



KANGAROO ISLAND FIRES JANUARY 2020

June 2020

Summary of Operations

FIRE FLIGHT

★ AERIAL FIRE MAPPING SYSTEMS ★

BACKGROUND

The Kangaroo Island fires

The Kangaroo Island fire was one of the many devastating fires to hit Australia in the summer of 2020. The loss of vegetation, property, wildlife, and even two lives, were unprecedented for Kangaroo Island. Such was the level of destruction that the fire made global headlines for many consecutive days.

When the fire broke out, the team at FireFlight Technologies deployed a fire mapping system to Kangaroo Island within hours to support multi-agency efforts to help fight the fires. The data was provided to the Australian Army, and quickly became a crucial contribution to early intelligence gathering that helped the Army to plan and execute its recovery and relief operations, in support of emergency services and local communities on the island.



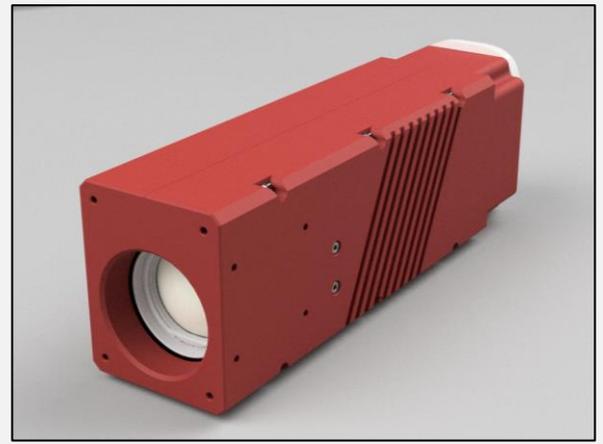
FIRE FLIGHT

★ AERIAL FIRE MAPPING SYSTEMS ★

THE FIRE MAPPING SYSTEM

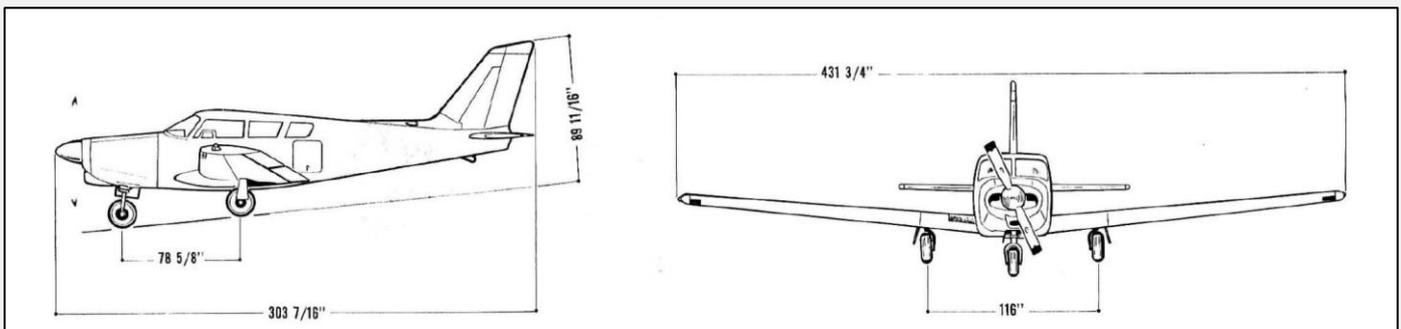
The FireCam 6000 fire mapping system

FireFlight Technologies has developed a range of different fire mapping cameras to suit different applications and different platforms (manned aircraft, UAV, rotary wing etc.). For the Kangaroo Island fires, the **FireCam 6000** was used. This camera has an image size of 640 x 480 pixels, and is normally flown at 10,000 feet above sea level. At this height the pixel size is 2m, and the footprint on the ground is 1280m x 960m. The FireCam 6000 incorporates a long wave infrared (LWIR) sensor, which is sensitive to thermal radiation between 8 and 13 microns. The sensor is able to detect heat signatures through thick smoke, and can be operated both during the day and at night.



Piper Comanche fire mapping aircraft

The FireCam 6000 can be mounted on a wide range of aircraft. For the Kangaroo Island fires, a Piper Comanche PA24 high performance aircraft was used. The aircraft was flown at 10,000 feet above mean sea level, in Class G (uncontrolled) airspace. During the acquisition flight the pilot was in continual contact with local air traffic controllers.



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TIMELINE OF OPERATIONS

Early January 2020

The FireFlight system was installed on a manned aircraft (Piper Comanche) based at Aldinga Airfield, South Australia. Staff from FireFlight Technologies made initial contact with the Intelligence Unit of the Australian Army, which had recently been relocated to Keswick Barracks.

8th January 2020

Discussions with Army intelligence staff led to a request for FireFlight Technologies to provide immediate fire mapping data of active fires on Kangaroo Island. Contact was also made with the liaison officer from the Royal Australian Air Force to discuss coordination of data acquisition.

