



MONTANAVIEW 2020 - 2021



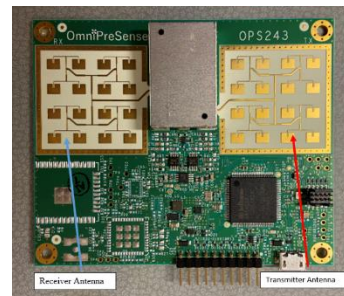
MONTANAVIEW 2020 - 2021 ACTIVITIES

MontanaView successfully completed the High Impact Activity “Fellowships for undergraduate and graduate students conducting applied remote sensing projects.” The goals of this activity were to 1) support students and provide encouragement and resources for them to pursue a career in geospatial sciences and remote sensing; and 2) benefit the state of Montana by providing information, data, and analysis that will improve the management of natural resources. MontanaView awarded 10 fellowships (\$1,500 each) to students at six institutions across Montana.

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

- Brenna Hatch, University of Montana, Using UAV imagery to monitor endangered Asian elephants and their habitat in the Khaling Duar Forest Reserve (Dr. Anna Klene)
- Shira Ellenson, University of Montana, Arctic greening: 25 years of tundra biomass change from in-situ and remotely sensed observations (Dr. Anna Klene)
- Erik Killian, Montana State University, Using remote sensing to improve large scale barley emergence measurement (Dr. Jennifer Lachowiec)
- Sasha Loewen, Montana State University, Data intensive adaptive management in organic agriculture (Dr. Bruce Maxwell)
- Ninad Bhagwat, Montana Tech University, Estimating the snowmelt derived runoff in the upper Missouri River basin with snowmelt runoff modeling (Dr. Xiaobing Zhou)
- Quinn Powell, Montana Tech University, A miniaturized radar sensor and GPS system integrated to an Unmanned Aerial Vehicle (Dr. Xiaobing Zhou)
- Chris Fryett, Montana State University Billings, Changes in landscape and environmental testing at the Billings regional landfill (Dr. Joe Hoover)
- Margaret Anderson, University of Montana Western, Lateral channel migration on beaver dominated streams: California Creek, southwest Montana, USA (Dr. Arica Crootof)
- Jenniffer LaCounte, Salish Kootenai College, Salish place names for CSKT’s forest management areas (Dr. Robert Kenning)
- Rachel Tom, Salish Kootenai College, Engaging the public with sustainable forest management projects through remote sensing (Dr. Robert Kenning)

Students presented their work at the MontanaView Annual Fellowship Meeting on April 25, 2021, and submitted a final written report to MontanaView and the identified project stakeholder(s).



Drone (left) and electronic components (right) of a miniaturized radar sensor and GPS system integrated to a UAV by Quinn Powell for his 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.



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MontanaView supported graduate student Zach Fighter of Montana State University, on his research titled “Multi-scale analysis of *Ventenata* control treatments on the Crow Reservation.” *Ventenata dubia* is an invasive winter annual grass that impacts plant community diversity and forage production. Zach’s project aims to test the integration of two herbicides and an organic soil amendment for controlling *Ventenata*. Vegetation response to treatments will be measured with in-situ field measurements as well as with multi-scale remote sensing, from the leaf-level with a handheld spectroradiometer, to the plot-scale with a multispectral sensor on a drone, to the landscape-scale with multispectral satellite observations. The expected outcomes of the study are to determine effective management methods and to understand the spectral and temporal responses of *Ventenata* to treatments.



Invasive winter annual grass *Ventenata dubia* in Montana.



Top: Zach Fighter (right) and Scott Powell (left) flying a drone at a field site on the Crow Reservation, Montana. Bottom: Zach Fighter (right) and Jane Mangold (left) applying herbicide treatment to a plot.



MONTANAVIEW CONSORTIUM MEMBERSHIP



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