Mapping the Fire Landscape

Active Fire Surveillance, and Fuel Hazard Assessments

Active Fire Surveillance

Active Fire Surveillance

The Problem: Continuous and timely detection and mapping of active fire across the Australian continent

Opportunity: Launch of the geostationary satellite, Himawari-8, providing 10 minute observations in near-real time

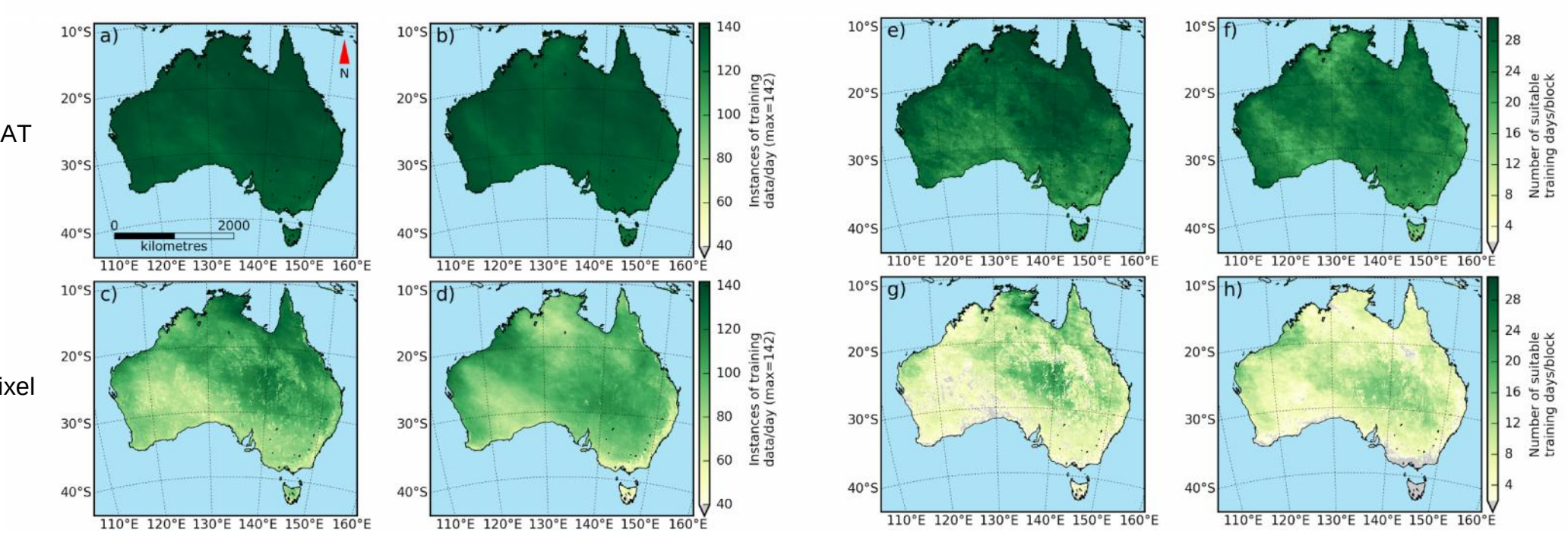
Solution: Two new innovative algorithms that take advantage of the temporally data rich source provided by Himawari-8 to provide:

- early detection of fires using robust BAT fitting method
- 10 minute observations of fire-line activity at an improved spatial resolution

