

Thermal drone imagery of a shrubland. The image shows a dense field of shrubs and trees. The color scale ranges from dark blue (cooler) to bright yellow and red (warmer). A white crosshair is visible in the upper right quadrant of the image.

Characterising fuel and fire behaviour in shrublands using MLS and thermal drone imagery

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MLS point cloud of a shrubland. The image shows a dense field of shrubs and trees, rendered in a color gradient from dark blue to bright yellow. The point cloud is composed of many small dots, creating a textured appearance of the vegetation.

DIRECTION
Unavailable

53H PA 438 424

Kangaroo Island Coastal Mallee

- 2019-2020 Burnt almost half the island
- 2 fatalities
- Dozens of properties
- 1,000 of stock
- 10,000 wildlife

- 2006

Ravine

A0B J_Pippos
FB501

Prescribed burning in coastal mallee

Best tool to control fires

Difficult to implement due to extreme fire
behaviour

Semi-arid mallee model is not suitable





Coastal Mallee
Prescribed burning is difficult

Predicting Prescribed burns outcomes depends on fuel

Crown Fire

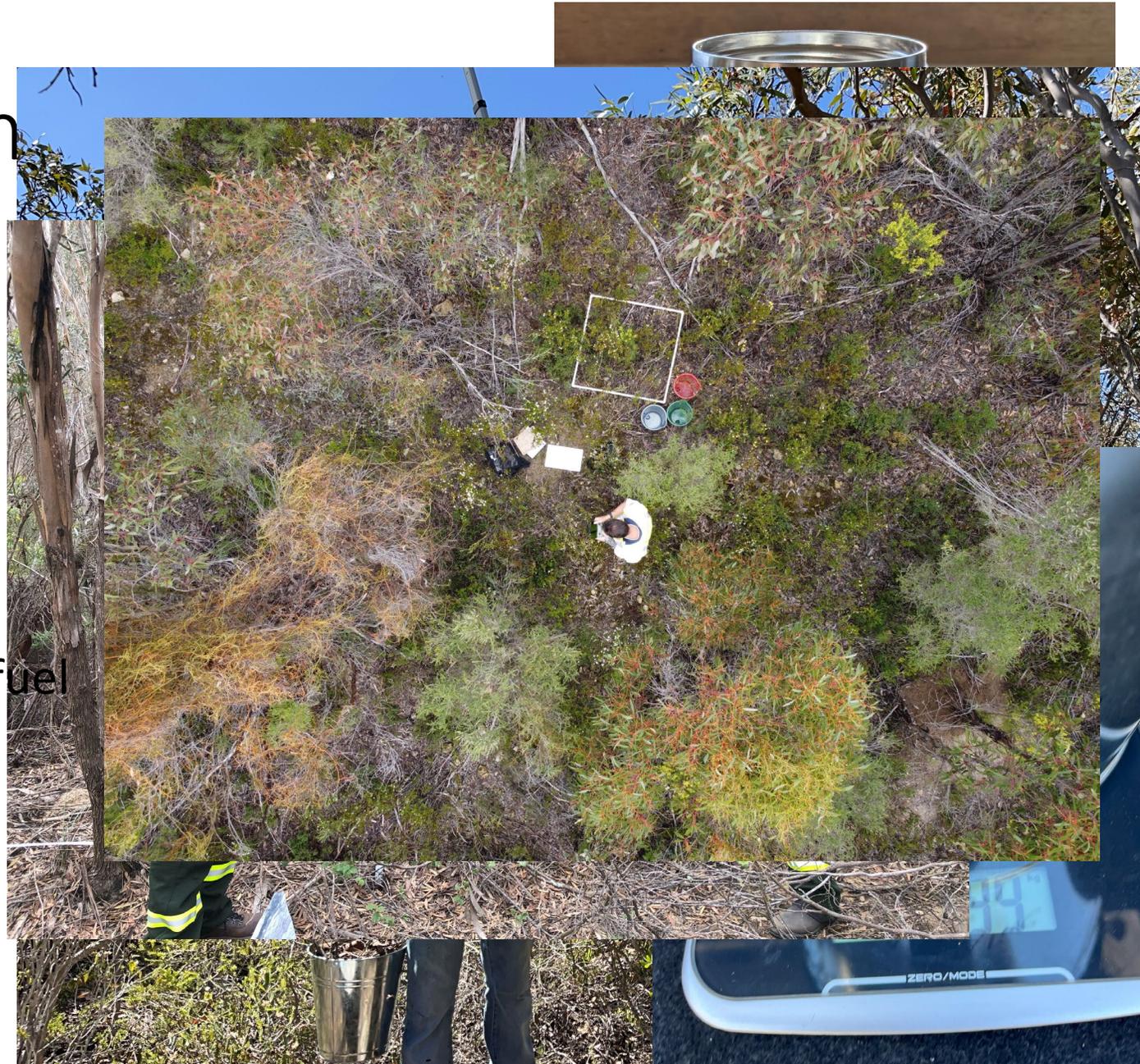


No-Go



Field fuel sampling method

- Field data collection
- Point intercept transect
 - Height of each fuel strata at 1-2m spacings through centre of plot
- Destructive sampling
 - Live and dead fuel weight for each fuel strata
 - Subsample fuel moisture sample to derive oven dried weight (ODW)



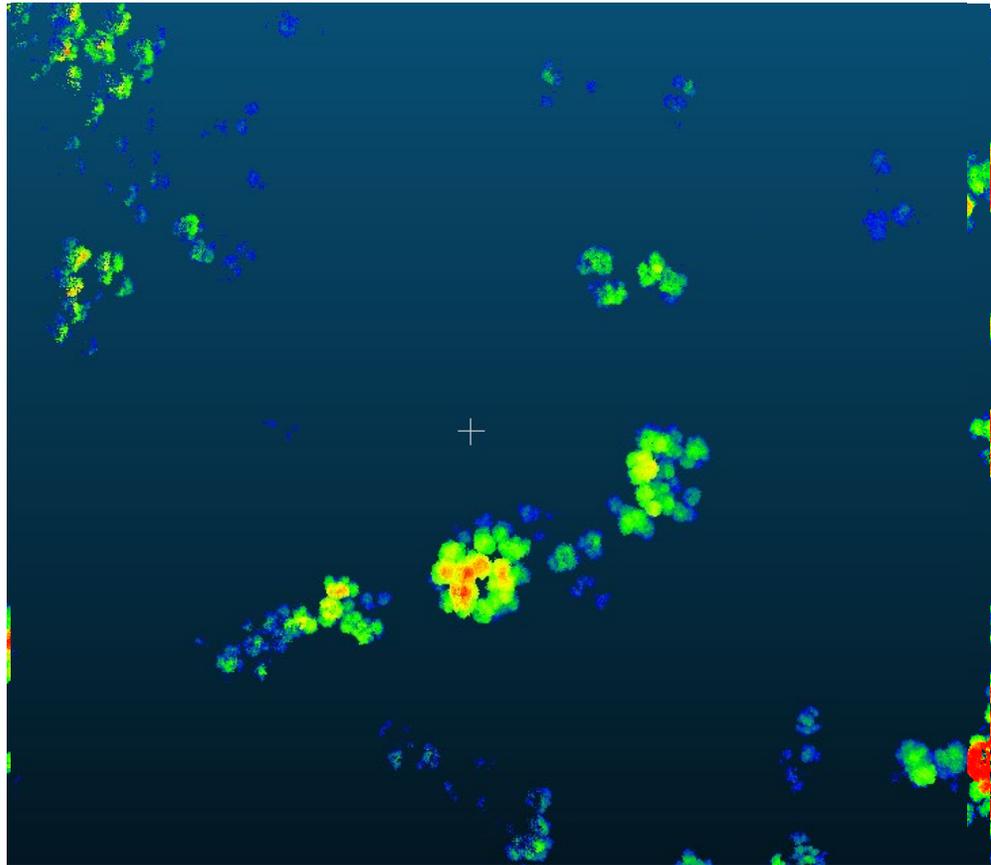
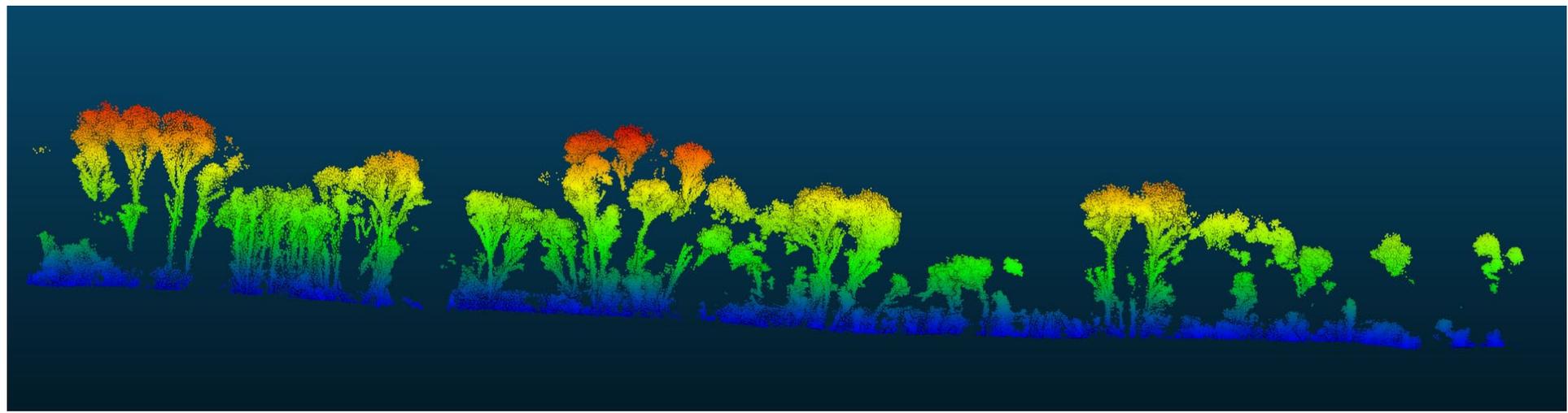
3D Remote Sensing me

