ARKANSASVIEW 2022 - 2023 ACTIVITIES
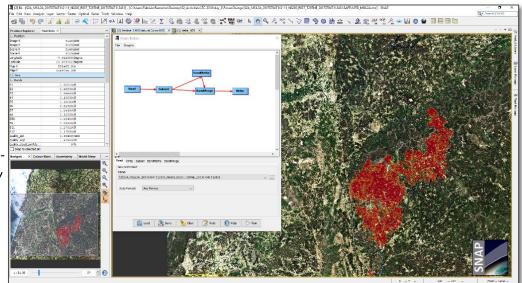
- ArkansasView has meticulously curated an upcoming workshop focused on Synthetic Aperture Radar (SAR) fundamentals and applications. This insightful event was conceived following a recommendation from Lisa Wirth, the esteemed Program Director of AmericaView, and has captured considerable interest among numerous AmericaView members. The workshop not only represents a valuable contribution by ArkansasView to the AmericaView Consortium but also presents a prime opportunity for the new Director of ArkansasView, Dr. Mohamed Aly, to establish broad collaborative connections with fellow StateView members.

- The SAR workshop offers an in-depth exploration of radar remote sensing and its wide-ranging applications across disciplines such as geology, geography, environmental, and agricultural studies. It primarily focuses on satellite SAR, delving into sensor geometry and its distinct capabilities, while introducing advanced radar remote sensing techniques including radar stereo, polarimetry, and interferometry.

- The specialized commercial SAR software packages are often too expensive for many researchers. Dr. Aly, in an effort to enhance the impact of the SAR workshop, undertook the demanding task of evaluating existing open-source software packages. The aim was to create hands-on exercises suitable for this brief workshop, utilizing freely available SAR data and an open-source processing package. Following careful assessment, the free, open-source SNAP software, developed by the European Space Agency (ESA), emerged as the choice. Its versatility allows for the processing of data from a multitude of satellite missions, including Copernicus Sentinel-1/-2/-3, ESA's SMOS mission, and third-party missions, significantly enhancing accessibility and utility.

- Furthermore, Dr. Aly facilitated online GIS training through the ESRI Virtual Academy, benefiting a substantial number of graduate and undergraduate students. Additionally, he assumed the role of an at-large faculty advisor at the GeoHog Conference hosted at the University of Arkansas in 2022.

A view of the SNAP desktop displaying a Copernicus Sentinel-2 image overlaid with the delta normalized burn ratio. SNAP is free, open-source software developed by the European Space Agency (ESA). Photo courtesy: ESA.

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BENEFITS TO ARKANSAS

- The SAR workshop holds the potential to greatly benefit the AmericaView community by enhancing their expertise in utilizing radar remote sensing data across the StateViews. This, in turn, advances crucial AmericaView objectives concerning education, training, technology transfer, and outreach. Furthermore, the materials created for the workshop will enrich a remote sensing course at the University of Arkansas, expanding its influence on both undergraduate and graduate students. This dual function not only supports ongoing education but also serves as a fundamental step in nurturing the future generation of leaders, scientists, and educators.

- This workshop endeavors to raise awareness regarding the distinctive capabilities of SAR sensors, seeking to empower the AmericaView community with the requisite knowledge to adeptly harness the upcoming NISAR data products from NASA. In partnership with the Indian Space Research Organization (ISRO), NASA is actively engaged in the development of NISAR, an InSAR mission tailored for monitoring natural hazards and an array of applications utilizing L- and S-bands. The anticipated launch date for NISAR is set for January 2024.

- Two graduate students from ArkansasView, enrolled at the University of Arkansas, embarked on specialized summer internships. Moamen Ahmed, a Geosciences PhD candidate, received partial funding from ArkansasView, leveraging the opportunity to showcase his expertise in research and remote sensing. Meanwhile, Travis Tipton, pursuing an MS in Geology, secured a fully sponsored internship through the Arkansas Geological Survey (AGS) to investigate active landslides in Arkansas. Throughout his internship, overseen by Martha Kopper, the Geohazard Section Supervisor at AGS, the collaboration with AGS expanded. This experience enabled Travis to continue exploring active landslides in his MS program, employing advanced machine learning techniques under the guidance of Dr. Aly.

- Moreover, Dr. Aly undertook the role of Coordinator for the Graduate Certificate in Geospatial Technologies (GISTGC) and became the Undergraduate Faculty Advisor for the Certificate of Proficiency in Geospatial Technologies (GISTCP) at the University of Arkansas. In addition to these responsibilities, he led online Global Campus classes focused on geospatial technologies. This platform allowed him to share his extensive remote sensing expertise with a broader audience, encompassing off-campus students from diverse industries and academic institutions across Arkansas. These courses stand as a crucial cornerstone for fostering the next generation of aspiring researchers and scientists.

ARKANSASVIEW CONSORTIUM MEMBERSHIP

Federal consortium members identified above do not receive funding from AmericaView.

ArkansasView Principal Investigator:
Dr. Mohamed Aly
University of Arkansas
479-575-3185
aly@uark.edu

Center for Advanced Spatial Technologies (CAST)
J. William Fulbright College of Arts and Sciences
University of Arkansas, Fayetteville, AR 72701

https://arkansasview.org