Active Fire Surveillance - Detection

BAT

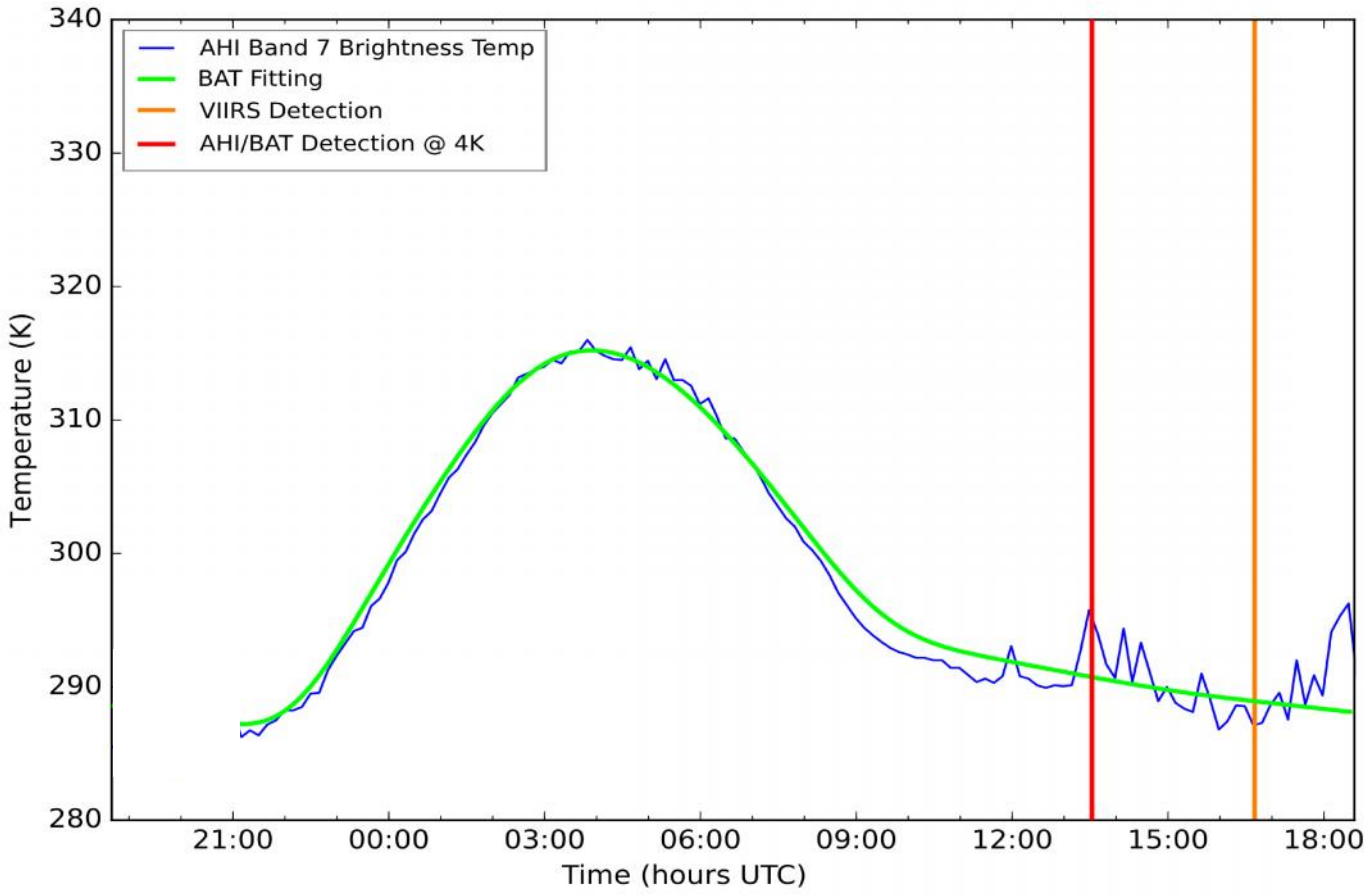
pixel



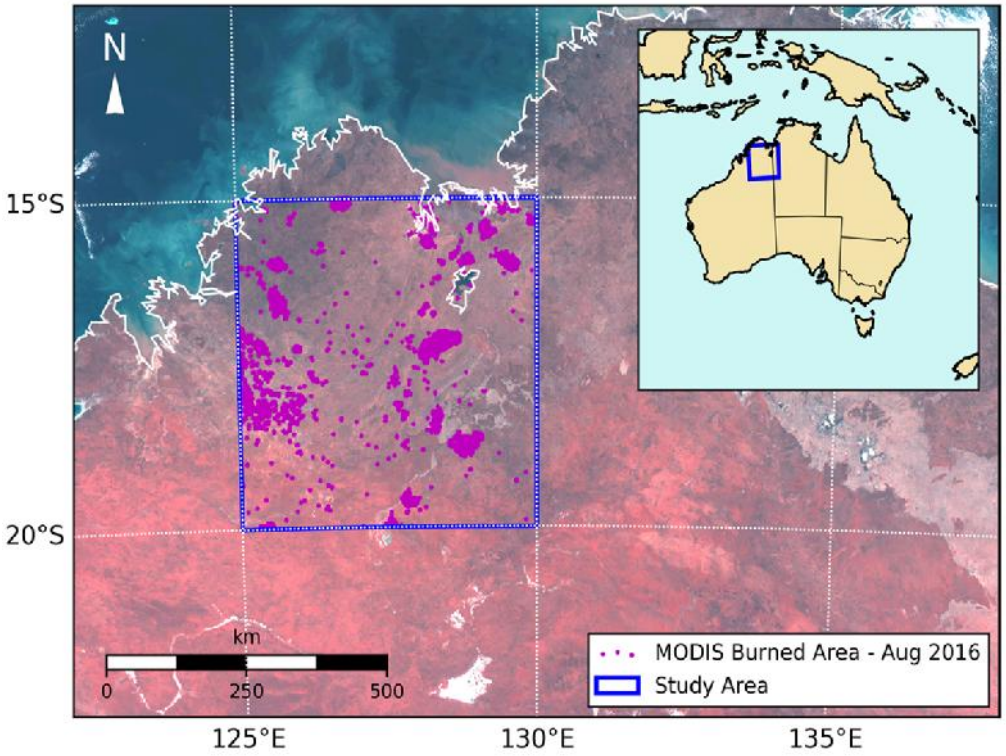
Advantages over pixel-based training data include increased availability of data for fitting, reduced error of fitting through periods of cloud and reduced processing load

