississippiView is a member of the AmericaView Consortium, a nationally coordinated network of academic, agency, non-profit, and industry partners and cooperators that share the vision of promoting and supporting the use of remote sensing data and technology within each state. AmericaView is funded by USGS grant agreement G18AP00077.

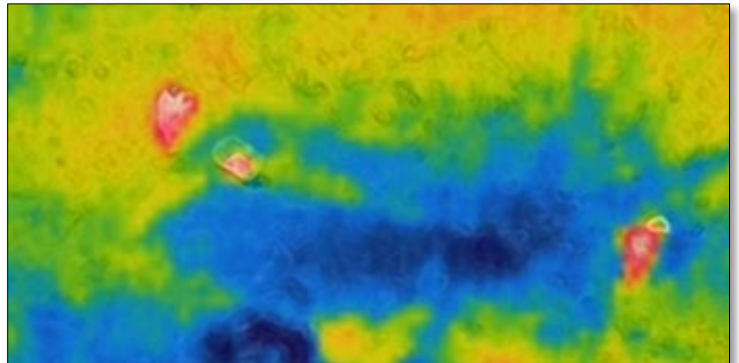
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BENEFITS TO MISSISSIPPI

MississippiView brings benefits to the state of Mississippi:

- Supports research to investigate impact of flooding and sediment from inland erosion on gulf coast aquaculture, specifically oysters.
- Flooding and groundwater withdrawal are of utmost importance to the state of Mississippi. Projects can help monitor these processes and lead to more effective responses to a natural disaster and better management of a valuable resources.
- Use of geophysics and UAS-based thermal for mapping potential underseepage pathways of levees. Piping and the formation of sand boils, poses a significant threat to the integrity of floodplain levees.
- Applications using a variety of the spaceborne, aerial, and terrestrial-based sensors are taught to students of Mississippi and support applied research in the state.
- MississippiView supports teaching curriculum and expanding our consortium to promote training future users and advancing the workforce in a changing world.



UAS-based imagery provides high-resolution thermal data at a seepage location during a flooding event along a Mississippi River mainline levee. TOP: Visible light image; BOTTOM: cooler water in the thermal imagery is shown in blue and is from seepage from under the levee. Individuals are towing a ground penetrating radar (GPR) antenna across the seepage area.



LEFT: MississippiView assists in workshops with regional high schools. Students worked with local experts and University of Mississippi faculty to explore opportunities in applied sciences. Using Landsat, Sentinel-2 and drone imagery to provide vegetative maps and real-time vegetative stress and thermal imagery.

MISSISSIPPIVIEW CONSORTIUM MEMBERSHIP

MississippiView is engaged in developing partnerships within the state. We have teamed with outreach efforts from the University of Mississippi's School of Engineering, School of Education, and School of Applied Sciences to provide spatial data and aerial/satellite imagery to support student learning and research.

We have continued to work with students from Rust College in Holly Springs, Mississippi



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