8th January 2020

In the afternoon of the 8th January 2020, the first fire mapping flights were undertaken over Kangaroo Island. The pilot discussed the flight plan with local air traffic controllers, and with the RAAF, to ensure there was no conflict with other aerial firefighting aircraft. Since the acquisition was planned to take place at 10,000 feet AMSL, the sortie was deemed safe. Multiple fires were mapped, and the data was shared immediately with the Australian Army and the RAAF.

9th January 2020

Multiple fires were mapped on Kangaroo Island during the day. The data was provided to the Australian Army and the RAAF in real time. Later in the day, the RAAF mobilised a P-8 Poseidon for further intelligence gathering operations.

10th January 2020

After discussions with the Australian Army, and the rapidly changing nature of their mission, it was determined that further mapping missions were not required. The RAAF was providing fire intelligence to support ongoing Army operations.



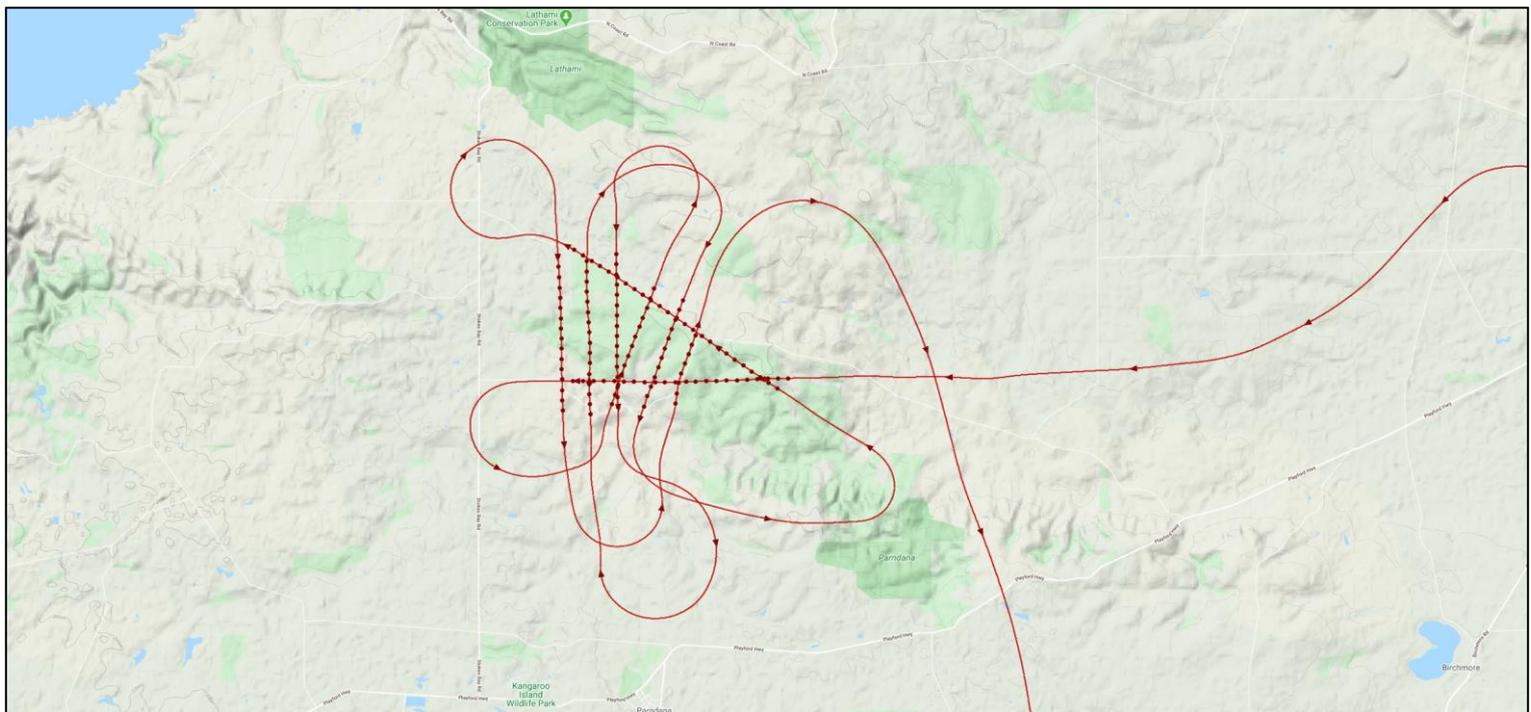
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RESULTANT FIRE MAPS

Stokes Bay, Kangaroo Island, 12:30pm, 8th January 2020

Data was acquired over multiple active bushfires in managed plantation forests approximately 10km SE of Stokes Bay, Kangaroo Island. The data was processed on board the aircraft, and uploaded to cloud-based storage in real time.



