KENTUCKYVIEW HISTORY AND SUCCESSES

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.
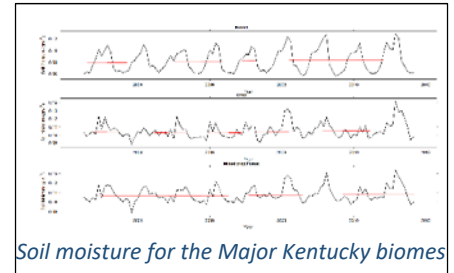
Soil moisture for the Major Kentucky biomes

KentuckyView has developed a methodology to estimate soil moisture based on spectral measurements and imagery. The main objective of the project was to investigate the spatial and temporal variability in remote sensing soil moisture for the State of Kentucky.
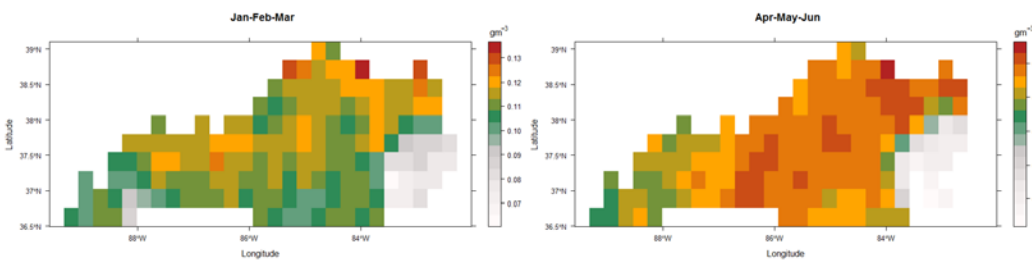
Spatial Variability in Kentucky Soil Moisture

Remote sensing education and outreach activities, such as workshops, Earth Observation Day and Earth Day presentations, have helped inform and educate teachers, students and the public in Kentucky.

Train-The-Trainer teacher workshop

Earth Observation Day celebrations. Keynote speakers

A Train-The-Trainer (TTT) teacher workshops were held at Murray State University. Several pre-service students and teachers attended the TTT workshop. Several USGS and NASA products, such as Landsat 5, 7, and 8, DEMs, as well as aerial imagery, were utilized. The students worked on five remote sensing modules, wrote a report for each module and answered questions related to the exercises in the modules.

We are developing workshop modules to improve K-12 education in the state. Also, more assessment tools have been developed.

Earth Observation and Earth Day Events were also held in Kentucky. Keynote speakers gave presentations. Undergraduate and graduate students presented their project results in oral sessions. Poster sessions followed the student presentations.

An Earth Observation Day poster session

*Earth Observation Day presentations at Murray State University*

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KentuckyView has been involved with Kentucky water quality mapping projects to establish a methodology for mapping water quality parameters. Factors included total suspended solids (TSS) concentrations, turbidity and Chlorophyll-a (an indicator of phytoplankton biomass) using satellite imagery. For this project, Landsat-8, MODIS (Moderate Resolution Imaging Spectroradiometer) and Sentinel data were utilized to develop the needed methodology. This activity is the first key step in establishing state-wide and nation-wide water quality monitoring programs in support of environmental planning and modeling activities. KentuckyView specifically focused on harmful algal blooms (HABs) prediction and monitoring this year. 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. Nontoxic algal blooms (NAB) also hurt the environment and local economies (EPA, 2018). Two test sites in Ohio and Florida were selected.
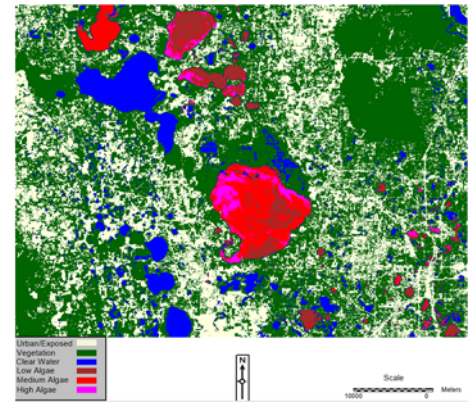
Landsat 8-based mapping of Lake Apopka, Florida

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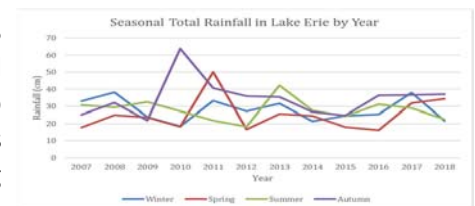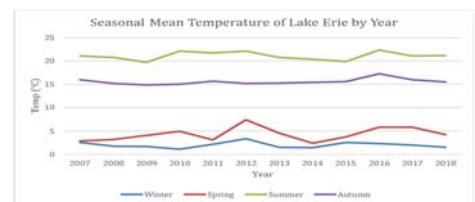
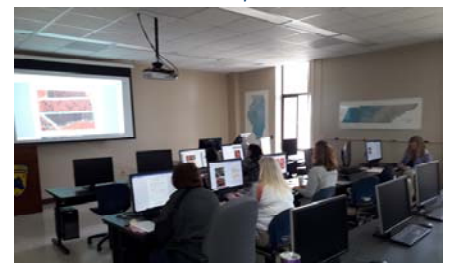Date: Jul 21, 2015-Jul 30, 2015
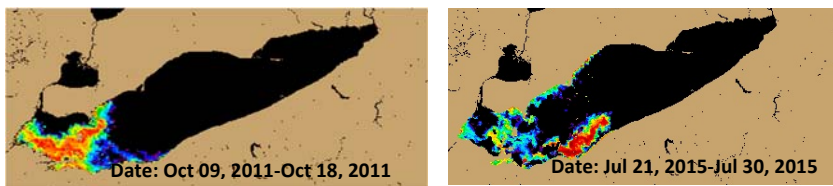
Lake Erie HABs monitoring

Empirically-based algorithms are playing an increasingly important role in HAB modeling, providing an important link between conceptual and dynamical modeling approaches. One of the main objectives of this monitoring was to establish an integrated empirical approach to predict and monitor HAB events using water quality parameters obtained from multispectral remote sensing (Landsat, MODIS & Sentinel), and GIS data, such as climate parameters (particularly temperature and rainfall), land-use/land-cover (LULC) characteristics including agricultural activities/practices, nutrient supply processes and urban sprawl, landscape metrics/spatial patterns and primary productivity to identify and validate such events more accurately.

A Train-The-Trainer (TTT) teacher workshop was held at Murray State University in April 2019. Several pre-service students and in-service teachers attended the TTT workshop. Several USGS and NASA products, such as Landsat and aerial imagery, etc. were utilized. The attendees worked on remote sensing modules, wrote a report for each module and answered questions related to the exercises in the modules.

TTT workshop

A fellowship program for graduate and undergraduate students in Kentucky was established this year. The 2019 undergraduate award in the amount of $400 was given to Ms. Mackenzie A. Nelson, Northern Kentucky University. The 2019 graduate award in the amount of $600 was given to Mr. D. Tyler Mahoney, University of Kentucky. The students will be using their fellowship monies for their research.