



SOUTH DAKOTA VIEW REMOTE SENSING ACTIVITIES 2014 - 2015



SOUTH DAKOTA LAKES – A LOOK FROM ABOVE

For the past three years, South Dakota View (SDView) has participated in the Big Sioux Water Festival, an event held annually on the campus of South Dakota State University for 4th-grade students, their teachers and chaperones. First held in 1993, this event is attended by an average of 1000 4th-graders each year.

For the 2015 event, SDView prepared an activity entitled "South Dakota Lakes - A Look from Above." This activity used ArcGIS Online to familiarize students with the location of selected lakes in eastern South Dakota using remotely sensed imagery as a background for the map. Additionally, students learned some "Fun Facts" about the lakes from the popups that appear by clicking on a lake.

Other layers available to display on the map were the state boundary, county boundaries, a latitude/longitude grid, interstate and other highways, railroads, cities and towns, major rivers, and additional lakes.

Handouts were made available for students to take home and for teachers to use in the classroom. They included an ArcGIS Online worksheet packet, a listing of geospatial websites, a Landsat mosaic of South Dakota, and a shaded relief map of South Dakota.

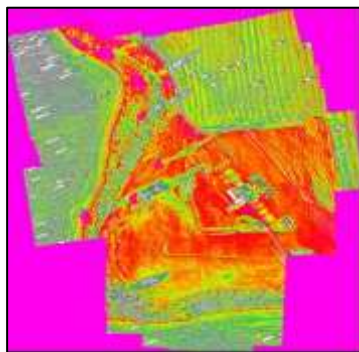


Fourth-grade students using an ArcGIS Online web application and Landsat imagery to learn about South Dakota lakes at the 2015 Big Sioux Water Festival

STUDENT MINI-GRANTS

Mini-grants were awarded to two graduate students in support of their projects involving geospatial technologies and data.

An award for a project entitled "The Integration of UAS (Unmanned Aircraft Systems) Data into Geographic Education" enabled the recipient to purchase software and a lightweight digital camera for use in the development of five laboratory exercises for the Air Photo Interpretation course in the South Dakota State University Department of Geography.



A Normalized Difference Vegetation Index (NDVI) orthomosaic created in a laboratory exercise developed by a mini-grant recipient

The second recipient used the mini-grant funding to purchase three tiles of high-resolution imagery in support of a project entitled "Mapping and Estimation of Water Storage Capacity of Small Water Bodies in the Limpopo River Basin (Southern Africa)." The imagery was used to validate estimates of water bodies in representative areas of the study watershed obtained through the use of lower-resolution imagery and multispectral water indices. This validation provided the confidence needed to extend the water body estimates to the entire study area.

BENEFITS TO SOUTH DAKOTA

As part of the AmericaView organization, SDView works synergistically with the other AmericaView states to **expand the utilization of remotely sensed imagery and technology for the benefit of its citizens, scientists, researchers, and educators.** Each AmericaView state has different needs and thus undertakes different projects to service those needs. **Educating the current workforce as well as the workforce of tomorrow (K-16 students) about the benefits of remote sensing and related geospatial technologies is a major area of emphasis for SDView.** This year's *South Dakota Lakes – A Look from Above* project and the Student Mini-Grant awards are two examples of those education efforts. In previous years the SDView education efforts have included workshops for K-12 teachers and 4-H educators and a statewide geospatial conference for current and potential remote sensing data users. All of these events create awareness of remote sensing products and their use for practical applications that are of benefit to the state's economy and the environment.

South Dakota View 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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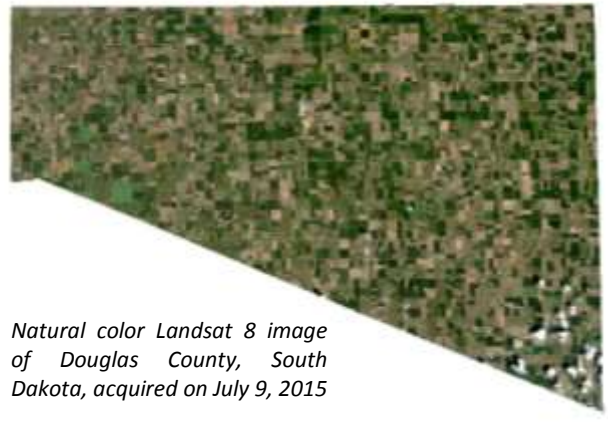
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ADDITIONAL SOUTH DAKOTA VIEW ACTIVITIES

Landsat Imagery of South Dakota Counties

Landsat satellite imagery acquired during the 2015 growing season was selected for each county in South Dakota based upon cloud cover and other quality factors. The multiband image files for each county are available upon request from SDView and will soon be available for downloading from the SDView website (<http://sdview.sdstate.edu>). The imagery is valuable for a variety of purposes including classroom instruction, precision agriculture, natural resource management and inventory, land cover mapping, and surface water evaluation. The images also have aesthetic appeal as wall hangings in government offices, professional buildings, and private homes. Additional information such as town names, highway identification, and lake names can be added by using geographic information system or other image processing software.



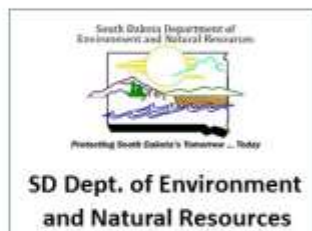
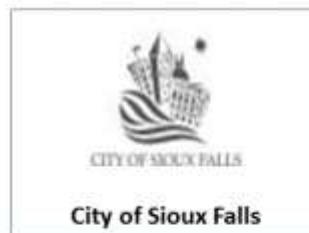
Natural color Landsat 8 image of Douglas County, South Dakota, acquired on July 9, 2015

Extending the Reach of SDView to Developing Countries

Students, such as Fulbright Scholar Angelinah Rasoeu from the southern African country of Lesotho, often extend what they have learned in a South Dakota university classroom to the benefit of their home country. In Angelinah's case, the assistance she received from SDView enabled her to use geospatial data and methods to assess whether or not irrigation would be beneficial for Lesotho based on its topography, climate, soils, and cropping practices. Similarly, the Limpopo River Basin in southern Africa will benefit from Esther Mosase's study involving the mapping and water storage capacity of small water bodies in that basin. Esther is one of the SDView student mini-grant recipients.

SOUTH DAKOTA VIEW CONSORTIUM MEMBERSHIP

The SDView mission of **expanding the utilization of remotely sensed imagery and technology for the benefit of its citizens, scientists, researchers, and educators** is accomplished via a consortium of partners from throughout the state. The entities listed below in addition to many universities, technical institutes, and tribal colleges in the state have worked with SDView during 2014-2015 in a variety of activities that further the mission and goals of SDView.



Federal consortium members identified above do not receive funding from AmericaView.

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<http://sdview.sdstate.edu>