- 27 Hovermap plots on Kangaroo Island and south of Port Lincoln – Another 24 identified for capture
- Tried a few different control points before settling on retroreflective GCP with submeter RTK GPS
- Processed to produce high density point clouds using Hovermap software (thanks Johann)
- Georeferenced in CloudCompare
- From the point clouds, fuel metrics were derived
- Feedback from Milestone 1, focussed on single solution using Hovermap Mobile Laser Scanner (MLS) backpack mode, as it is the best

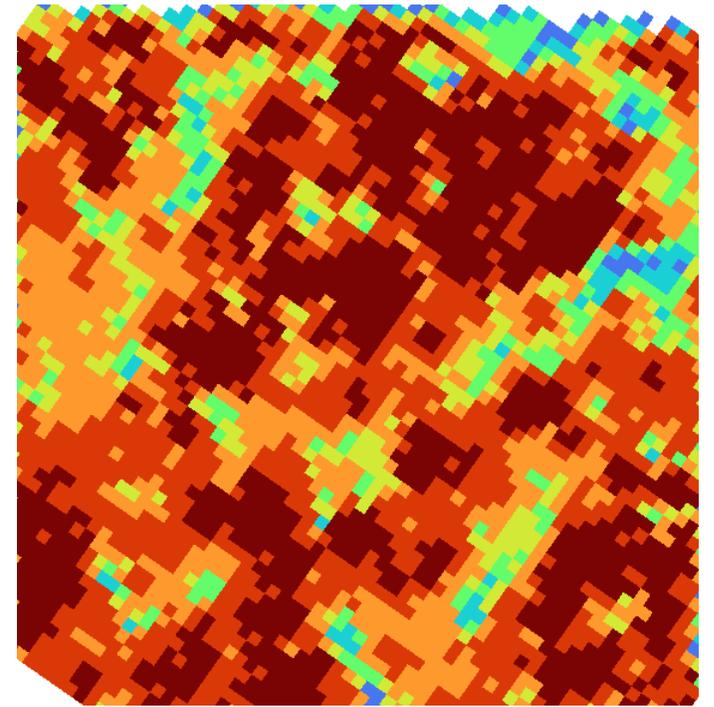


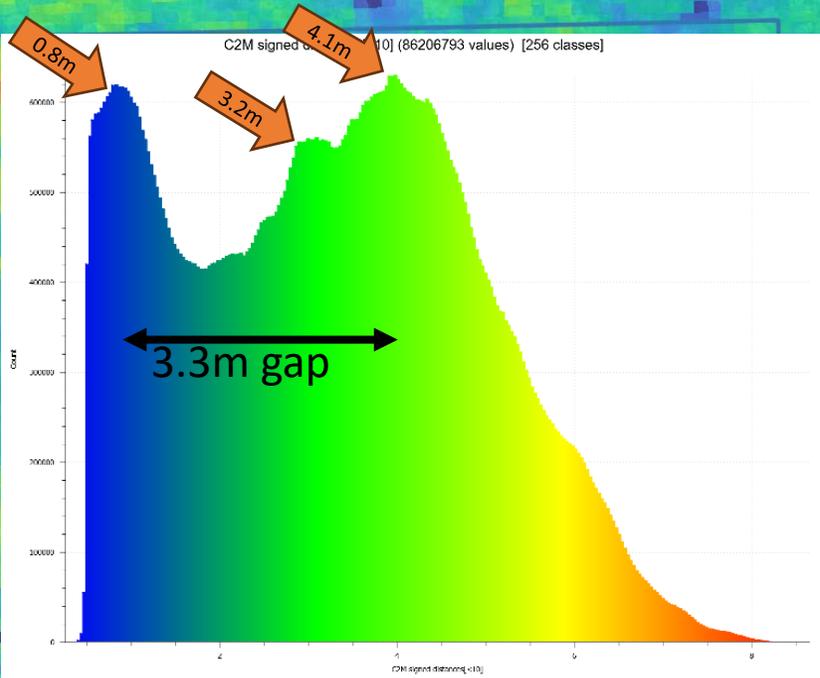
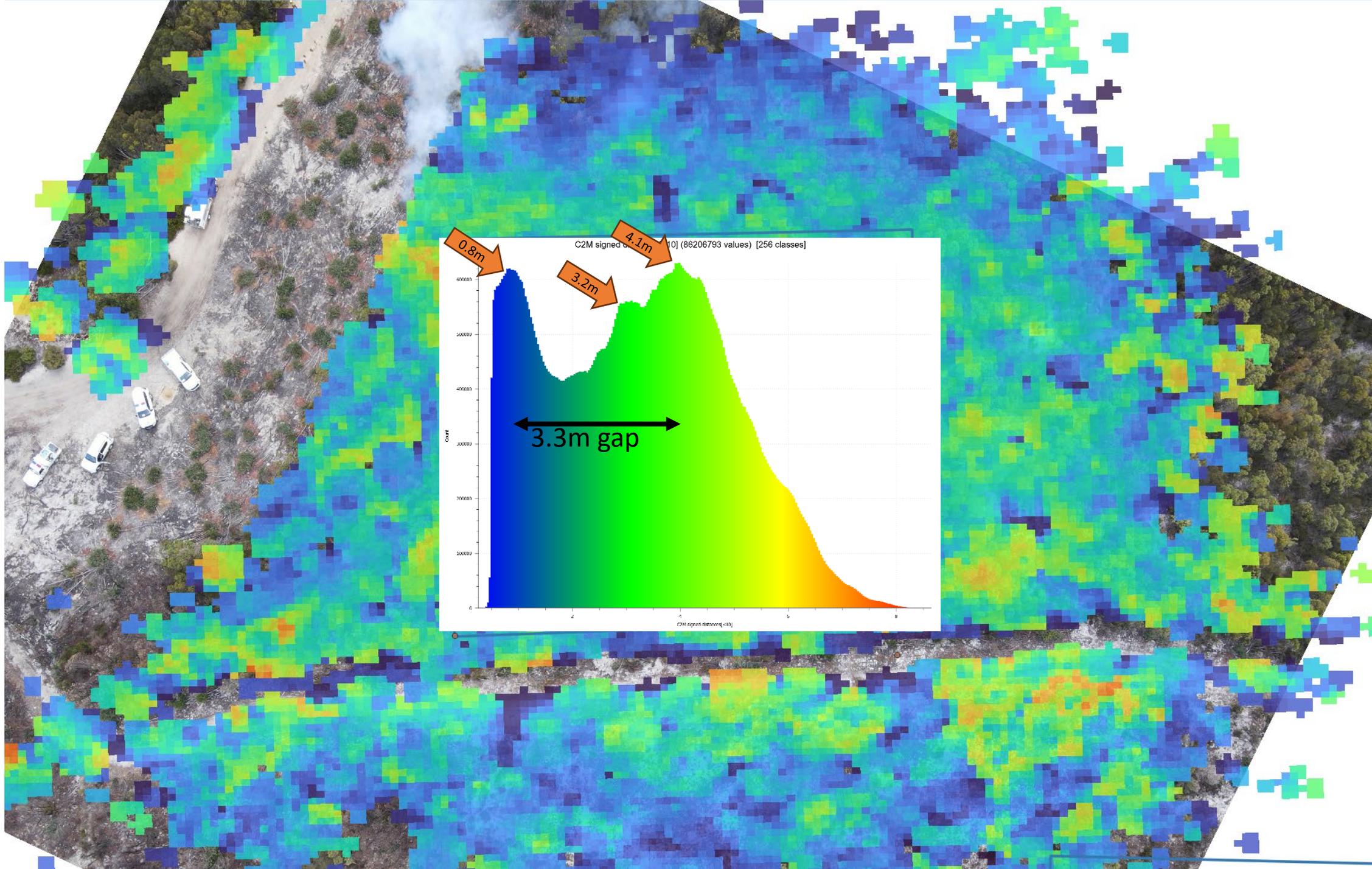


