



NORTH DAKOTA VIEW 2018 - 2019



NORTH DAKOTA VIEW HISTORY AND SUCCESSES

North Dakota View has been engaged in outreach, teaching and research since 2004.

- Hands on training on remote sensing and geographic information system (GIS) at Turtle Mountain Community College. This project allowed students to investigate changes to the reservation using global positioning systems (GPS), Landsat, and aerial imagery.
- Development of a web-based community mapping project at Fort Berthold to document the Bakken oil boom, and its impact on the reservation and western North Dakota. The objective of this project was to provide a central location and simple way of viewing spatial data showing changes due to energy development. The information is being updated periodically.
- Developed and use an augmented reality sand box to illustrate land surface changes from a remote sensing perspective. North Dakota students and educators from grade school through university level have attended workshops around the state by NDView personnel. This popular tool mixes reality with computer technology to produce and project instant, colorized topographic maps onto land forms that students create to study the Earth's surface.



Middle school students work on watershed exercise with augmented reality sand box, 2019.



Working with UAS for data collection.



3D model example from workshop with ND Geographic Alliance.

NDView has also provided many scholarships to students engaged in research using geospatial tools such as remote sensing imagery (e.g. Landsat), GIS and GPS. Students at the University of North Dakota and North Dakota State University have been recipients of these scholarships and their research has included:

- Use of Landsat and Unmanned Aerial Systems (UAS) acquired imagery for the investigation of tile drainage on cropland hydrology in the Red River Valley, ND.
- Remote location of elk herds using GPS collars and habitat mapping from Landsat imagery. This study was a partnership with the North Dakota Game and Fish Department to identify potential conflict zones between elk and croplands. Locations included the Standing Rock Reservation, Turtle Mountain and the Pembina Hills.
- Comparison and correlation of satellite imagery with ground-based sensors for studying the phenology of grasslands at the University of North Dakota Oakville Field Station.

North 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. AmericaView is funded by USGS grant agreement G18AP00077.



AmericaView Website:

www.AmericaView.org

Christopher McGinty, Executive Director:

chris.mcginty@americaview.org

Lisa Wirth, Program Manager:

lisa.wirth@americaview.org

Brent Yantis, Board Chair:

rodney.yantis@louisiana.edu

NORTH DAKOTA VIEW 2018 - 2019 ACTIVITIES

The main focus for North Dakota View for the past year was education and training on environmental applications of unmanned aerial systems (UAS). A one day workshop was given at the ND Geographic Alliance Summer Institute for K-12 teachers. Participants were introduced to low cost software for creating 3D spatial models from digital imagery. The workshop was held at Minot State University. Teachers collected imagery from around campus and completed a series of exercises. Workshop materials were also provided in digital form for future use by the teachers with their students.

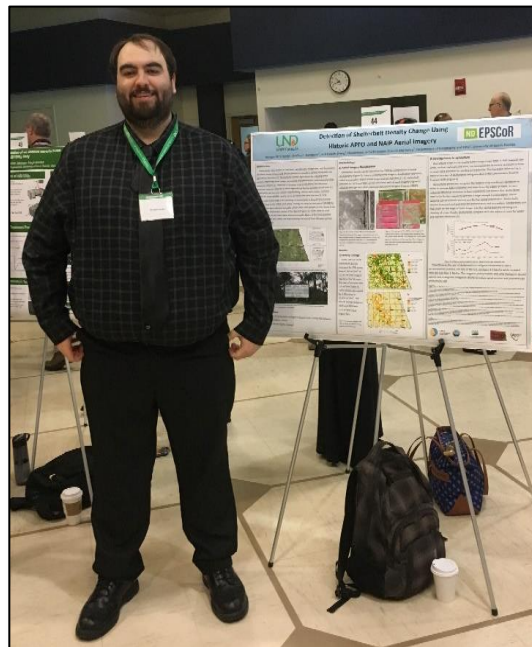
NDView purchased software (DroneDeploy, Pix4D, ERDAS Imagine) for UAS mission planning and analysis, and supported additional training. The software has been made available to the University of North Dakota campus through shared licenses and an open computer lab.

Student research scholarships for \$750 each were awarded to two graduate students and one undergraduate student at the University of North Dakota. Students have used the awards to conduct research, and present findings at a national conference. In addition, two students were hired to maintain the NDView website, and process and update new information on North Dakota's natural resource development.

Activities by NDView and its collaborators have advanced the training of teachers and researchers in the state and region with new skills in geospatial technologies. Advanced software tools have been made available for the professional development of students and community members.



Science fair students learning about watersheds and remote sensing, March 2019.



NDView supported student research presentation.

North Dakota View Principal Investigator:

Bradley Rundquist

University of North Dakota

701-777-4589

bradley.rundquist@und.edu



<https://arts-sciences.und.edu/academics/geography/index.html>



[Facebook.com/groups/91074880028](https://www.facebook.com/groups/91074880028)