



# IOWAVIEW REMOTE SENSING ACTIVITIES 2014 - 2015



## REMOTE SENSING EDUCATION - MAPGIVE EVENTS

Four workshops were held in 2015 to train over 80 participants of various audiences and age groups on using remotely sensed imagery to create GIS data to help local and international areas without existing or easily accessible GIS data. These workshops are a high priority for Iowa since students and many adults don't have exposure to remote sensing or GIS and aren't offered enough opportunities to learn and give back their time to help others both in Iowa and globally.

IowaView is using OpenStreetMap and MapGive tools to engage varied audiences about the value and use of remote sensing and other geospatial technologies. IowaView does two hour events that begin with training using TeachOSM to introduce the OSM ID mapping tool; buildings and other features are mapped for a small Iowa town to give attendees practice with a local connection. Later, the group is introduced to the MapGive task manager and mapping for humanitarian projects across the world.



*Top left: An image from an event in July 2015 at the Iowa 4-H youth summer conference, "Dare to Discover." Top Right: View over a participant's shoulder at the MLK Jr. Day of Service, January 2015. Bottom Image: Afternoon session of MLK Jr. Service Day event, January 2015.*

## INVENTORY OF NUTRIENT MANAGEMENT PRACTICES



*An example of the conservation practices being collected: grassed waterways (neon green), terraces (yellow), grassed riparian area (orange), forested riparian area (dark green); base photo is color infrared.*

There is a critical need for the development of tools and data to inventory nutrient management practices in the upper Midwest. Many corn-belt states have been required by the US EPA to develop nutrient reduction plans to reduce the amount of agricultural fertilizers reaching the Gulf of Mexico via the Mississippi River Basin. The Iowa Nutrient Research Center at Iowa State University funds a project to develop technologies to inventory and monitor conservation practices that could potentially meet nutrient reduction targets for watersheds. The Iowa Department of Natural Resources also funds a related project inventorying an expanded set of conservation practices. IowaView staff are coordinating portions of both projects at the ISU GIS Facility and funding part of a student's time to digitize practices using aerial imagery and elevation data.

February - June 2015 IowaView staff created file geodatabases to store data for six conservation practice data types (grassed waterways, terraces, water and sediment control basins, pond dams, stripcropping, contour buffer strips). Students digitized conservation practices in a total of 40 HUC 12 watersheds. Staff prepared watersheds for work, monitored student progress, performed visual quality control on data results, generated metadata and distributed final datasets to public Iowa and federal agencies.

IowaView 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.



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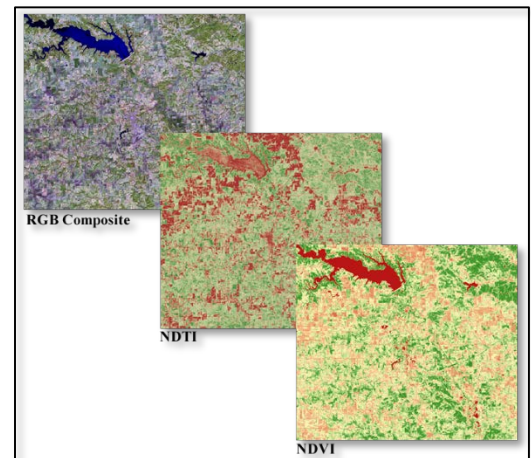
## MAINTAIN DATA ARCHIVE



IowaView supports the development and maintenance of a publicly available remote sensing data archive for the state. In FY14, IowaView staff maintained and supported the Iowa Geographic Map Server (aka the Orthoserver, <http://ortho.gis.iastate.edu/>) and its collection of web services. The 2014 National Agriculture Imagery Program (NAIP) color and color infrared imagery is now part of the Orthoserver collection. IowaView staff created services for 2014 natural color and color infrared summer imagery, available to the public via WMS ([http://ortho.gis.iastate.edu/IGMS\\_WMS.html](http://ortho.gis.iastate.edu/IGMS_WMS.html)) or ArcGIS REST services on the GIS Facility website. The archive contains an almost complete set of Landsat 7 and 8 imagery 2000 to 2014, as well as value added products such as NDVI, NDTI, and an RGB composite image, for each Iowa scene.

## BENEFITS TO IOWA

- **Remote Sensing Education via MapGive Events** - This is a high priority for Iowa since students and many adults don't have exposure to remote sensing or GIS. These events give participants a gentle introduction to remote sensing/GIS and provide a hands-on service learning project to reinforce and demonstrate what they have learned.
- **Inventory of Nutrient Management Practices** - This project is a priority in Iowa and other upper Mississippi River Basin states because the 2008 Gulf Hypoxia Action Plan has a goal of reducing nutrient loads to the Gulf by 45%. This has the potential of impacting every agricultural producer in the state; the ability to inventory and monitor changes on the land will be critical to measuring the success of the overall conservation program.
- **Maintain Data Archive** - The Orthoserver has become a dependable resource for statewide imagery, elevation and related remotely sensed datasets. Users from the ISU campus, public agencies, private companies and individuals access the data for many reasons and the use grows each year. Keeping the data accessible and adding new datasets is important to enable continued research, analysis, discovery and education for Iowans.



*IowaView collaborators created a Python/ArcGIS tool to batch process Landsat .gz and .tar files to calculate the Normalized Difference Vegetation Index (NDVI), the Normalized Difference Tillage Index (NDTI) and create an RGB composite raster.*

## IOWAVIEW CONSORTIUM MEMBERSHIP

The mission of the IowaView consortium is to increase the knowledge and use of remote sensing and other geospatial technologies for the benefit of the citizens of Iowa, through education, research and service. IowaView supports the collection and management of publicly accessible remote sensing data archives, including the Iowa Geospatial Infrastructure (IGI), Iowa's contribution to the National Spatial Data Infrastructure (NSDI).



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