



# KENTUCKYVIEW 2020 - 2021



## KENTUCKYVIEW 2020 - 2021 ACTIVITIES

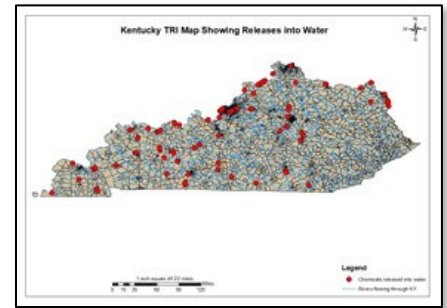
KentuckyView has been working on inland water quality and quantity mapping using Landsat imagery for the State of Kentucky for several years. During the current year, a research collaboration program, Ohio River Integrated Geospatial Interinstitutional Network (ORIGIN) including KentuckyView, OhioView and West VirginiaView, was established 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 Oklahoma-Texas Water Science Center, Fort Worth, TX, the USGS Ohio Kentucky Indiana Water Science Center (OKI-WSC), Louisville, KY, and Murray Field Office of OKI-WSC, Murray, KY. During the current year KentuckyView specifically focused on HABs prediction and monitoring. HABs are defined as algae overgrowths in aquatic systems, some of which produce dangerous toxins in fresh and/or marine waters affecting human health and the environment. Landsat-8 and Sentinel-2 datasets, and Google Earth Engine (GEE) were used for such efforts. Climate parameters, LULC characteristics, nutrient supply processes and urban sprawl, landscape metrics and primary productivity have been used to examine characteristics of HAB events that occurred in 2015 and 2016 for predictive modeling of HABs. These prediction parameters and models have been ranked based on their importance for weighted overlay models.

**Mini-grant program:** A Mini-grant program was established to increase collaboration among consortium member institutions, and their researchers and students. Dr. Oluwabunmi Dada of MSU received funding for a project entitled *“The Spatial Pattern of Industrial Pollution and Water Quality Issues in Kentucky.”*

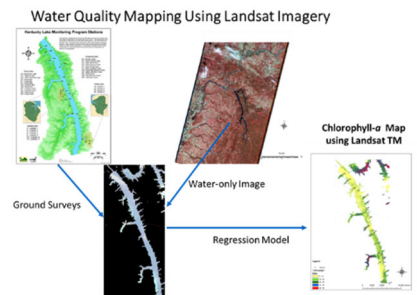
**Earth Observation Day and Earth Day activities:** A virtual Earth Observation Day (EOD) event was held at MSU on October 13, 2020. Two Keynote speakers, Dr. Bassil El Masri of MSU and Dr. Patricia Kambesis of Western Kentucky University, and the KentuckyView PI Dr. Cetin gave presentations. There were 34 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; however, due to the Covid19 issues, the activities were postponed.

**State-wide undergraduate and graduate student fellowships:** The winners of the 2021 undergraduate award in the amount of \$500 were Ms. Amber Harland-Bennett, MSU and Mr. Clint Cornelison, MSU. The winner of the 2021 graduate award in the amount of \$1,000 winner was Ms. Grace Embree, University of Louisville. The students would use their fellowship monies for their research.

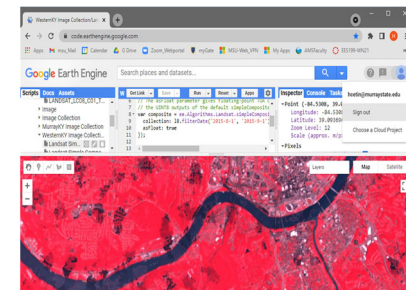


Toxic Release Inventory. Mini-grant, Dr. Dada



Chlorophyll-a mapping using Landsat-8.

The 2020 EOD event at MSU



Google Earth Engine modeling

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.



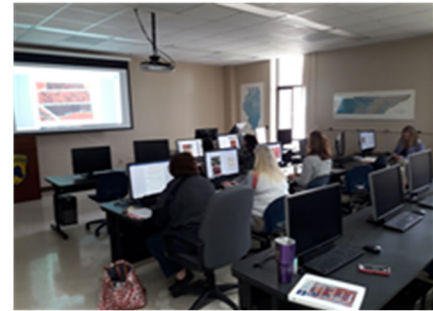
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## BENEFITS TO KENTUCKY

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.

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 allows 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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