Aircraft type and registration	Piper PA24 Comanche; VH-MAS
Flying height	10,000 feet AMSL
Ground resolution	2m
Acquisition time	21 minutes
Area of capture	2400 hectares
Processing / delivery time	Processed and delivered in real time
Data location	https://www.fire.aero/Examples/KI-Jan2020/StokesBay-1230ACDT-080120

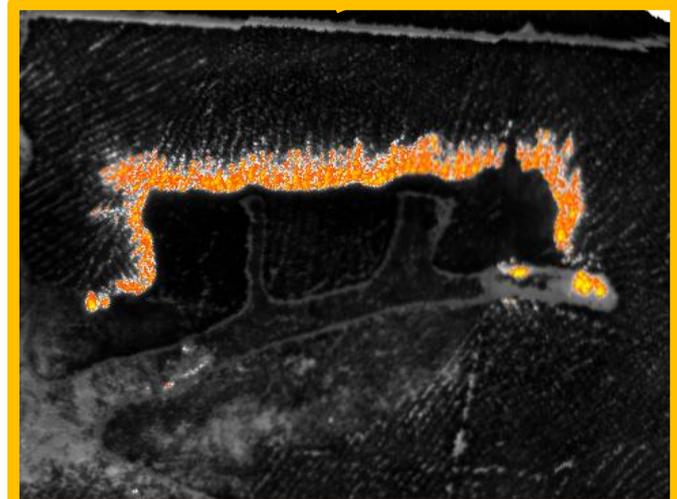
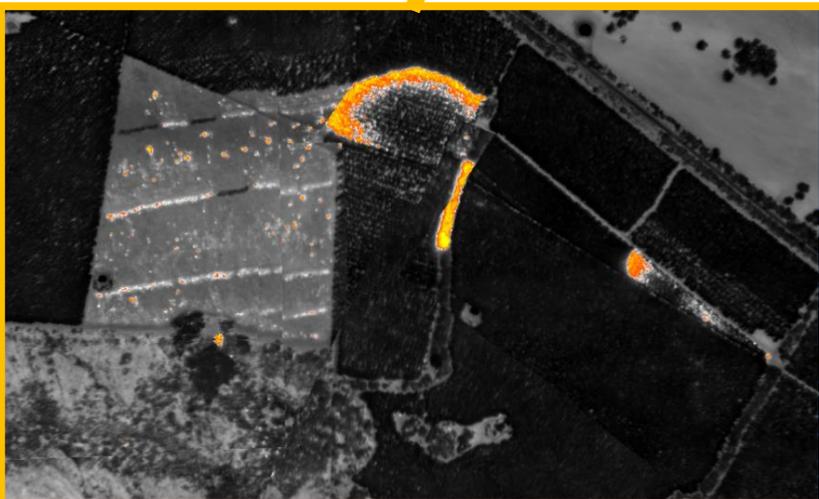


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RESULTANT FIRE MAPS

Stokes Bay, Kangaroo Island, 12:30pm, 8th January 2020



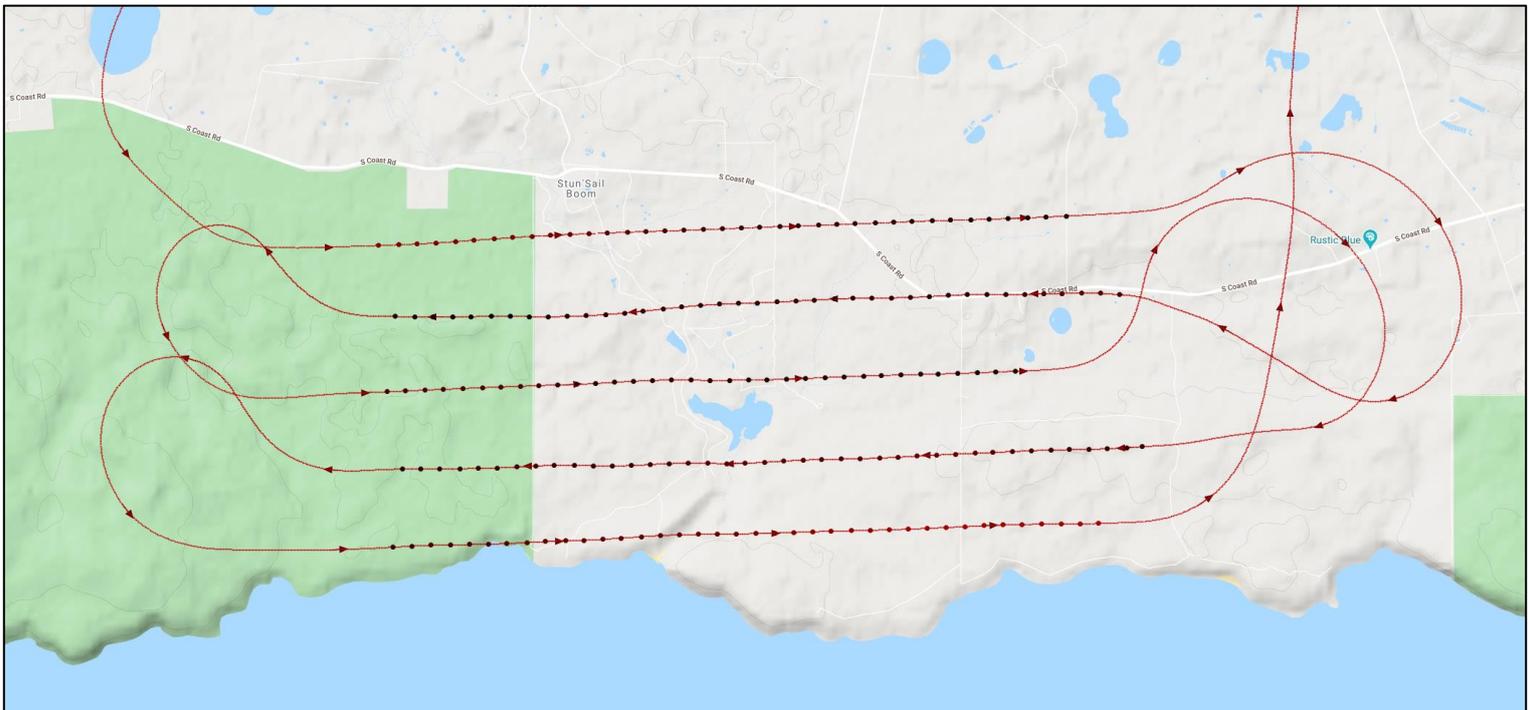
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RESULTANT FIRE MAPS