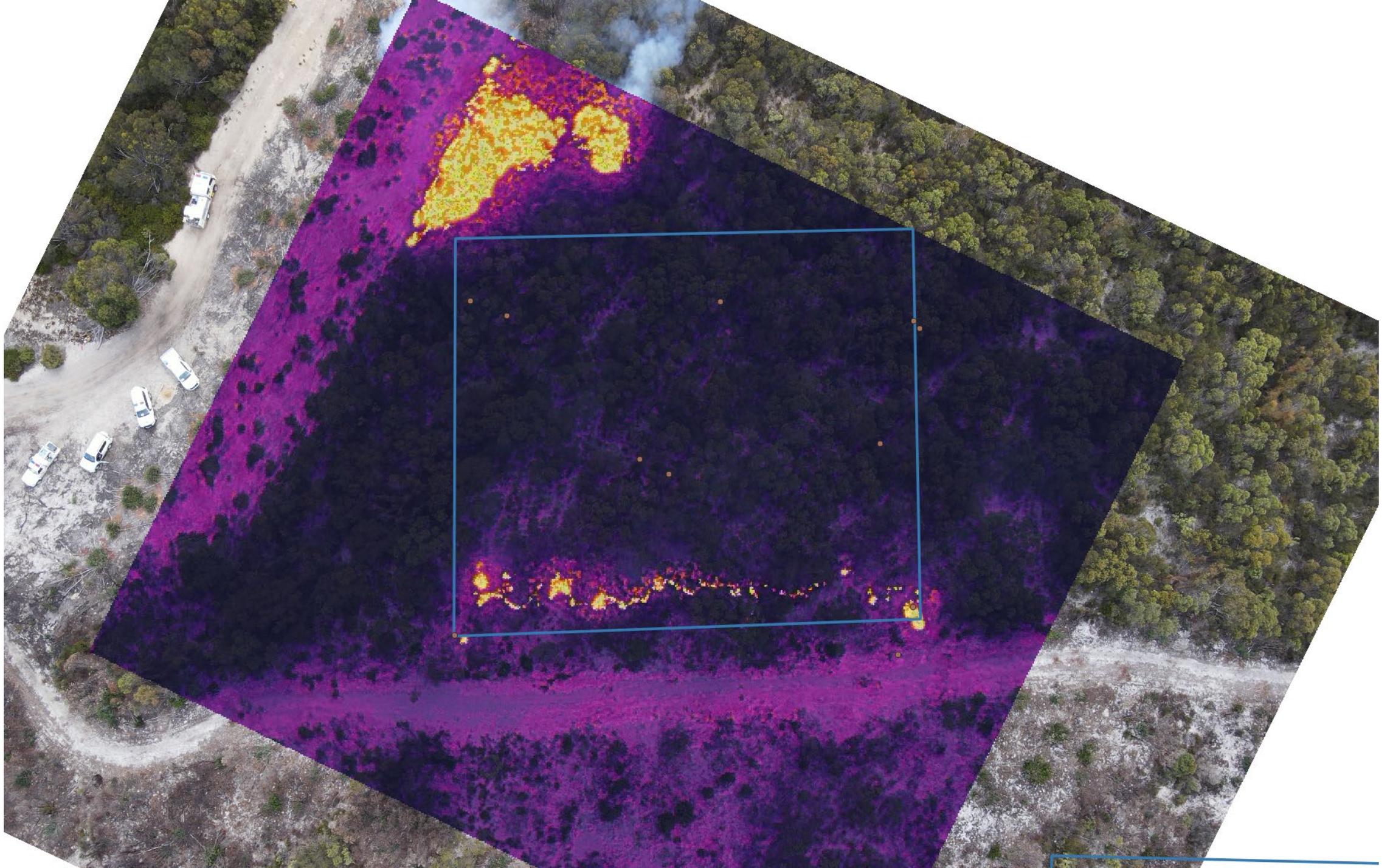


