



KENTUCKYVIEW 2021 - 2022

AmericaViewSM
Empowering Earth Observation Education
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KENTUCKYVIEW 2021 - 2022 ACTIVITIES

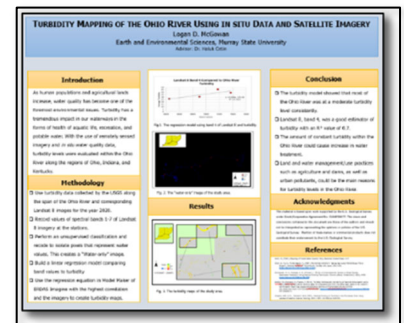
KentuckyView has been working on inland water quality and quantity mapping using Landsat imagery for the State of Kentucky for several years. During the current year, Ohio River Integrated Geospatial Interinstitutional Network (ORIGIN) research collaboration program including KentuckyView, OhioView and West VirginiaView, continued to monitor the Ohio River for mapping water quality and harmful algal blooms (HAB) events using multispectral and hyperspectral remote sensing, and other geospatial techniques. Drs. Anita Simic Milas from OhioView, Haluk Cetin from KentuckyView, and Aaron Maxwell from West VirginiaView coordinated the ORIGIN program. Kentuckyview also established collaborations with researchers at the Goddard Space Flight Center of NASA, and several USGS offices including the USGS Ohio Kentucky Indiana Water Science Center, Louisville, KY, and Murray Field Office, Murray, KY. During the current year KentuckyView specifically focused on HABs prediction and monitoring. Landsat-8 and Sentinel-2 datasets, and Google Earth Engine were used for such efforts. The results showed that Turbidity mapping performed better ($R^2=0.81$) compared to the TSS ($R^2=0.76$) and Chlorophyll ($R^2=0.65$) mapping, which showed lower R^2 values.

Workshops: A workshop was held on Murray State's main campus to educate pre-service teachers and students. Visible and infrared cameras were used for the training. We hired one undergraduate student to work on the project. He was trained in water quality mapping and produced his initial water quality maps of western Kentucky, particularly for the Ohio River. Another student was also trained in water quality mapping.

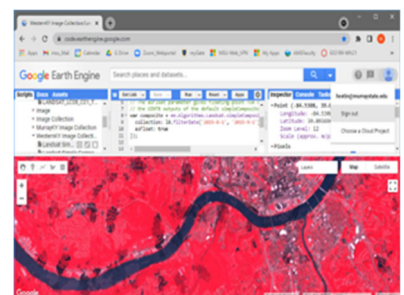
Earth Observation Day and Earth Day activities: A virtual Earth Observation Day (EOD) event was held at MSU on Tuesday, October 12, 2021. Three Keynote speakers, Dr. Oluwabunmi Dada of MSU, Mr. Eric Morris of Geospatial Project Manager, GISinc and Dr. Junfeng Zhu, Kentucky Geological Survey, University of Kentucky, and the KentuckyView PI Dr. Cetin gave presentations. There were 27 participants at the event.

K-12 outreach activities: The MSU student chapter of ASPRS met two times to establish plans to work with K-12 students on a common geospatial project. Kentuckyview participated the Archaeology Day event held in Wickliffe Mounds State Historic Site, Wickliffe, Kentucky. We used several tools, such as a UAS, thermal camera, imagery, poster, and an EOD game poster, to educate the participants. We served 181 people. Of those, 126 were adults and 55 children.

State-wide undergraduate and graduate student fellowships: The winners of the 2022 undergraduate award in the amount of \$500 were Mr. Logan McGowan, MSU and Mr. Blake Kennedy, MSU. The winner of the 2022 graduate award in the amount of \$1,000 was Ms. Kabita Paudel, Kentucky State University. The students would use their fellowship monies for their research.



Turbidity analysis of the Ohio River



KentuckyView 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 KENTUCKY

KentuckyView 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. KentuckyView currently comprises 12 member institutions and agencies. As KentuckyView continues to grow we expect that additional universities, colleges, non-profit organizations, and state and federal agencies will add their knowledge, experience, and shared goals to ours as we seek to improve life for citizens throughout the Commonwealth. The primary focus of KentuckyView is on the use of images collected from remote sensors, as well as other geospatial technologies, to support K-16 education, applied research, and public outreach. The Kentucky Spectral library has been utilized to help process satellite data, such as Landsat 8 and 9.

KentuckyView has conducted research on soil moisture, water quality and quantity, and harmful algal blooms. For the state of Kentucky, these projects inform the water research community and improve understanding the environmental conditions, which allow Kentucky to manage the water resources more efficiently.

We are developing workshop modules to improve K-16 education in the state. Also, more assessment tools have been developed. Remote sensing education and outreach activities, such as workshops, story maps, Earth Observation Day, Earth Day, and GIS Day presentations, have helped inform and educate teachers, students, and the public in Kentucky.



KENTUCKYVIEW CONSORTIUM MEMBERSHIP



- *Murray State University - MARC and the Department of Earth and Environmental Sciences (official member of record)*
- *Morehead State University*
- *Kentucky Division of Geographic Information*
- *Kentucky Geological Survey*
- *Eastern Kentucky University – Department of Geography*
- *Jefferson Community and Technical College*
- *Kentucky State University*
- *University of Kentucky – College of Agriculture*
- *Western Kentucky University – Department of Geography and Geology*
- *University of Louisville – Center for Geographic Information Sciences*
- *Northern Kentucky University – History and Geography Department*

Federal consortium members identified above do not receive funding from AmericaView.

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