



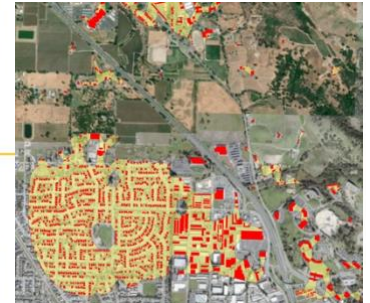
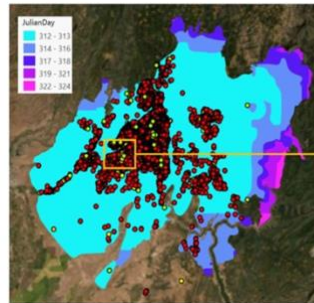
# CALIFORNIAVIEW 2020 - 2021



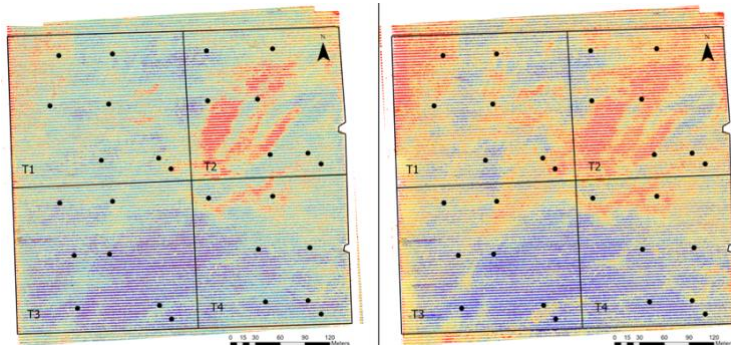
## CALIFORNIAVIEW 2020-2021 ACTIVITIES

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. In GY 2020, CaliforniaView has made great efforts to train and promote the applications of satellite and UAV technology in natural resource management and precision agriculture, in addition to the continuation of advancing remote sensing education across multiple disciplines.

**Engaging students in project-based research enhanced by deep learning and "big data".** CaliforniaView supported one Geography PhD student to develop deep learning approaches for mapping tree mortality and building footprint with high resolution imagery. A master student was trained to investigate the drivers rapid spread of large wildfires in California with a machine learning model. Another PhD student developed an automatic workflow to detect vineyard water stress using a machine learning model to combine UAV Imagery and weather data. Together they trained 8 undergraduate students.



(a) Damaged building footprints on daily fire progression map from MODIS/VIIRS. (b) Building footprint mapping with deep learning.



Variation of vineyard leaf water status predicted with a machine learning model driven by UAV multispectral imagery and weather data.

**Promoting interdisciplinary collaboration on deep learning and its applications.** CaliforniaView hosted about 9 zoom meetings to engage faculty and researchers from five departments at UC Davis, Cooperative Extension specialists, key industry partners such as SeeTree, Jain Irrigation, and Hortau, for open discussions. Key topics included tree level multi-sensor and multi-scale monitoring, yield prediction, and tree health forecasting, with deep learning. These resulted in closer collaboration across disciplines and fruitful discussion on proposals to

**Student training on UAV/drone remote sensing technology.** CaliforniaView co-sponsored UC DroneCamp and demonstrated drone technology advances and applications in various topics. Funding support was provided for selected DroneCamp participants from the under-represented communities. We also supported campus-wide drone user groups, UCD Drone Club, and MapTime. A drone lab was further refined on flight planning and image processing.



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.

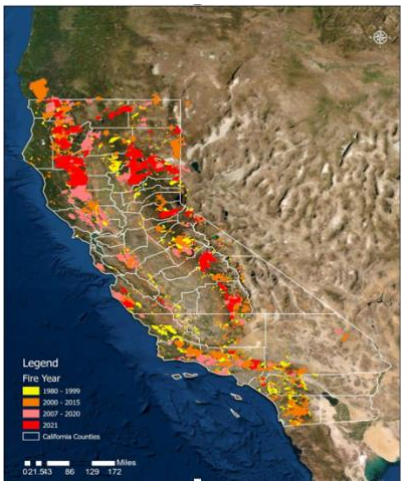


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## BENEFITS TO CALIFORNIA

California has experienced the most destructive wildfires in the past five years. As the most diverse and productive agricultural state, it also faces the challenge of minimizing water and N use while maximizing the yield. CaliforniaView's activities contributed to facilitate data-driven management for sustainable natural resource and agriculture by

- Providing demonstration and guidance to state agencies and the specialty crop industry on satellite and UAV remote sensing technology and AI capabilities.
- Training students to equip next generation workforce with remote sensing foundations and tools.
- Relaying the power of multi-scale remote sensing framework and workflow for upscaling drone-based sensing with high resolution satellite imagery, to support better-informed decision making across scales.
- Educating broader audience about the benefits and advances of remote sensing and AI applications.
- Building the bridge between private companies and end users via partnership.



(a) Ecosystem monitoring and machine learning based fire risk prediction to help fuel management prioritization for fire hazard reduction. (b) UAV technology for water stress mapping to improve vineyard irrigation management. (c) EOD activity on campus.

## CALIFORNIAVIEW CONSORTIUM MEMBERSHIP



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