WyomingView 2022 - 2023

WyomingView 2022 - 2023 Activities

Number of WyomingView Interns Cross 100

This GY, the number of WyomingView student interns has crossed 100. The first intern was trained in the academic year 2004-05. These students were recruited from remote sensing classes taught at the University of Wyoming. They have worked on a range of topics, including crop growth, rangeland monitoring, tracking changes in water bodies, and mapping wildfires and floods.

In GY 2022-23, 4 interns worked on quantifying analyst bias in flood inundation maps generated with the rapid flood mapping (RFM) method. In 2021, WyomingView published a paper describing the RFM method, which generates maps of newly inundated areas and excludes pre-existing waterbodies. In this GY, 4 interns independently identified the threshold values for pairs of pre- and post-flood images and compared the accuracy of the maps. This applied research project addressed how analyst bias can affect identification of flooded areas.

One of the interns will present the first part of the findings in the 2024 AAG Annual Conference. The complete findings will be submitted to a peer-reviewed journal by summer 2024.

Post-flood image Landsat 8 shows both pre-existing and newly inundated areas. Mapping newly inundated areas will help emergency management agencies.

Yellowstone NP floor puzzle attracted approximately 65 students from Wyoming middle- and high-schools. Students were introduced to space-based Earth observation, Landsat program and the value of the archive for tracking changes in Earth surface. Event: STEM Carnival, Laramie, WY (2023).

K-12 Outreach @ STEM Carnival

The WyomingView PI was invited to participate in the Fall 2023 STEM Carnival. This event, hosted every fall, is aimed at introducing Wyoming middle and high school students to careers in STEM disciplines. Approximately 65 students assembled the Yellowstone National Park (YNP) floor puzzle and learned how Landsat images can be used to track changes in YNP and beyond.

In GY 2022-23, WyomingView reached out to 573 students (grade levels K-8).

- With the aid of multi-temporal images, eighth graders at Laramie HS saw the annual green-up and senescence at the continental and global scale *(196 students)*.
- Seventh graders in Laramie MS learned how satellite images are used for post-disaster assessment and recovery efforts (*165 students*).
- Fifth graders in Spring Creek ES saw the effects of how diverting water from two rivers converted the 4th largest inland water body – Aral Sea – to the world's newest desert.

EOD and outreach activities are effective to promote remote sensing applications and to recruit the next generation of students.

WyomingView 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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BENEFITS TO WYOMING

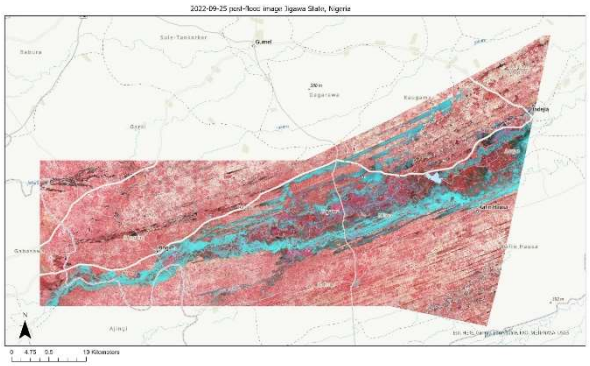
- WyomingView PI conducted 7 outreach sessions in **Saratoga Elementary School**, Saratoga, WY. This was the first in-person EOD activity outside Laramie.
- **192 students** from K-6th grade participated in these sessions. Like most Wyoming towns, Saratoga is located farther away from big cities and these students do not get opportunities to participate in outreach activities.
- **18 teachers** participated in these activities and connected the materials covered to their science and geography classes. Teachers appreciated this opportunity to introduce these young kids to several science applications, including observing the Earth from space, along with a brief history of Landsat program.
- WyomingView will travel to other rural schools in the state along with educators from the WY NASA Space Grant program. This partnership will provide access to many rural schools in the state.

These educational outreach activities benefit students to open their minds and talk about new opportunities across STEM disciplines.

Students learned about prominent landmarks in Yellowstone National Park, including the scars left behind by various wildfires. This photo was featured in Wyoming Tribune Eagle/Laramie Boomerang on May 18, 2023.

WYOMINGVIEW CONSORTIUM MEMBERSHIP

In GY 2022-23, all WyomingView interns worked on flood mapping projects.



Landsat 9 image acquired on September 25, 2022, shows the flooded areas in the Jigawa state located in northeastern Nigeria.

- Using Landsat 9 images, two interns generated inundation maps for 2022 floods that occurred in Nigeria. These students used the image thresholding method for identifying newly inundated areas.
- The inundation map was generated in less than an hour and had an accuracy of 90.56%.
- Currently we are preparing the manuscript that will be submitted to a peer-reviewed journal by summer 2024.
- Findings will be shared with the **International Charter on Space Disasters**. This information will be useful for generating inundation maps for future flooding events.

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