IDAHOVIEW 2020 - 2021 ACTIVITIES

With IdahoView taking the lead, the Earth Sensors Research Committee (ERSC) completed a UAS Storymap that is available for public viewing. This Storymap highlights 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

IdahoView's 2020-2021 HIA was to complete a Terrestrial LiDAR Analysis for Geohazard Identification. Railroad corridors in northern Idaho are subject to landslides, debris flows, and rock fall. These geologic hazards have the potential to severely impact railroad assets, profitability, and public safety, particularly when hazardous materials are transported. Recent slope instability and mass movement in these railroad corridors have affected rail operations and emphasized the need for a detailed understanding of geologic hazards and slope dynamics in this region to prevent river corridor contamination from materials transported in rail cars.
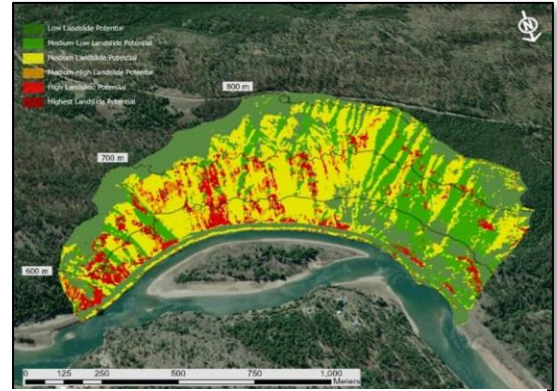
To monitor known landslide hazards LiDAR point clouds can be used to measure change at sites over time. In 2017 we flew LiDAR equipped UAS at sites along the Kootenai and Moyie Rivers in northern Idaho.

Rail cars along the Kootenai River in northern Idaho, August 2021

To monitor known landslide hazards LiDAR point clouds can be used to measure change at sites over time. We compared recent manned aircraft LiDAR data to data from 2017 that we flew with a LiDAR equipped UAS at sites along the Kootenai and Moyie Rivers in northern Idaho. Using a multiscale model to model comparison, we were able to quantify new mass movement activity at sites along the river corridors.

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DEMs generated from LiDAR point clouds can be used to identify landslide potential. We are using object-based image analysis (OBIA) with factors that influence landslide potential. For example, slope roughness, curvature, vegetation, aspect and elevation are integrated into a rule-based model. To identify critical slopes these morphological parameters are classified into hazard categories. Further we are exploring machine learning approaches to automate slope stability mapping. Machine learning is a division of artificial intelligence that uses statistical models and algorithms to recognize patterns in data and adapt. This project will continue and also act as a seed grant for future proposal development.

Landslide susceptibility map

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.

MS GIS student Dana Drinkall presenting her LiDAR research at a 3 Minute thesis event at ISU (Fall 2021)

IDAHOVIEW CONSORTIUM MEMBERSHIP

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