

★ FIRE FLIGHT ★

★ AERIAL FIRE MAPPING SYSTEMS ★

System Overview – January 2018

What is the FireFlight system?

FireFlight is an airborne fire mapping system, developed by Spatial Scientific Pty. Ltd., an Australian spatial technology company based in Adelaide.

The system, which comprises a thermal imaging sensor, GPS, computer, and specialised software, is mounted on a manned aircraft (an unmanned aircraft version will be available in the future). It is used for real time fire mapping. Unlike other “fire spotting” systems, the FireFlight system creates geospatial maps of the fire, just like a topographic map, but showing the presence/absence of fire hot spots. The fire maps are geographically accurate, so they can be overlaid on top of other similar data sets, such as road networks, vegetation maps or Google Earth maps.

The system is designed to be flown at altitudes of greater than 5000 feet (and often above 10,000 feet), so therefore above all of the other air traffic associated with active bushfires.

The system is inexpensive to deploy and easy to use. Although new, it has already been operated in the US, Australia and SE Asia.

What data does the FireFlight system provide?

The FireFlight system creates maps of fire in real time:

As the aircraft flies over the fire (at altitudes of greater than 5000 feet) the on-board, vertically-looking thermal camera continually acquires images of the ground and the fire. These images are combined into a geometrically accurate fire map covering the whole fire ground. The fire maps are colour coded to show actively burning fires, hot burnt areas, and unburnt regions.

Once created, the fire maps are sent to our own secure website, where they can be viewed in any web browser (so no need for end users to install extra software on computers or mobile devices). The agencies managing the fire can determine who receives the link to the secure website to view the data.

The FireFlight system can be used for post-fire burn mapping and hotspot detection:

Recently burnt areas or blacked out areas can be scanned to identify any hotspots where small fires are still burning. Geometrically accurate thermal image mosaics, created from imagery acquired after the fire has been blacked out, are provided to the end users with a separate file detailing all areas of high temperature hotspots.



★ FIRE FLIGHT ★

★ AERIAL FIRE MAPPING SYSTEMS ★

Who operates the FireFlight system?

Spatial Scientific builds the FireFlight systems in Adelaide, before shipping them to pre-selected aircraft operators who are based in the regions where the fire mapping data will be required. The aircraft operators are subcontracted to Spatial Scientific to operate the FireFlight system when required. Ownership of the systems remains with Spatial Scientific.

How is the FireFlight system fitted to aircraft?

The FireFlight system has been designed to be small and portable. The thermal camera requires a "camera hatch" in the bottom of the aircraft with a diameter of no more than 5cm. The whole system is controlled by a purpose-built flight computer which can be powered directly from the aircraft power supply. If there is no external GPS antenna already installed on the aircraft, a small portable GPS antenna can be placed on the glare shield. Pilot navigation information is displayed on a small screen which can be mounted on the pilot's yoke. (Aircraft operators are of course required to ensure that installation and use of the system is compliant with local aviation regulations.)

How do users pay for the mapping data?

The end user of the data enters into a contract with Spatial Scientific to provide fire mapping data (either real time, or post-fire mapping) in a specific region for a specific period of time. The exact costing model is tailored to suit the actual needs of the end user.

How is the fire mapping data delivered?

The fire mapping data can be delivered in any way which suits the current operations of the end user.

1. Data can be made available for download from a secure website in a file format specified by the end user.
2. Data can be uploaded to a secure website (accessible from any web browser) where hotspots and thermal heat maps can be viewed overlaid on top of Google maps or satellite imagery.
3. Data can be 'pushed' directly into the end users' servers.

Please note that we do not sell the FireFlight system. We either operate the system ourselves, or we contract other companies to operate the system on our behalf, or we lease the system to other companies. In all cases, we undertake the processing of the image data, and delivery of the fire maps to the end user.

