NASA's high-tech wildfire weapons

- Story Highlights
- Unmanned aerial vehicle assesses the damage from wildfires in California
- The vehicle is a cousin of the Predator B, a wartime surveillance plane
- Ikhana captures thermal-infrared imagery used to pinpoint hot spots
- NASA also has 2 Earth-observing satellites to monitor the wildfires

By Saba Berhie

(PopSci.com) -- NASA's unmanned aerial vehicle Ikhana is a cousin of the Predator B, an Air Force tool used for wartime surveillance and reconnaissance missions, but this drone is on a more benevolent mission: assessing the damage from wildfires in Southern California.

This week, Ikhana flew over blazes like the Witch fire in San Diego County to determine the direction of the flames and send thermal-infrared imagery to scientists for layering over Google Earth maps. The combination of data and maps was then used to dispatch firefighters and equipment to sites in need and to determine which areas should be evacuated.

But Ikhana won't become the standard for high-tech firefighting just yet, according to Everett Hinkley, the liaison and special-projects group leader for the U.S. Forest Service.

The UAV is extremely expensive compared with manned airplanes, and each mission requires lengthy preparation time. These are essentially test flights for the drone, the goal being to hone operators' skills for a time when the technology is more affordable and widespread.

Ikhana's main task is to scan the wildfires at close range and send thermal-infrared imagery to a central server accessible by agencies such as FEMA, the Department of Homeland Security, emergency-service centers in Southern California, and even the Pentagon.

Experts are then called on to interpret the data with people on the scene to incorporate this valuable information into their maps. Eventually, NASA plans to include UAVs in a whole network of devices that will monitor natural-disaster sites at different scales, from satellite imagery down to ground-level data.

Right now, in addition to Ikhana, that network includes two high-tech satellites that are also being used to monitor the wildfires. The Terra and Earth Observing-1 (EO1) satellites have sensors that use telescopes and cameras to scan the planet for natural disasters and send data back for scientists to review.

The Terra's sensor has a one-kilometer range -- large enough to locate hotspots from space but too huge to focus in on specific sites. The EO1 has a 30-meter range for closer views of natural disasters, and the UAV delivers even more detailed information. NASA is working to combine these tools to create a web of sensors that rescue workers could use to find the information they needed quickly and efficiently

"It's kind of like going to the weather channel for fire," says Dan Mandl, the EO-1 mission manager at NASA. "Every sensor in the world becomes a data feed, and we're using RSS technology [so] anyone can locate and subscribe to it."

Instead of having people intercept the data, the process has become automated, which speeds up the information-gathering process, Mandl says. An image from the EO1 used to take two weeks to analyze, but the first images from the fire in Southern California were analyzed in less than 10 hours.

"The fire workers need to have as much data as possible about the location of the fires," Mandl says, "because the big problem is that fires don't stay still."

All About Wildfires • NASA

Find this article at:
http://www.cnn.com/2007/TECH/science/10/26/nasa.wildfire.tech/index.html