Active Fire Surveillance - Detection

Example showing fire detected at least 3 hours earlier than the first detection by standard LEO fire products



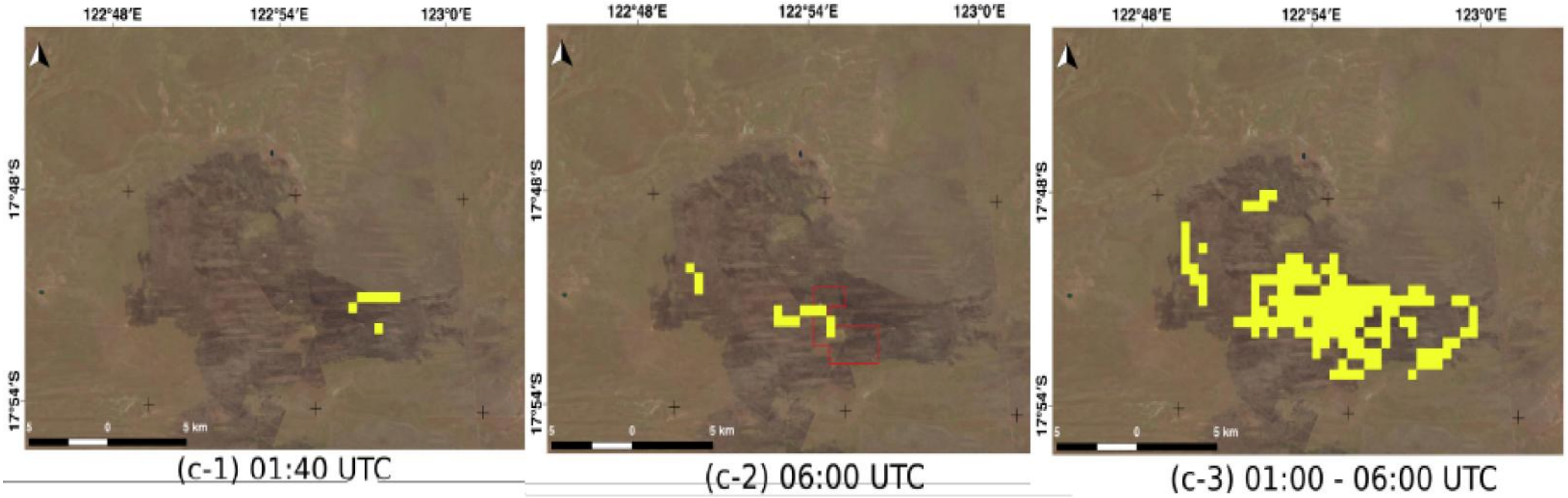
Active Fire Surveillance – Detection Performance



