



MISSISSIPPIVIEW 2022 - 2023

AmericaViewSM
Empowering Earth Observation Education
americaview.org

MISSISSIPPIVIEW 2022 - 2023 ACTIVITIES

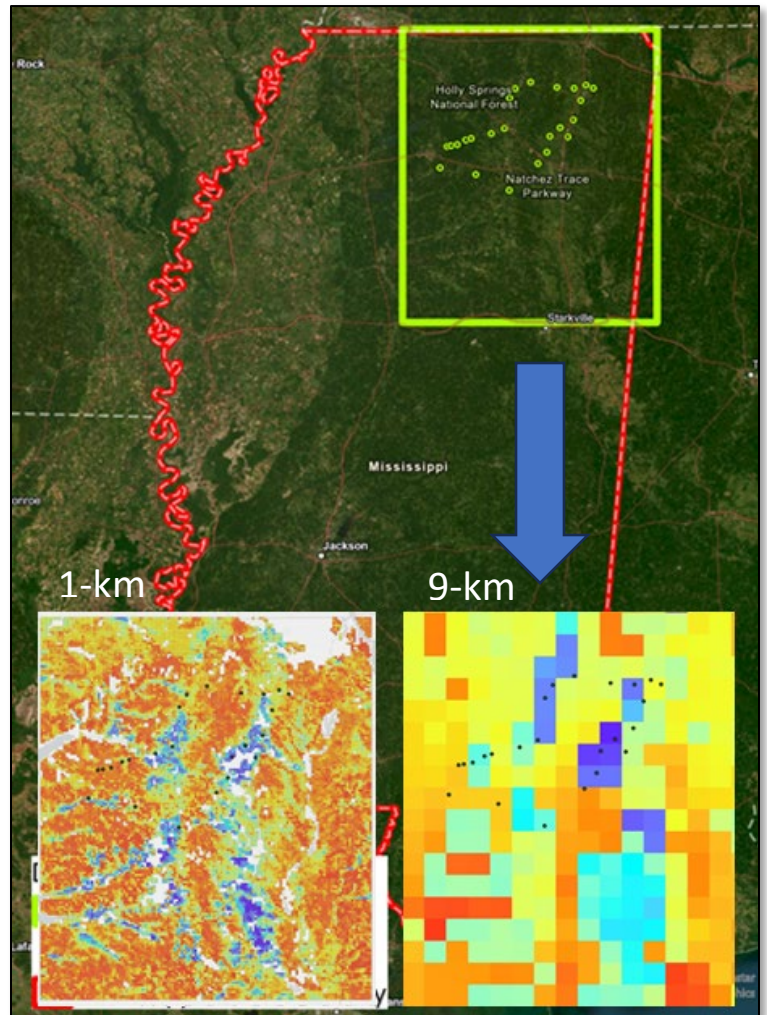
MississippiView was established in 2003 and is led by the Mississippi Mineral Resources Institute (MMRI) at the University of Mississippi. We promote and facilitate geospatial data usage, research, and collaboration among the geospatial community in Mississippi while fostering national and international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

Our high impact activity (HIA) involved studying the use of machine learning (ML) algorithms is downscaling remotely sensed Earth observation data.

By using data from the Soil Moisture Active Passive Mission (SMAP) mission, we were able to estimate finer-resolution data by using a ML technique called Random Forest method.

The results allow land managers and farmers to better estimate the soil moisture level at the field-level. This method of downscaling has many other applications including:

- Land use change/monitoring
- Disease and pest monitoring
- Water and food resiliency
- Taxation and efficient urban planning



Above: Study area in green box at north part of the state of Mississippi. The data at the bottom right inset is from Soil Moisture Active Passive Mission (SMAP) satellite shown at approximately 9-km pixel resolution. The student downscaled this coarse data using machine learning methods to a more useful 1-km pixel resolution shown in the lower left inset.

Left: A.V. Ellepola, graduate student, collecting soil moisture data from the field.

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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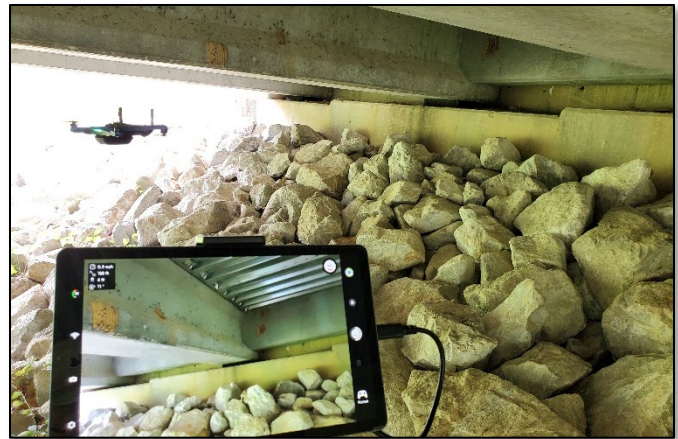
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BENEFITS TO MISSISSIPPI

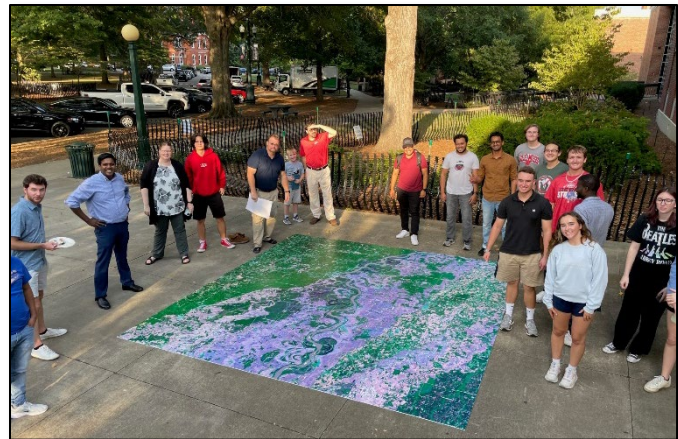
MississippiView brings benefits to the state of Mississippi:

- Supports research to investigate impact improved flood forecasting, disaster response and recovery, and enhanced methods of education.
- 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.
- Ongoing projects in use of machine learning help to better monitor changes to land use which may affect the tax base and urban/development planning of a region.
- MississippiView supports teaching curriculum and expanding our consortium to promote training future users and advancing the workforce in a changing world.
- All these examples and more go to contribute to the economic development in the state of Mississippi.

Right: MississippiView assists in many projects to help improve the state of Mississippi. Providing UAS remote pilots for research to improve bridge inspections workflows and processing point clouds for 3D digital twinning is a collaboration with Department of Civil Engineering at the University of Mississippi and Mississippi Department of Transportation (MDOT).



Above and Right: Large format floor puzzle used during outreach event. Students enjoyed food and fun with Landsat imagery. The imagery is from the 2022 flood event of the Lower Mississippi River Valley. After assembly, collaborators have specific places to point out on the map to show flood effects on ecology, agriculture, urban planning, and dam safety.



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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