

CALIFORNIA WILDFIRES: A COSTLY PROBLEM

Wildfires in California and along the Wildland Urban Interface (WUI) are increasingly becoming severe and costly. In fact, 13 of the largest and most destructive wildfires in California happened within the last five years. In 2020, fires swept across 10 million acres in the West, killing dozens and causing \$16 billion in property damage. Urgent assessment and response are necessary to save lives and property and to inform the public. The Department of Homeland Security (DHS) has a need to support the development of accurate situational awareness data on wildfires to enhance assessment and response to these calamities.

The DHS Science and Technology Directorate (S&T) identified several key findings that could substantially improve immediate life-saving efforts during WUI fire incidents, including the support of broader use of existing fire modeling and forecasting tools for pre-incident planning. These efforts include building requirements that improve operational capabilities and incident response to save lives in WUI fires. They also include advancing S&T's ability to create high-confidence, timely WUI-specific models that can be used to inform response tactics during extreme conditions.

SOLUTION: THE WIFIRE EDGE

The University of California, San Diego, is focusing on the development of the WIFIRE Edge, an integrated platform that leverages advances in edge computing. This platform is intended to assist S&T in the development of integrated sensing and artificial intelligence (AI), leveraging existing DHS investments in field sensors and technology.

Edge computing is a form of computing that is done on site or near a particular data source, minimizing the need for data to be processed in a remote data center. The project will develop a concept demonstration for two scenarios: 1) Initial attack response; and 2) Prescribed burn planning and monitoring using commercially available sensing technology, edge computing and next-generation fire modeling.

The objectives of this project are to: 1) Develop the WIFIRE Edge Platform to assist with the development of S&T's integrated sensing and AI at the edge; and 2) Demonstrate initial attack and prescribed burns' concept scenarios deploying and utilizing the WIFIRE Edge Platform.



CREATING BETTER OUTCOMES

The outcome of this project will be improved data quality, more accurate fire models, and a more dynamic data-driven capability to predict and monitor fires. This will provide response planners the essential information needed to allocate firefighting resources, safety procedures, and support decisions on evacuation at WUI fire incidents.

UPCOMING MILESTONES

- Project kick-off, Fiscal Year (FY) 2023 Quarter 1
- Technical report with pictures, test results, description of sensing unit and deployment checklist. FY23 Quarter 3
- Final report of project outcomes including simulations and map burn outcomes

PERFORMERS & PARTNERS

- University of California, San Diego, CA
- Federal Emergency Management Agency, Washington, DC