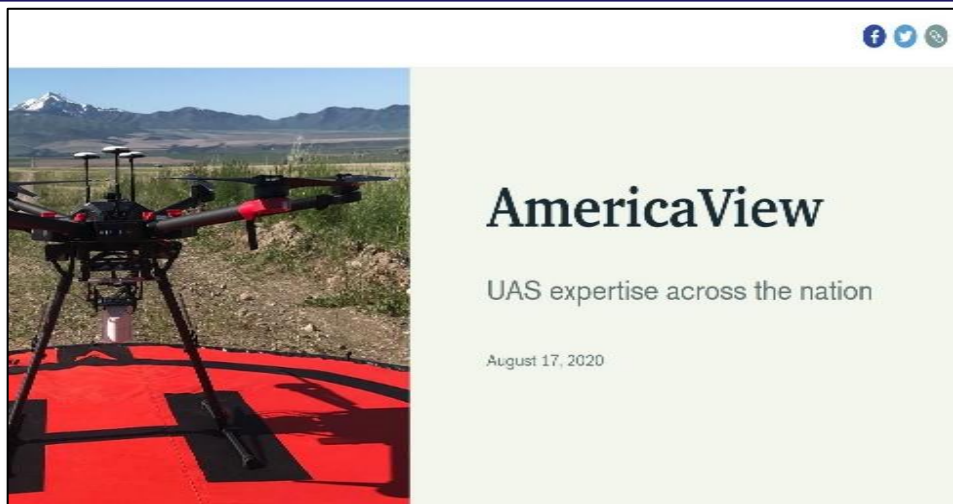


IDAHOVIEW 2019 - 2020 ACTIVITIES

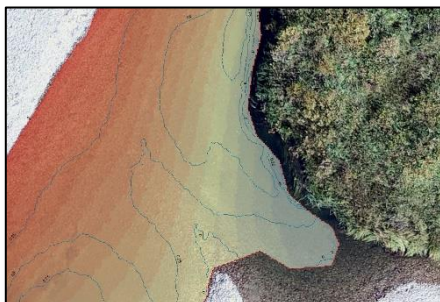
The Unmanned Aircraft Systems (UAS) Working Group, now the Earth Sensors Research Committee (ERSC), collected highlights detailing stateviews' UAS domain expertise, research, and sensor/platform capabilities. Images and specific examples of education, outreach, and research were coalesced into a StoryMap (see image on right). The StoryMap showcases the diverse use of UAS sensors across urban, agriculture, forestry, and other natural resource sectors. Further, links to educational resources on AmericaView's Youtube channel were included in the StoryMap.



AmericaView StoryMap highlighting UAS expertise, research, and capabilities across the AV network. <https://storymaps.arcgis.com/stories/efc33add7bf34b3d85e9f23896cd2b15>



Floating temperature loggers



Mapping thermal gradient in stream system

IdahoView's 2019-2020 HIA was to map thermal environments of sagebrush and Red Band Trout and their response to heat stress using advanced thermal sensors. Using the MicaSense Altum multi-camera system (thermal, multispectral, optical) mounted on a boom we surveyed small desert streams and sagebrush plots. Red Band trout is a fish species native to Idaho that inhabits desert stream systems in south central Idaho. In the summer of 2020, IdahoView PI Delparte and a graduate student surveyed stream temperatures and water depths along 5 small desert stream systems.

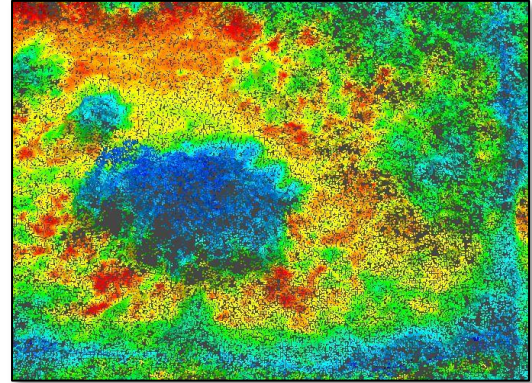
To calibrate the thermal sensor, we used floating temperature loggers (see left top image). The MicaSense camera recorded surface temperatures that were within +/- 0.2 °C. Each individual camera image was stitched together using structure from motion software and exported to a thermal mosaic for digital mapping (see image bottom left). To determine the difference of temperatures within the water column, we recorded temperatures at different depths and secured a logger to the river bottom with another floating above. There was no temperature difference between depths which indicated sufficient water mixing through stream flow. The thermal mapping revealed that certain areas along the stream corridor exceeded trout survival tolerances. To avoid these areas, trout are forced to navigate via different connecting pools and water corridors. Collaborating scientists are collecting genetic material from these fish to examine thermal thresholds and their ability to adapt.

BENEFITS TO IDAHO

IdahoView's HIA using advanced sensors to map thermal environments is a high priority in Idaho because remotely sensed information about thermal stress on sagebrush and trout could aid in understanding the adaptive capacity of plant function and fish tolerances in a changing climate. For example, decision making for native plant restoration projects in areas impacted by fire or other disturbance can be informed by the work done in this project as we study the long-term survivability of different species of sagebrush to thermal stress in common gardens. This project will continue and also act as a seed grant for future proposal development.

Engaging Students in STEM Activities

It is vital to Idaho's economy to educate a qualified workforce in Science, Technology, Engineering, and Mathematics (STEM) professions. Industries that require STEM are expected to increase in Idaho and across the nation. IdahoView actively engages graduate and undergraduate students in field data collection and the hands-on use of advanced sensors to address issues that impact Idaho's natural resources to aid decision making. Both undergraduate and graduate students are encouraged to participate in the research and communication of results to stakeholders through one-on-one interactions, posters and oral presentations.



Thermal capture of sagebrush in common garden



College of Southern Idaho students examine sagebrush characteristics in a common garden (Fall 2019)

IDAHOVIEW CONSORTIUM MEMBERSHIP



**Idaho State
University**



**BOISE STATE
UNIVERSITY**



University of Idaho

IdahoView partners:

- Promote the development of novel tools and techniques that allow translating remotely sensed data into information that is meaningful to decision makers
- Use remote sensing as a means to promote STEM interest and learning
- Seek to expand involvement to incorporate all higher education institutions in Idaho and any other interested parties
- Advance the availability and timely distribution of data by maintaining links to archives of publically available satellite imagery for Idaho
- Encourage the use and scientific application of remotely sensed data from advanced sensors

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