Stun'Sail Boom, Kangaroo Island, 1:45pm, 9th January 2020

Data was acquired over active bushfires burning in native vegetation to the west of Stun'Sail Boom, Kangaroo Island. The data was processed on board the aircraft, and uploaded to cloud-based storage in real time.



Aircraft type and registration	Piper PA24 Comanche; VH-MAS
Flying height	10,000 feet AMSL
Ground resolution	2m
Acquisition time	16 minutes
Area of capture	3700 hectares
Processing / delivery time	Processed and delivered in real time
Data location	https://www.fire.aero/Examples/KI-Jan2020/StunsailBoom-1345ACDT-090120

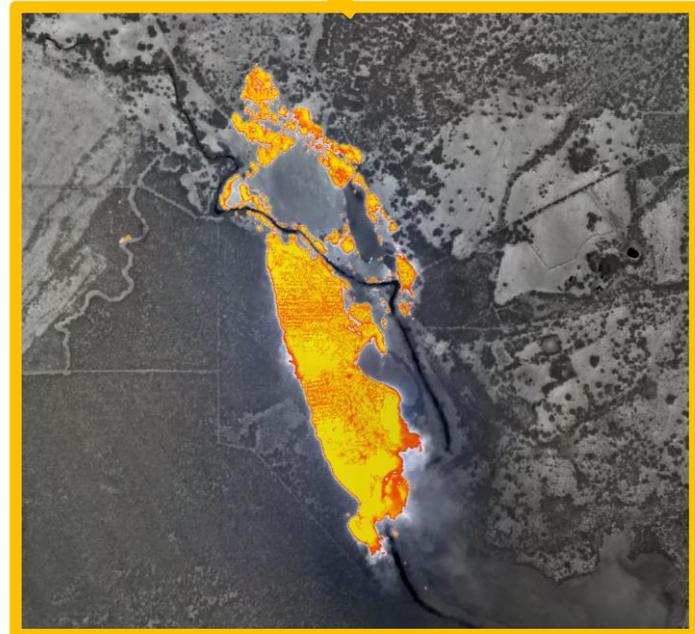
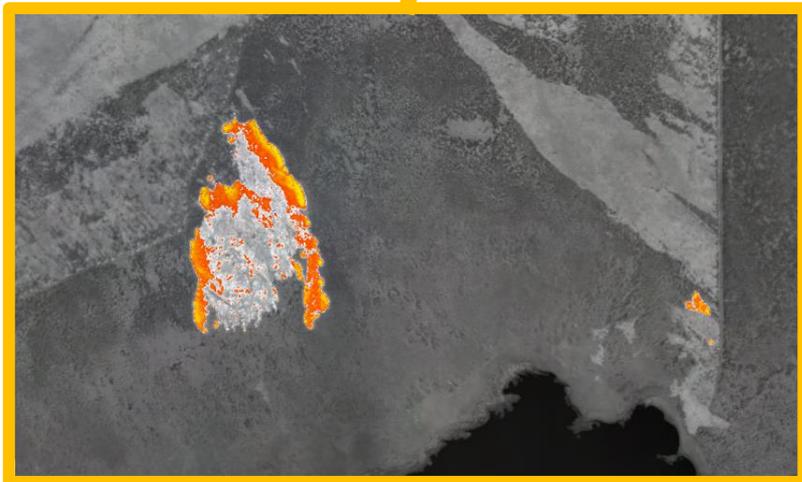
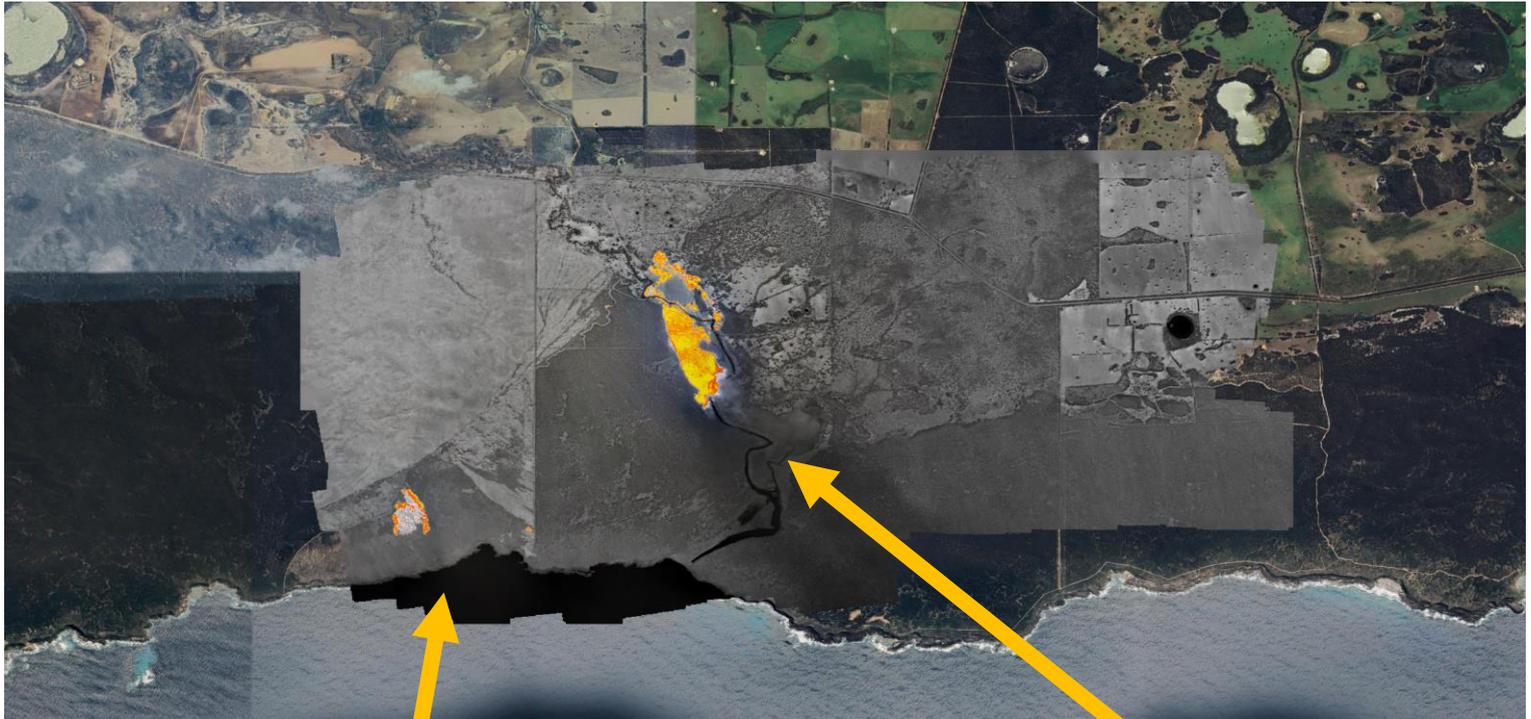


