

IndianaView

Remote Sensing Activities

2013 - 2014

Providing Remote Sensing Education

Geospatial Lesson Plans for Middle School

IndianaView, in partnership with the Geography Educators' Network of Indiana (GENI), developed geospatial lesson plans, student tutorials, and on-line educational inter-actives directed towards middle school students built around the theme of natural hazards. The activities introduce GPS, Remote Sensing and GIS to students in grades 6-8, but can be adapted for younger and older students. The lessons are tied to the Indiana Academic Standards: Social Studies, Science English/Language Arts, and Math. This project was a result of a need identified by several IndianaView consortium members for education and outreach materials that use and highlight the state geospatial data initiatives. This project follows a previous duo of geospatial lesson plans that were generated for high school students. That material is available from the GENI web site (www.iupui.edu/~geni). The middle school lesson plans will be available from the same site after testing has been completed.



Path of a tornado, a natural hazard, near Washington, IL on November 16, 2013 is illustrated in this natural color image.

Benefits to Indiana

Geospatial lessons, developed by IndianaView and its partners, introduce middle school students to GPS, Remote Sensing and GIS by exposing them to state resources such as IndianaMap which incorporates over 270 layers of maps, the state climate web site (iClimate) for drought maps, Indiana Geological Survey data about earthquakes in Indiana and USGS sites for maps of forest fires (MODIS data).

IndianaView 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.



Supporting Remote Sensing Projects

Mini-grant: Assessment of Tree Canopy Change at Indiana University, 2008 - 2012

Mini-grants are used to fund projects conducted by the consortium partners to promote the use of remote sensing image data. The most recent mini-grant funded an Assessment of Tree Canopy Change at the Indiana University - Bloomington campus (IUB).

Trees on the IUB campus are an integral component of the character, health, beauty and distinction shared by visitors, students, and life-long residents near campus (www.indiana.edu/~spea/pubs/woodland.pdf).

Construction of new facilities and infrastructure and natural processes have resulted in recognizable declines to campus trees and forests. This project mapped canopy cover in 2008 and 2012 on campus and in surrounding neighborhoods. Results suggest canopy cover has declined in the study area by approximately three percent.

The tree canopy change study results are being used by the Indiana University Office of Sustainability's Environmental Quality and Land Use Committee to address one of their four focus areas (Land) and a specific campus goal "To ensure sustainable open space planning."



Example of an area within the Indiana University Bloomington Campus study area with significant tree canopy change from 2008 (left) to 2012 (right).

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Other IndianaView Projects

MultiSpec

MultiSpec is a free remote sensing software application that is used for education and research. Features added in 2014 allow users to easily combine the individual Landsat 4 band files provided by USGS into a single GeoTIFF image file similar to what can be done for Landsats 5, 7 & 8 and the ability to mosaic two images side by side or top to bottom. Another feature is the ability to specify “no data” or “fill data” values for statistics calculations.

A new tutorial made available on the MultiSpec web site illustrates how to use the “Change Image File Format” processor to manipulate the channels in an image file. The tutorial uses an accumulated daily growing degree day image file, one image channel for each day of the year, as an example.

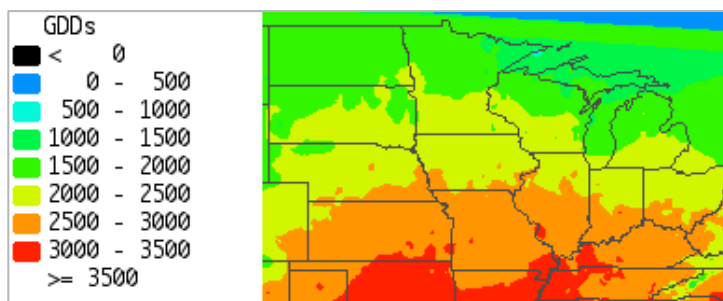


Illustration of growing degree days (gdd) for the Midwest accumulated from May 1 to September 7, 2014 that was created using MultiSpec.

engineering.purdue.edu/~biehl/MultiSpec/

IndianaView GloVis

The IndianaView portal provides easy access to analysis-ready images of Indiana including Landsat, ASTER and other image data such as MODIS Leaf Area Index (LAI) products and USDA National Agriculture Statistics Service crop data layers. Links are provided to a portal operated by a consortium member, Indiana University, which provides the aircraft acquired orthographic image data and to IndianaMap which provides many geospatial layers of information operated by consortium members IGIC & the Indiana Geological Survey. A link is also provided to a subscription service called PRESTIGE for near-real time MODIS data from Purdue's Terrestrial Observatory.

www.indianaview.org/glovis/

gis.iu.edu/

www.indianamap.org/

www.purdue.teragrid.org/prestige

IndianaView Consortium



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Researchers and educators at partner institutions Indiana State University, Indiana University, Martin University, University of Notre Dame, the Indiana Geographic Information Council and CUSIS have participated in the IndianaView migrant program with projects involving K-12 education, general public outreach, research studies and educational lab development. Fact sheets are available at: www.indianaview.org/fact_sheets.html

Partners have used the Landsat data available from the IndianaView GloVis portal and have shared image data from their own research libraries to be added to the portal.

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