# MichiganView Remote Sensing Activities 2015 - 2016

## Exposing K-12 Classrooms to Environmental Remote Sensing

A primary goal of MichiganView is to promote the use of remote sensing technology. Remote sensing education is well established in colleges and universities, but it is often absent from K-12 curriculum. MichiganView has developed an innovative outreach program that serves to introduce young students to basic remote sensing principles, focusing on ways to engage elementary school students with hands-on remote sensing related activities including in-classroom projects.

Over the past several years MichiganView has focused on developing partnerships with local schools which employ a project-based learning philosophy. This type of learning environment has the flexibility required to incorporate remote sensing into the curricula, which is absent from typical elementary and middle school science curricula

This year two major projects were completed with local schools. A project with 3rd graders included providing lessons and a web-based tool to aid in their module on bird migration. The web-tool allowed students to explore how different species of birds use different migration patterns, and enabled exploration of major migration corridors and their relationship to existing wind farms. The goal of the project was for students to understand the balance between sustainable energy and ecosystem health. Another project involved 7th graders learning about invasive species. MichiganView Co-I Mike Battaglia gave in-class presentations on invasive plants, and provided students with a mapping tool to help understand how invasive-species monitoring works. Groups of students selected individual invasive species and developed plans for helping to control their spread.

*7th grade students present projects to MichiganView Co-I Mike Battaglia and a panel of invasive species experts at Northside School in Ann Arbor*


*MichiganView's education and outreach web page provides examples of the web-based tools created to expose students to remote sensing and geospatial technologies.*

In an effort to expand outreach efforts beyond individual classrooms, MichiganView has created a website to showcase some of the web-based tools that have been created for some recent project-based learning modules and other community outreach programs. MichiganView continues to seek other means to reach a wider audience via partnerships with science educators and curriculum developers at other Michigan-based institutions.

## Benefits to Michigan

- Development of educational remote sensing materials for K-12 students
- Collaborative opportunities for remote sensing students and professionals
- Access to Michigan satellite imagery and derived data from a newly revised web portal
- Remote sensing software tools and training to students and non-expert professionals
- A conduit between Michigan's government representatives and the remote sensing community

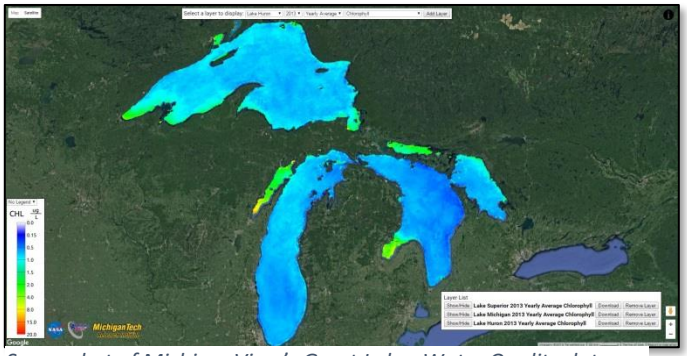

MichiganView is a member of the AmericaView Consortium, a nationally coordinated network of academic, agency, non-profit, and industry partners and cooperators that share the vision of promoting and supporting the use of remote sensing data and technology within each state.

**AmericaView Website:**
www.AmericaView.org
**Roberta Lenczowski, Executive Director:**
roberta.lenczowski@sbcglobal.net
**Chris McGinty, Program Manager:**
chris.mcginty@americaview.org
**Jarlath O'Neil-Dunne, Board Chair:**
Jarlath.ONeil-Dunne@uvm.edu

## Additional MichiganView Activities

### Great Lakes Water Quality

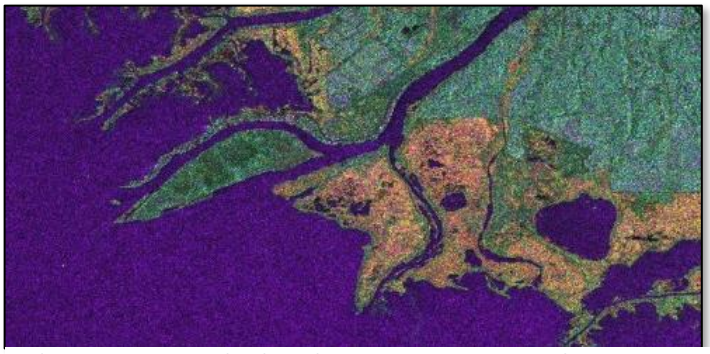
Satellite derived Great Lakes geospatial water quality data were generated for the upper Great Lakes as inputs to a funded NASA Carbon Monitoring System Program. Those products had not been conditioned for wide-scale use. As part of an AmericaView mini-grant, these science data products were made available via an interactive webpage.



*Screenshot of MichiganView's Great Lakes Water Quality data viewer. Data for the Great Lakes is downloadable and viewable.*

### SAR Training

MichiganView scientists at the Michigan Tech Research Institute have expertise in exploitation of synthetic aperture radar (SAR). As part of an AmericaView mini-grant, MichiganView developed training materials on SAR fundamentals. Lectures and lab exercises were developed with the intent of preparing students with the skills required to gain employment as a SAR technician.

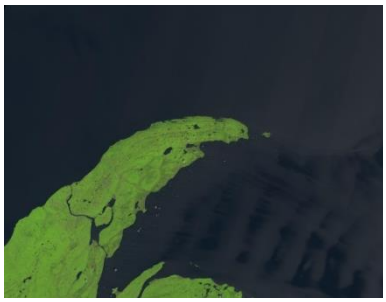


*Radarsat-2, Harsens Island, Michigan, August 24, 2015. The SAR training materials include tutorials to aid in the proper processing of SAR data.*

### Data Archives

MichiganView maintains a large archive of imagery available for download. Current archived data holdings include:

- Landsat 5, 7, and 8 data with links to select cloud-free images.
- Statewide NAIP imagery for 2005, 2006, 2009, 2010, 2012, and 2014.
- MODIS Clear Sky Archive, cloud free MODIS images of the entire state.
- Great Lakes Border Flight imagery, high resolution airphotos of Michigan's coastal areas.
- Links to interactive web-maps and data viewers that allow users to access derived data products from a variety of Michigan-centric remote sensing projects.



*Landsat 8, Keewenaw Peninsula, Upper Peninsula, Michigan, May 30, 2016*

## MichiganView Consortium Membership

Michigan Technological University

University of Michigan

Radiation Laboratory

Michigan Tech Research Institute

Michigan Tech Geological and Mining Engineering and Sciences

SNRE School of Natural Resources & Environment University of Michigan

**MichiganView Principal Investigator:**
**Dr. Nancy French**
**Michigan Tech Research Institute**
**734-913-6844**
**nhfrench@mtu.edu**

MichiganView

**http://www.michiganview.org**

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