Detection Performance
(fitting start time 22hrs prior to a burned area detection)

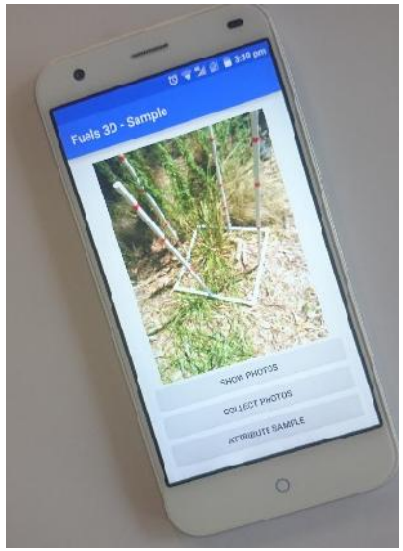
Detections @ 4K	**Detection (in 24hr period)**	**Average diff in detection time (LEO - AHI)**
No LEO Active Fire	56.0%	N/A
VIIRS Active Fire	84.7%	2 hrs, 7 mins
MODIS Active Fire	91.3%	5 hrs, 42 mins

Active Fire Surveillance - Mapping



Case study: Broome Wildfire, September 2015
(Also trialled against operational European fire product for SEVIRI showing significant improvement in detection accuracy.)

Fuel Hazard Assessments (Fuels3D)



Fuel Hazard Field Assessments

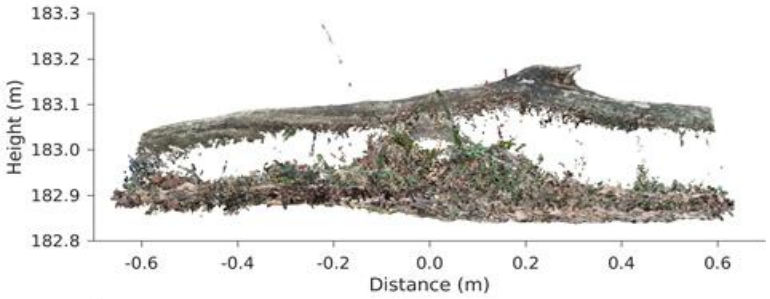
The Problem: Lack of repeatability and reliability with current field fuel hazard assessments

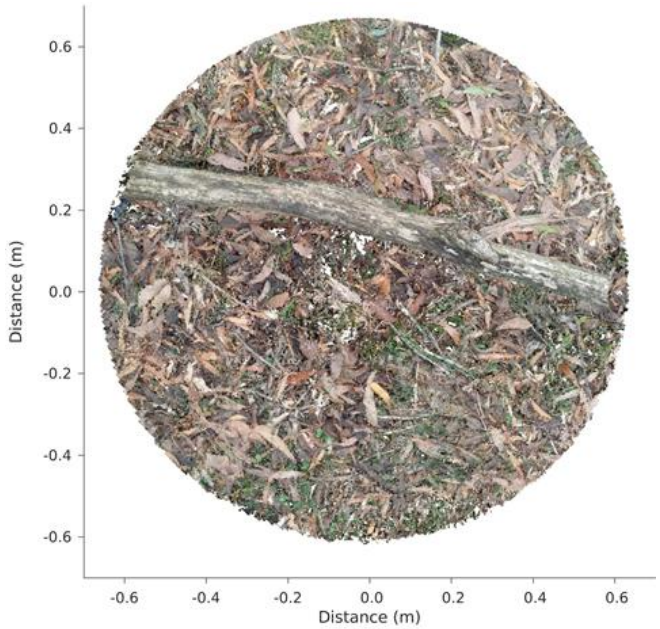
Opportunity: To bring together smartphone technology with advances in computer vision and photogrammetric techniques

