# MISSOURIVIEW
2020 - 2021

MISSOURIVIEW 2020 - 2021 ACTIVITIES

The increasing availability of geospatial data converged with recent advancements in artificial intelligence, machine learning, and cloud infrastructure offers the potential for breakthroughs in science, policy, and national security. To broaden the use of Earth Observation data and demystify machine learning and AI for remote sensing application, the development of easy-to-use teaching materials are necessary.

During 2020 – 2021 reporting period, we have developed three teaching materials for K-12 and college level courses (https://missouriview.github.io). These materials include: Missouri as Art, Forest Conservation with AI, and Water Disparity and Levee Management. These training modules are designed to promote the use of geospatial data and contribute to the mission of AmericaView by advancing K-12 and college education.

Additionally, MissouriView consortium students and faculty presented 29 posters at Geo-Resolution national conference held at Saint Louis University; GIS Day @SLU
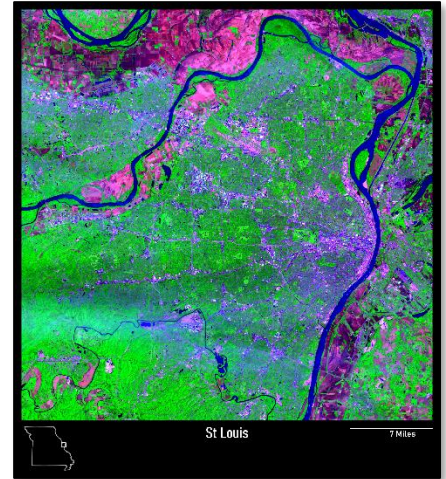
St. Louis region featured in Missouri as Art teaching materials that were created satellite imagery.

Lake of the Ozarks from satellite.

- Missouri as Art
  - We used creative combinations of visible and infrared light imagery from Landsat and other available satellite imagery data to introduce remote sensing with selected views of farmland, forests, rivers and streams, built environment, and cloud cover as artistic qualities of Earth's land features. This module can be used to teach fundamentals of remote sensing concepts to college students, high school teachers and students. LINK

AI for forest conservation in Africa

- Forest Conservation with AI
  - This is a 2-week course module on teaching AI for forest conversation, ideal for undergrad and graduate courses. Through codes, presentation, and an assignment provided in the module, students learn how to create a tropical forest map using U-Net as the segmentation algorithm with WorldView-3 imagery. LINK

Len small levee breach.

- Water Disparity and Levee Management
  - Inconsistent levee management is a major water equitability issue along the Mississippi River that is causing environmental disparities for under-represented communities. This project studied the issue of water equity along the Mississippi river, centered around levee maintenance and management using drone-based LiDAR and RGB photogrammetry. LINK

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BENEFITS TO MISSOURIVIEW

- Missouri as Art teaching material was created using creative combinations spectral bands of Landsat and Sentinel-2 satellite data. It provides intuitive teaching material for K-16 and the general public and promotes public knowledge of Earth Observation.
- Forest Conservation with AI is a two-week class module that benefits undergraduate and graduate courses to teach AI/ML applications with a practical example of deforestation mapping. Open-source code, tutorials, instructor solutions with power point presentation are provided as part of the manual.
- Water Equity project will provide excellent introduction to LiDAR and Photogrammetry techniques that can benefit undergraduate and graduate-level courses highlighting the issue of levee management in terms of water equity.
- As a first-year pilot project, our activities brought together major universities and innovation hubs in St. Louis metro region and provided a bi-state (Missouri and Illinois) platform for collaboration.

MissouriView member meeting held at SLU.
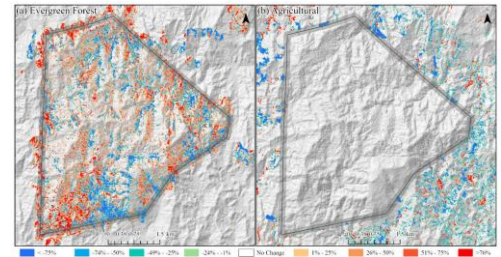
Changes in evergreen forest and agriculture explaining the impact of human activities to tropical forests.

MISSOURIVIEW CONSORTIUM MEMBERSHIP

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