

April 24, 2019 | By Kimberly Mann Bruch

## UC San Diego's HPWREN Workshop Attracts First Responders, Scientists, Educators

### Firefighters discuss live streaming video from 'virtual fire towers'

On August 6, 2018, first responders received a 911 call reporting a fire. A quick check of a set of recently deployed fixed field of view cameras confirmed the presence of smoke, immediately followed by pointing the new [ALERTWildfire](#) PTZ cameras on [Santiago Peak](#) to confirm the fire's location within the Cleveland National Forest and its significant potential for major destruction. Notifications were sent to the applicable agencies.

That fire became known as the Holy Fire, which burned 23,136 acres and was finally contained more than a month later, on September 13. The new

cameras were deployed less than four months prior in partnership with [ALERTWildfire](#), the Orange County Fire Authority, Southern California Edison, and UC San Diego's High Performance Wireless Research and Education Network ([HPWREN](#)).

"Because we were able to determine post-fire that the smoke produced in the incipient phases of the Holy Fire was visible on these cameras prior to the initial 911 call, we plan on using this technology as 'virtual fire towers' in the future on identified high-hazard days to increase situational awareness," said Brian Norton, Division Chief – Special Operations, [Orange County Fire Authority](#). "This will be done in partnership with volunteer fire watch patrols already established in Orange County."

Norton and fellow HPWREN users – ranging from astronomers at [Palomar Observatory](#) to networking engineers at the [Tribal Digital Village Network](#) (TDVNet) – recently participated in a wide-ranging workshop held at the observatory to update colleagues on current projects and



*Multiple first-responder agencies and organizations rely on HPWREN's camera network across remote areas of greater San Diego. HPWREN users met in April to discuss the future of not only these "virtual fire towers" but also additional applications of the high-speed network. Credit: HPWREN*

discuss future plans for the network. The meeting was organized by Hans-Werner Braun, HPWREN co-founder and a research scientist at the San Diego Supercomputer Center (SDSC), and Frank Vernon, HPWREN co-founder and a research geophysicist at Scripps Institution of Oceanography, who welcomed workshop attendees with a briefing on HPWREN's status and projections.

Vernon focused his discussion on the importance of HPWREN within the science, education, and first responder communities, as well as an array of agencies including San Diego Gas and Electric (SDG&E), San Diego County Fire Authority, California State Parks, Orange County Fire Authority, as well as WIFIRE, a National Science Foundation (NSF) funded project led by UC San Diego that has developed real-time and data-driven simulation, prediction, and visualization of wildfire behavior.

Vernon explained the involvement of the multi-partner Pacific Research Platform (PRP) which supports HPWREN, and how the CENIC 100 Gigabit optical fiber is used to link HPWREN data servers at UC San Diego, San Diego State University, and UC Irvine. Once a wildfire is spotted by the HPWREN-connected cameras, PRP delivers high-resolution weather data to fire modeling workflows in WIFIRE.

Following Vernon's talk, the workshop's keynote address was given by Andy Boden, deputy director at the Caltech Optical Observatories (COO), which oversees the administration of the Palomar Observatory. Boden commended the network for assisting in several major discoveries, including the 2005 discovery of Eris, a dwarf planet. "Thanks to discoveries aided by HPWREN, astronomers came to understand that Pluto belonged to a different dynamical family than the other things that we call 'planet,'" explained Boden. "Hence, the 2006 IAU definition 'demoted' Pluto to what we call a minor planet."

Jerald Coleman, technology manager at the San Diego County Fire Authority, which is one of the primary supporters of HPWREN, spoke about the Area Situational Awareness for Public Safety Network (ASAPNet) - a public/private partnership-based extension of HPWREN for the benefit of public safety communities, especially firefighters in San Diego County. Coleman discussed how ASAPNet partners such as SDG&E are currently planning to build out wireless internet data communications capabilities to further firefighter assets, while also using HPWREN's environment-observing cameras and other sensors.

Chris Arends, meteorology program manager at SDG&E, another primary HPWREN supporter, discussed the importance of the HPWREN-connected cameras, the weather stations, and the resilience of the HPWREN system. Arends noted that the weather stations, which report data

every 10 minutes, is ingested into their weather modeling system and imperative to their efforts.

Additional speakers included:

Information Technology Specialist Philip Usrey, California State Parks

Director of the Nevada Seismological Laboratory (University of Nevada-Reno) Graham Kent

Research Analyst Jessica Block, WIFIRE and Calit2, UC San Diego

Network Field Coordinator Joseph Peralta, TDVNet

Director of Operations Erin Hunt, California Wolf Center

Ronald Sebeny, Engineering and Operations Manager Ronald Sebeny, NASA International Laser Ranging Service Project

Presentations are available at [http://hpwren.ucsd.edu/Presentations/20190404-HPWREN\\_Users\\_meeting/](http://hpwren.ucsd.edu/Presentations/20190404-HPWREN_Users_meeting/).

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#### MEDIA CONTACT

**Jan Zverina**, 858-534-5111, [jzverina@sdsc.edu](mailto:jzverina@sdsc.edu)

**Kimberly Mann Bruch**, 858-822-3622, [kbruch@ucsd.edu](mailto:kbruch@ucsd.edu)

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