



FIELD STATION PROGRAMS

Fire Sensor Demonstration Project at Santa Margarita Ecological Reserve (SMER)

A coalition of community groups, businesses, universities and fire response agencies in the Fallbrook area have begun a project to install a network of early-warning fire sensors at the Santa Margarita Ecological Reserve. The project, based on a grant from the National Telecommunications and Information Administration of the Department of Commerce and generous matching funds from the project partners, has a total cost of \$1.2 million.

Purpose

To demonstrate the potential of new technologies to enhance fire safety in backcountry areas by alerting emergency response personnel about fire occurrence. The project will determine if fire sensor networks can be used to (1) detect ignition in surrounding areas, and (2) raise awareness of fire hazards and enhance fire preparedness in the Fallbrook community.



We are in the process of installing a network of 13 state-of-the-art wireless wildfire sensors, 4 weather stations, and 4 remote cameras in and around SMER. Critical broadband Internet connectivity to the reserve is provided by the High Performance Wireless Research and Education Network (HPWREN), a project funded by the National Science Foundation, along with a collection of ecological sensors and data, makes SMER a dynamic and engaging testbed for showcasing a real-time fire detection system. The data from the sensors and instruments will be delivered via pagers, email, and a website to emergency personnel and the general public. This project brings together various public, academic, community and business organizations, and the collaboration promises to have wide impact in the region.

Fire Sensors

FireAlert DCS by Ambient Control Systems is a standalone, self-powered sensor designed to detect and monitor wildfires. A patented infrared optic system scans 360 degrees horizontally and distinguishes wildfires from other thermal phenomena. When a fire is detected it transmits a message by radio to a receiver unit, which relays the message to a central computer server.

Notification System

A computer server deployed at SMER receives messages from the network fire sensors and automatically transmits notifications by email and telephone to computers,

phones, and pagers. The notifications will indicate which sensor detected a fire, in which direction, at what time, and where further information may be obtained. When a fire is detected by the network, a high-performance website hosted by the SDSU Visualization Center will display a regional map showing the estimated location of fire.

Education Website

An education website is being constructed at SDSU in consultation with the project partners. The website will indicate the current fire danger, calculated from weather stations at SMER, and feature webcams, current sensor network status, historical fire information, a community calendar, discussion forums, and wildfire preparedness instructions tailored for specific segments of the local population. A team from the SDSU School of Communication has designed a study to evaluate the effect of the education website on Fallbrook community.

Project Partners

- SDSU Field Station Programs
- Fallbrook Fire Safe Council – Tracy Ragsdale
- California Department of Forestry and Fire Protection – Fire Chief Rich Bolton
- North County Fire Protection District – Fire Marshall Steve Abbott
- SDSU Visualization Center – Dr. Eric Frost
- Mission Resource Conservation District
- Scripps Institute of Oceanography – Dr. Dan Cayan
- Ambient Control Systems – Jonathan Luck

Funding Agency

Department of Commerce Technology Opportunity Programs (<http://www.ntia.doc.gov/otiahome/top/>)

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high performance wireless [research and education network](#)