

FIREFLY GOES WIRELESS: AN INFRARED DATA DOWNLINK SYSTEM

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ABSTRACT

Airborne infrared fire detection systems have been used for over 30 years by natural resource management agencies such as the USDA Forest Service. The sensor system in use today consists of a two-channel Daedalus line scanner, a processing system to convert the analog signals to digital data, and various output devices. This is commonly referred to as the FireFly system. Currently, the primary output products from this system are hardcopy strips of the imagery or digital freeze frames.

The FireFly system is currently flown on a Sabreliner jet aircraft based out of the National Interagency Fire Center in Boise, ID. A typical FireFly mission may involve imaging several fire incidents across a large geographical area in a single night.

The problem: How to efficiently deliver the data from the Firefly system to ground personnel so that they can interpret the images in a timely fashion. Currently, hardcopy images are either dropped from the aircraft in a tube or the aircraft lands and deliver the images. Both methods are often costly and inefficient.

The USDA Forest Service Remote Sensing Applications Center and the National Interagency Fire Center have cooperatively developed an infrared data downlink system (IRDL) using standard commercial off-the-shelf components. The system consists of a PC computer, a printer, and a wireless receiver/transmitter attached to an amplifier and antenna. Ground personnel set up the system and direct the crew on the aircraft to fly over their position and download the data via a wireless link between the aircraft and ground station. The system is undergoing final tests and hopefully will be used in field conditions this fire season. In addition, work is beginning on the next phase of this project, which is the georectification and georeferencing of the Firefly images to produce accurate maps for overhead teams charged with making fire suppression decisions.