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RESULTANT FIRE MAPS

Stun'Sail Boom, Kangaroo Island, 1:45pm, 9th January 2020



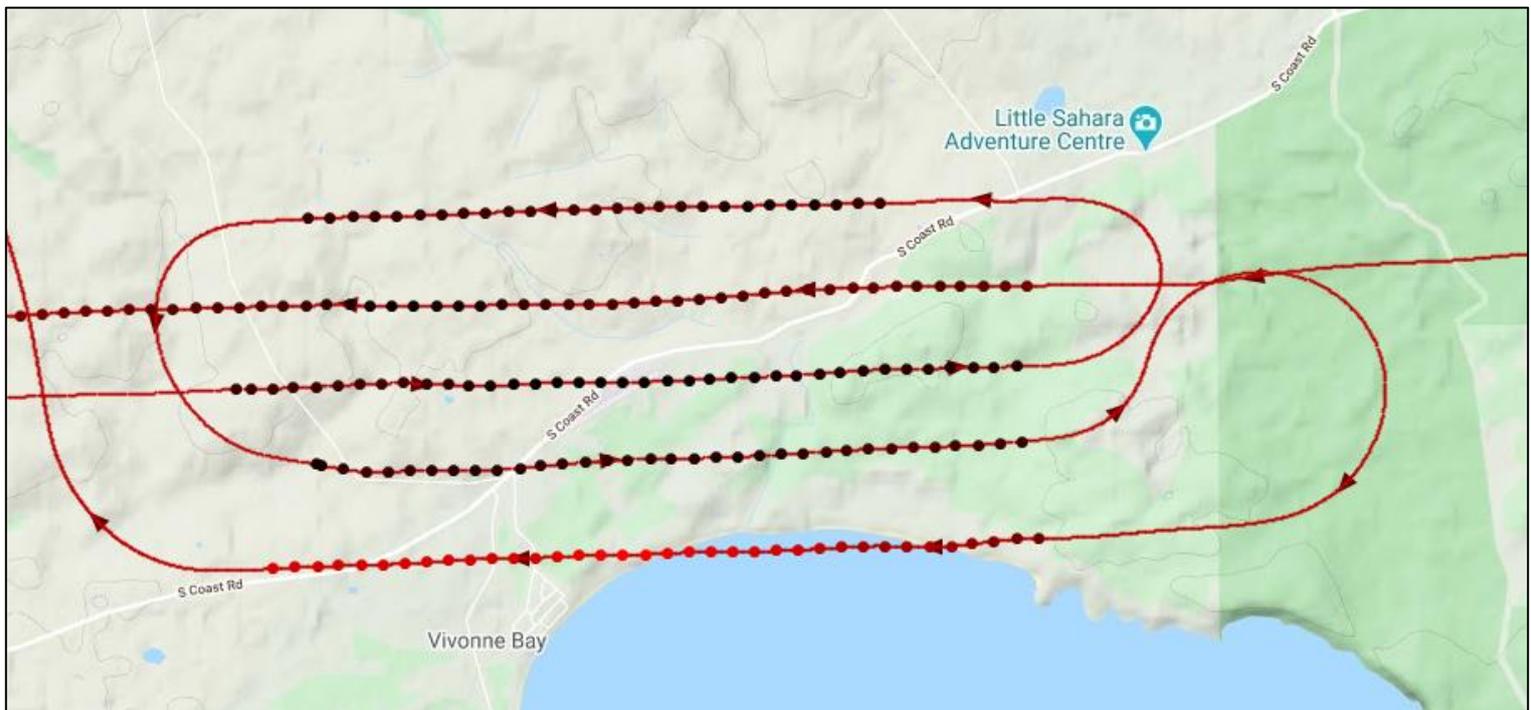
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RESULTANT FIRE MAPS

Vivonne Bay, Kangaroo Island, 2:00pm, 9th January 2020

Data was acquired over two active bushfires burning in native vegetation at sites approximately 1km and 2km north of Vivonne Bay, Kangaroo Island. The data was processed on board the aircraft, and uploaded to cloud-based storage in real time.



Aircraft type and registration	Piper PA24 Comanche; VH-MAS
Flying height	10,000 feet AMSL
Ground resolution	2m
Acquisition time	13 minutes
Area of capture	3600 hectares
Processing / delivery time	Processed and delivered in real time
Data location	https://www.fire.aero/Examples/KI-Jan2020/Vivonne-1400ACDT-090120

