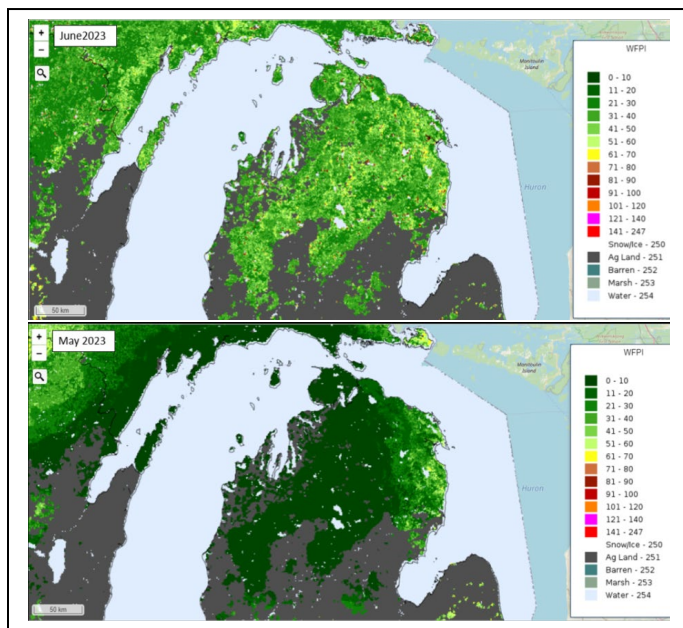## MICHIGANVIEW 2023 - 2024 ACTIVITIES

As a member of the AmericaView consortium, MichiganView strives to promote remote sensing science within the state of Michigan by establishing partnerships with educators and developing resources that familiarize students with Earth observation. MichiganView's primary focus is to develop tools and activities for K-12 students.

In the 2023-2024 grant year, MichiganView developed tools designed to help meet specific Michigan Science Standards (MSS). The MSS are built on the Next Generation Science Standards and have been adopted by the Michigan Department of Education. Two modules were created for high school Biology, Environmental, and Physical Science classes. MichiganView tools are created with accessibility and open sources in mind, so platforms such as ESRI StoryMaps are typically used to eliminate the need for specialized software.

For students at the high school level, a StoryMap was created to illustrate how human activities are modifying Earth systems using the example of forests in northern Michigan. The tool enabled students to investigate changes in NDVI to assess areas that have been disturbed by timber harvesting, fire, land-use change or non-native insect infestations. USGS's Wildfire Potential Index and biomass/carbon reservoirs were used to study how drought influenced a wildfire in June of 2023 near Houghton, MI. Supplemental StoryMaps were also made for students about controlled burns to promote of native species and ecosystems. Another module/StoryMap is mapping, identifying, and quantifying wetlands, which are one of the most difficult ecosystems to classify using remote sensing. Using data from the Great Lakes Commission and MTRI research in Greats Lakes invasive aquatic plant species, drone imagery is used for identification and classification.

Professional Development for Michigan middle and high school teachers was provided by MTU's Center for Science and Environmental Outreach – "Clear Skies, Clean Waters, Bright Futures" for which air quality was linked with forest fires. A lesson on wildfire smoke was presented to the teachers.

In addition to creating content for use in traditional classroom settings, MichiganView also supervised the Remote Sensing competition for several regions of the Michigan Science Olympiad. Science Olympiad is a national organization that runs STEM related tournaments around the country.

Screenshot of an ESRI StoryMap created for Michigan high school students. The tool focuses on Michigan's forest using USGS's WFPI (Wildfire Flammability Potential Index) that uses the ratio of live fuel to dead fuel. WFPI is a unitless number that ranges from 0 to 150 and relates to vegetation flammability. The two following satellite images are of the northern-lower peninsula of Michigan

RGB and multi-spectral imagery, from a drone, of a wetland on Lake Erie to help identify types of vegetation for classification.

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BENEFITS TO MICHIGAN

- MichiganView creates educational materials that adhere to standards and performance expectations set by the Michigan Department of Education.

- Content developed by MichiganView is created on easily accessible, browser-based platforms such as ESRI StoryMaps and Google Earth Engine and many other open-source government websites.

- MichiganView leverages free and publicly available imagery, such as data from the Landsat mission, in its tools and tutorials.

U.S. Fish and Wildlife Service Wetlands Mapper – an open source for students.

Smoke from wildfires raging in Western Canada affected the Great Lakes and most of North America in mid-May 2023. (MODIS)

MICHIGANVIEW CONSORTIUM MEMBERSHIP

Chelsea High School