



CALIFORNIAVIEW 2018 - 2019



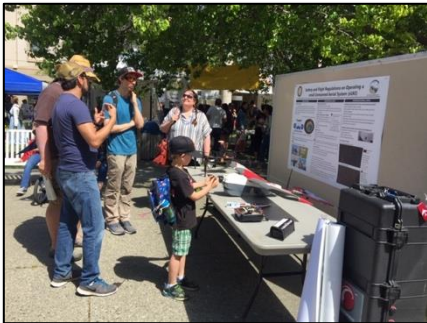
CALIFORNIAVIEW HISTORY AND SUCCESSES

CaliforniaView was housed at Department of Land, Air and Water Resources and Center for Spatial Technologies and Remote Sensing (CSTARS), University of California, Davis. CaliforniaView's vision is to promote and advance remote sensing education within the state of California utilizing predominantly USGS Landsat data sets to solve societal problems. It has become the state's go-to remote sensing educational resource since 2012. CaliforniaView has supported California's economy and sustainable environment by

- Providing imagery and geospatial tools to the workforce for damage assessment and disaster preparedness.
- Relaying data-driven information to stakeholders to support better-informed decision making on pressing environmental issues such as drought and wildfires.
- Educating and exciting the general public and educators about the benefits and applications of remote sensing imagery.
- Training educators and students on the accessibility of free Landsat data.
- Providing lesson plans guiding teachers on the implementation of remote sensing into their classroom curricula.



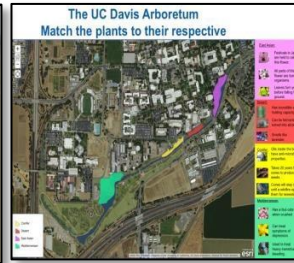
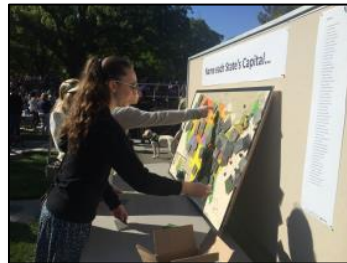
Landsat Mosaic of California created from a combination of Landsat 7 data during 1999 and 2002 and the National Elevation data.



The Drone showcase on 2019 Picnic Day, including (a) multiple sUAS system demos and poster presentations on applications, and (b) thermal imaging test.

To introduce remote sensing at the public venues, CaliforniaView has been hosting exhibitions at the annual University Open House (Picnic Day) at UC Davis with more than 70,000 visitors each spring. Interesting activities included a hands-on matching game with Landsat mosaic of California, a citizen science data collection-mapping project on campus, thermal infrared imaging test, and most recently a showcase of UAV systems including 3D Solo, DJI, and Precision Hawk, and of UAV applications with posters. .

CaliforniaView has been actively participated in the national AV Earth Observation Day to engage K-12th Grade as well as college students. Activities included a lunch seminar for faculty and students, remote sensing game posters for discussions on local and national environmental topics.



UC Davis students playing matching games for the state capitals (left) and plant identifications (middle), and participating in seminar and discussions on remote sensing applications in natural and agriculture resource management (right).

CaliforniaView 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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CALIFORNIAVIEW 2018 - 2019 ACTIVITIES

CaliforniaView is currently working on **“Promoting and advancing remote sensing education across disciplines”**. The state of California is facing a critical need for remote sensing specialists working in government, state and private sectors, particularly due to the cascading impacts of recent droughts and heat waves on agriculture and forestry.

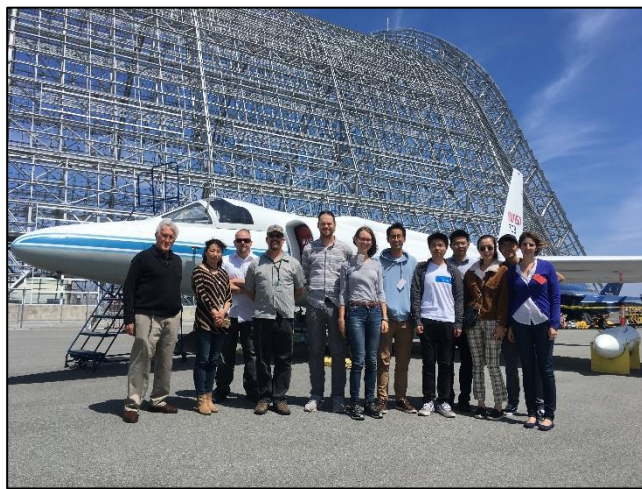
CaliforniaView has undertaken the following activities successfully to foster the interests, equip the students with the remote sensing skills for their research and future career:

(1) *Providing training on Google Earth Engine (GEE) to lower the barrier of using remote sensing data for research.* We hosted a joint workshop with Center for Spatial Science in February 2019. Demos covered a range of tools in GEE from exploring available data, fusion table, and GEE java scripts for analysis, including burn severity mapping and orchard planting year mapping.

(2) *Engaging students from multidiscipline in project-based research.* CaliforniaView supported two graduate students and two undergraduate interns in their research projects. Andy Wong, a PhD candidate from Hydrological Sciences, developed a pilot project on toxic algae bloom detection in Lake Tahoe using UAV technology. He has gained hands on experience on collecting aerial imagery, processing data, and developed automatic image segmentation. Yuhuan Huang, a PhD candidate from Geography, developed Random Forest machine learning models to identify key drivers for fire severity California inter-coastal mountain ranges, based on Landsat data. A manuscript about this work has been submitted to Climatic Change. Two interns were trained together by the graduate students on a few drone related projects; they learned how to operate drones and process UAV images with Pix4D.

(3) *Organizing workshops and coordinating on brown bag meetings on emerging remote sensing technologies and real-world applications in agricultural and natural resource management.* CaliforniaView sponsored the UCD mapping club for training on visualization of remote sensing and other geospatial data. For example, about 15 students around campus joined the Mapathon event this spring and were engaged with a lively discussion afterwards. We also coordinated and participated the campus wide drone show and talk events, which attracted undergraduate and graduate students from different major and graduate groups. We have reached out to potential presenters from academic, state and federal agencies, such as CAL Fire and Department of Water Resources, mostly based in Sacramento, and industries from bay area such as Planet and Climate Corp. Students will learn the real-world applications and also get a flavor of future career paths relevant to Remote Sensing and geospatial technologies.

(4) *Expanding the consortium by bringing together K-12 educators, faculty, and researchers from a variety of State universities and colleges, professional organization, and industry.* It also improved communication and encouraged close collaboration among consortium members. For example, we added a few partners from private industries including Climate Corp, Planet Lab, CERES Imaging, and LandIQ. We have established collaborative pilot projects with Climate Corp at the UCD Russell Ranch for remote sensing applications in precision agriculture; Planet Lab agreed to provide free commercial satellite data for our research.



Students from Hydrology, Ecology and Geography graduate groups at UC Davis visited NASA Ames Research Center, including the airborne facility tour and interactions with the “pixel-pushers” team.



UAV flight planning and training.

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