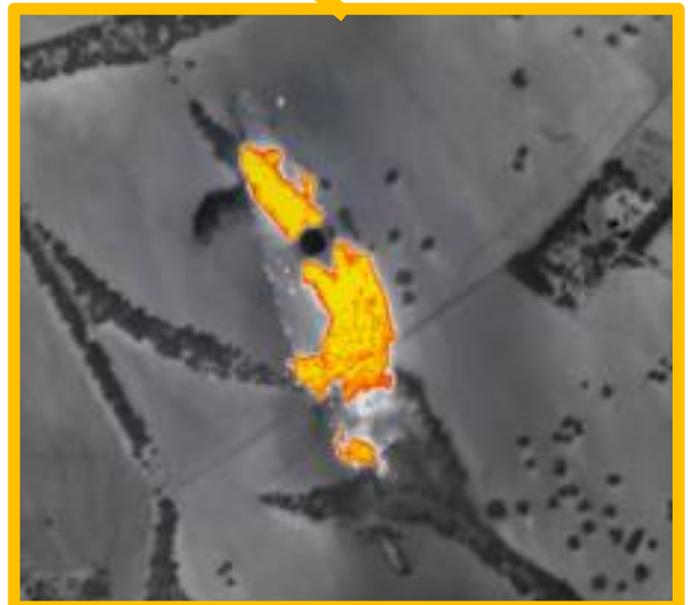
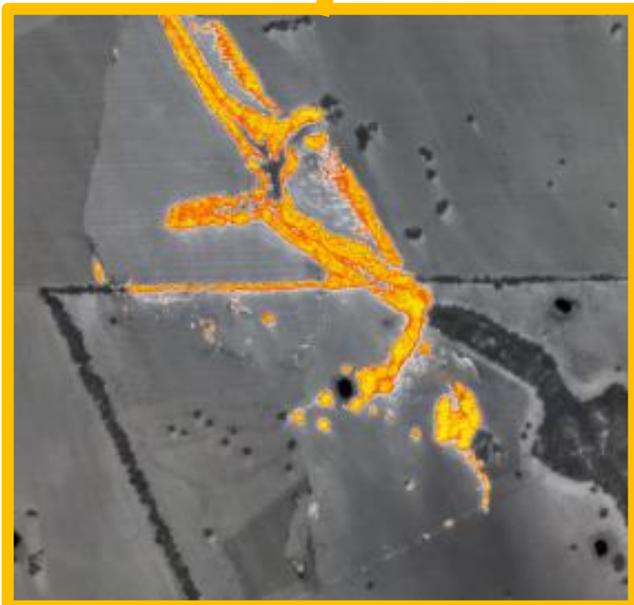
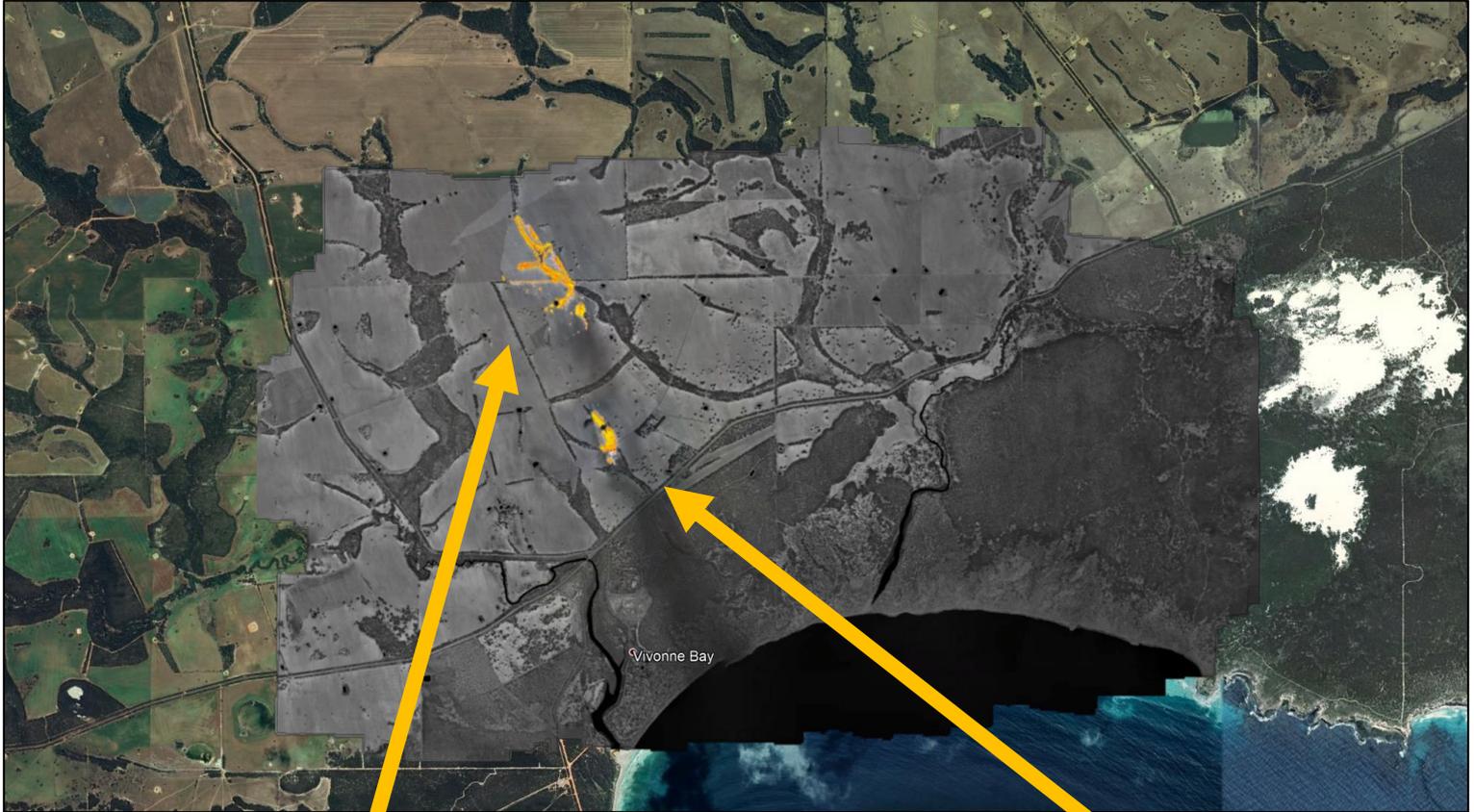