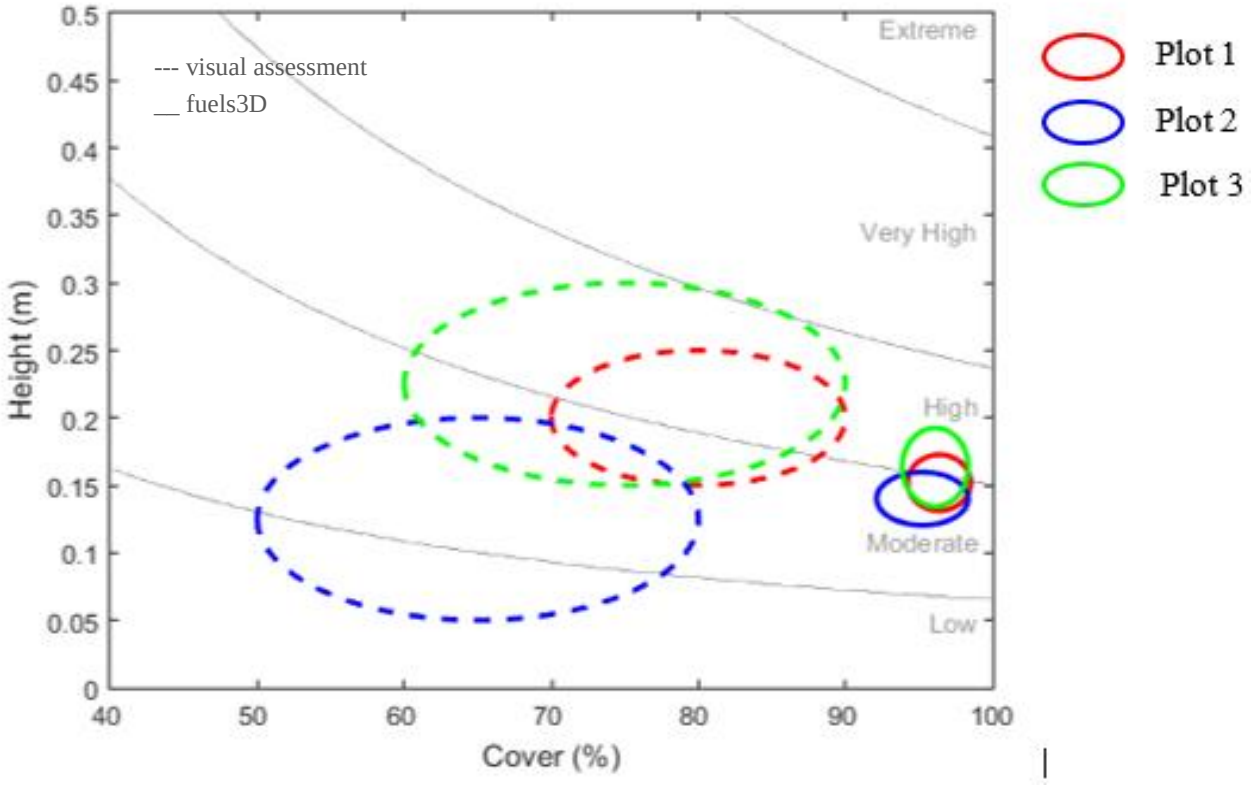
Solution: An app – Fuels3D – that manages image capture in the field to produce accurate 3D point clouds from which repeatable, quantifiable surface and near-surface fuel hazard metrics are calculated

Fuel Hazard Field Assessments - Fuels3D

Fuel Hazard Field Assessments - Fuels3D







Taking Fuels3D to the Sky

Thank You

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