



MONTANAVIEW 2019 - 2020



MONTANAVIEW 2019 - 2020 ACTIVITIES

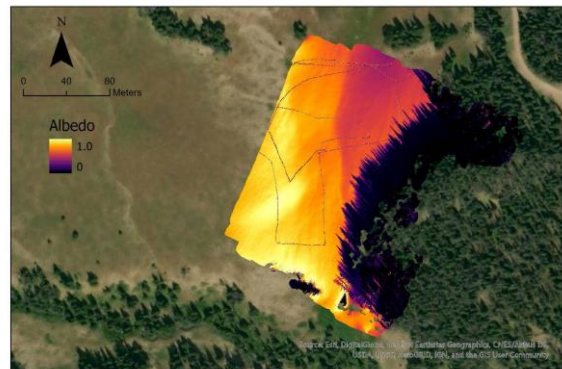
MontanaView successfully completed two “High Impact Activities” during the grant period 2019 – 2020.

High Impact Activity #1 was titled, “Fellowships for undergraduate and graduate students conducting applied remote sensing projects.” The goal of this activity was two-fold: 1) to support students and provide encouragement and resources for them to pursue a career in geospatial sciences and remote sensing; and 2) to benefit the state of Montana by providing information, data, and analysis that will improve the management of natural resources. MontanaView awarded 7 fellowships (ranging from \$750 to \$1,500) to students at four institutions across Montana.

The following is a list of the students and their institutions, project titles, and mentors (in parentheses):

- Matthew Cunningham, University of Montana, Deriving surface fuels from conventional UAS imagery for new fire models (Anna Klene)
- Lochlin Ermatinger, Montana State University, Investigating the abundance and distribution of nectar resources for natural enemies of the wheat stem sawfly (David Weaver)
- Zachary Goodwin, University of Montana, Snowpack ablation and ditch irrigation in the Skalkaho Creek subbasin, Bitterroot Valley, Montana (Anna Klene)
- Patrick Jackson, Montana State University, Geographic patterns of the invasive pathogen PKD in headwater streams of the Missouri River (Nick Fox)
- Sierra Luoma, Montana Tech, The integration of a fluxgate magnetometer with an unmanned aircraft system (Xiaobing Zhou)
- Andrew Mullen, Montana State University, Assimilating UAV and satellite data for improved albedo products (Eric Sproles)
- Logan Swanson, Salish Kootenai College, Encroachment in the wildland/urban interface in the Jocko Valley (Robert Kenning)

Each student presented their work at the MontanaView Annual Fellowship Meeting on April 23, 2020, and submitted a final written report to MontanaView and the identified project stakeholder(s).



Albedo sensor framework (left) and derived high resolution albedo map (right) from Andrew Mullen's MontanaView remote sensing fellowship project.

MontanaView 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.



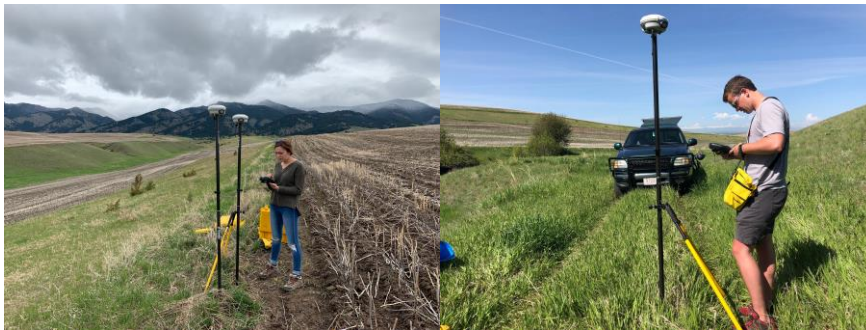
AmericaView Website:
www.AmericaView.org
Christopher McGinty, Executive Director:
chris.mcginty@americaview.org
Lisa Wirth, Program Manager:
lisa.wirth@americaview.org
Brent Yantis, Board Chair:
rodnev.yantis@louisiana.edu

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High Impact Activity #2 was titled, "Remote sensing research for precision agriculture." The goal of this activity was to provide support for undergraduate research assistants to assist in precision agriculture research at Montana State University. Two undergraduate students were funded through this High Impact Activity: Hailey Webb and Nathaniel Barnes (pictured below), both 2020 graduates of Montana State University, from the Department of Land Resources and Environmental Sciences. Hailey and Nathan led the remote sensing and field data collection efforts, as well as data processing, data analysis, and writing. A manuscript based on their work is currently in review in the journal *Precision Agriculture*, titled, "Does drone remote sensing accurately estimate soil pH in a spring wheat field in southwest Montana?"



Aerial photograph acquired from a drone in late summer of 2019 (above), and ground photograph (below) of a precision agriculture study site near Bozeman, Montana.



Hailey Webb (left) and Nathaniel Barnes (right), 2020 graduates of Montana State University, conducting field data collection for a precision agriculture research project.



MONTANAVIEW CONSORTIUM MEMBERSHIP



MontanaView Principal Investigator:

Scott Powell

Montana State University

(406) 994-5017

spowell@montana.edu



www.montanaview.org