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RESULTANT FIRE MAPS

Vivonne Bay, Kangaroo Island, 2:00pm, 9th January 2020



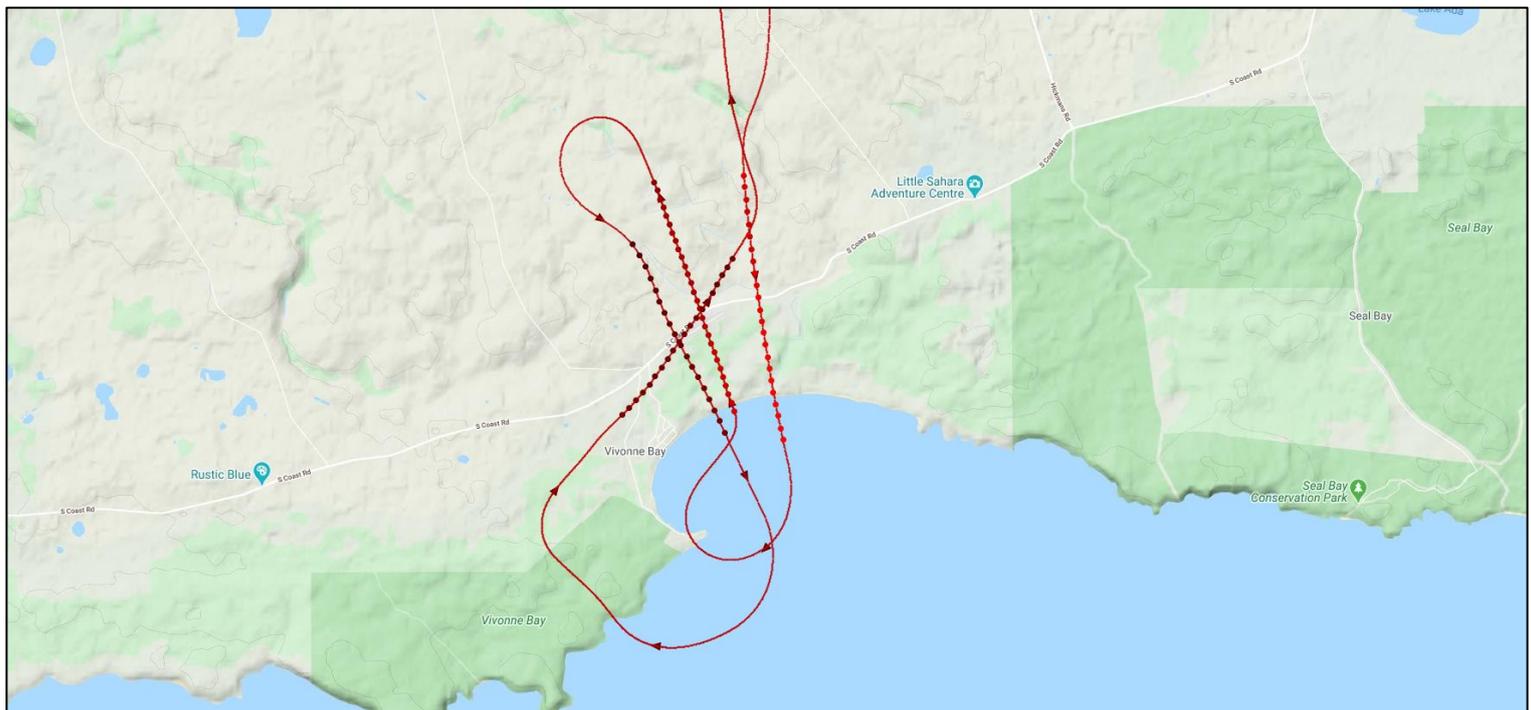
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RESULTANT FIRE MAPS

Vivonne Bay, Kangaroo Island, 5:00pm, 9th January 2020

Data was acquired over a moderately large bushfire burning in native vegetation close to Vivonne Bay, Kangaroo Island. The data was processed on board the aircraft, and uploaded to cloud-based storage in real time.



Aircraft type and registration	Piper PA24 Comanche; VH-MAS
Flying height	10,000 feet AMSL
Ground resolution	2m
Acquisition time	9 minutes
Area of capture	1700 hectares
Processing / delivery time	Processed and delivered in real time
Data location	https://www.fire.aero/Examples/KI-Jan2020/Vivonne-1700ACDT-090120



FIRE FLIGHT

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RESULTANT FIRE MAPS

Vivonne Bay, Kangaroo Island, 5:00pm, 9th January 2020



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SUMMARY

Summary of Kangaroo Island operations

The fire mapping undertaken over Kangaroo Island in January 2020 had the dual purpose of validating the FireFlight system, and providing support to the agencies managing the fires, specifically the Australian Defence Force (ADF). The data provided to the ADF was well-received and made an important contribution to their logistical operations. Other airborne data available to the fire agencies at the time consisted of high definition thermal video acquired by the Royal Australian Air Force, and a limited number of acquisitions conducted by a contracted linescanning aircraft.

Interaction with fire agencies

During the Kangaroo Island bushfires, FireFlight Technologies made the decision not to contact the South Australian Country Fire Service (CFS), the fire agency tasked with managing the fires. The CFS was facing unprecedented challenges, with numerous bushfires burning across the state. The effort involved in implementing new procedures to utilise new fire mapping intelligence would have been a significant distraction, and could have potentially impacted negatively on ongoing operations.

Future opportunities

FireFlight Technologies is keen to partner with companies and government organisations who would like to use the FireFlight system in firefighting operations. The FireFlight system can provide real time fire intelligence directly to firefighting agencies using FireFlight's own aircraft. Or aircraft operators can fly the FireFlight system on behalf of those agencies.

Contact details are on the following page.





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