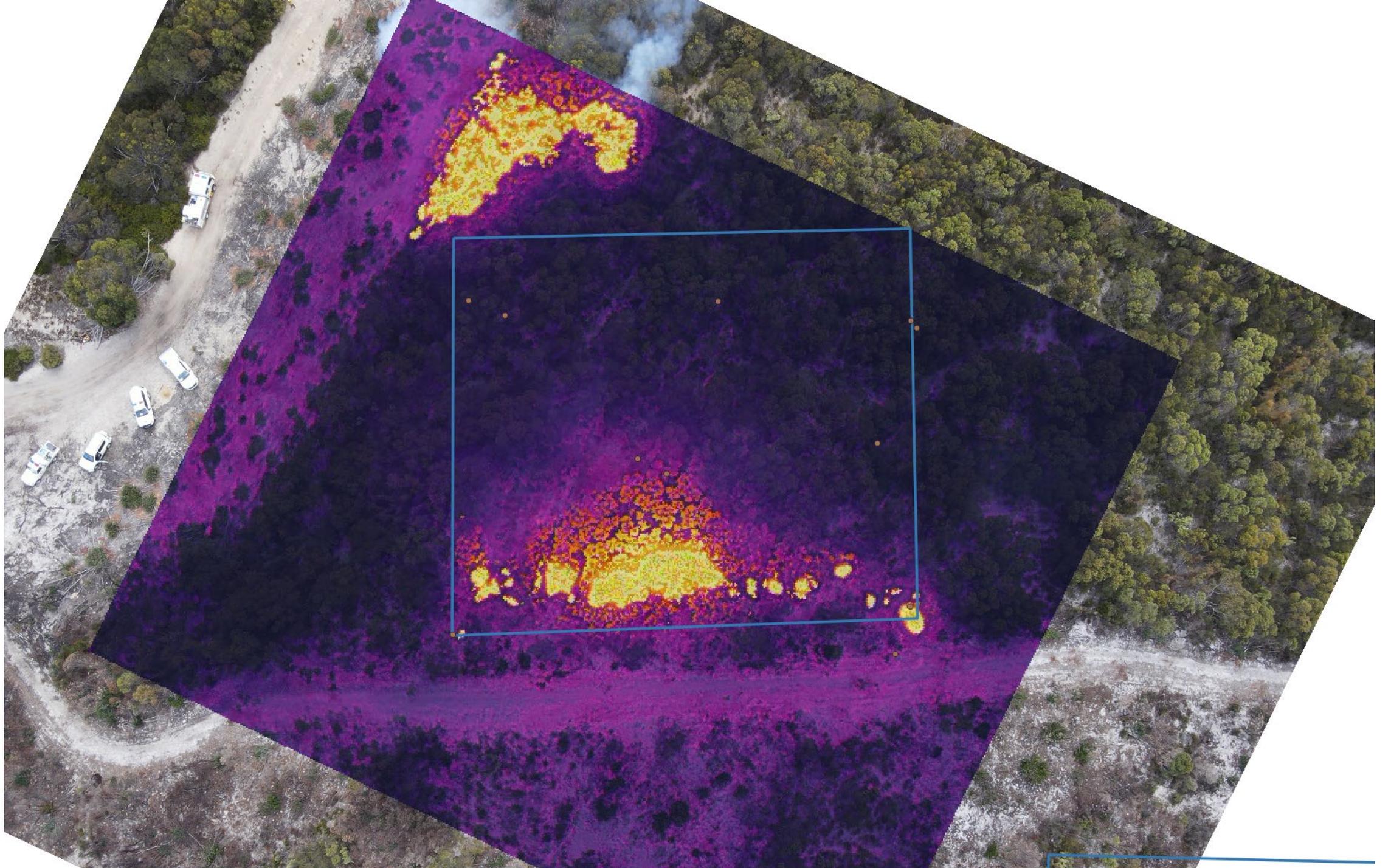


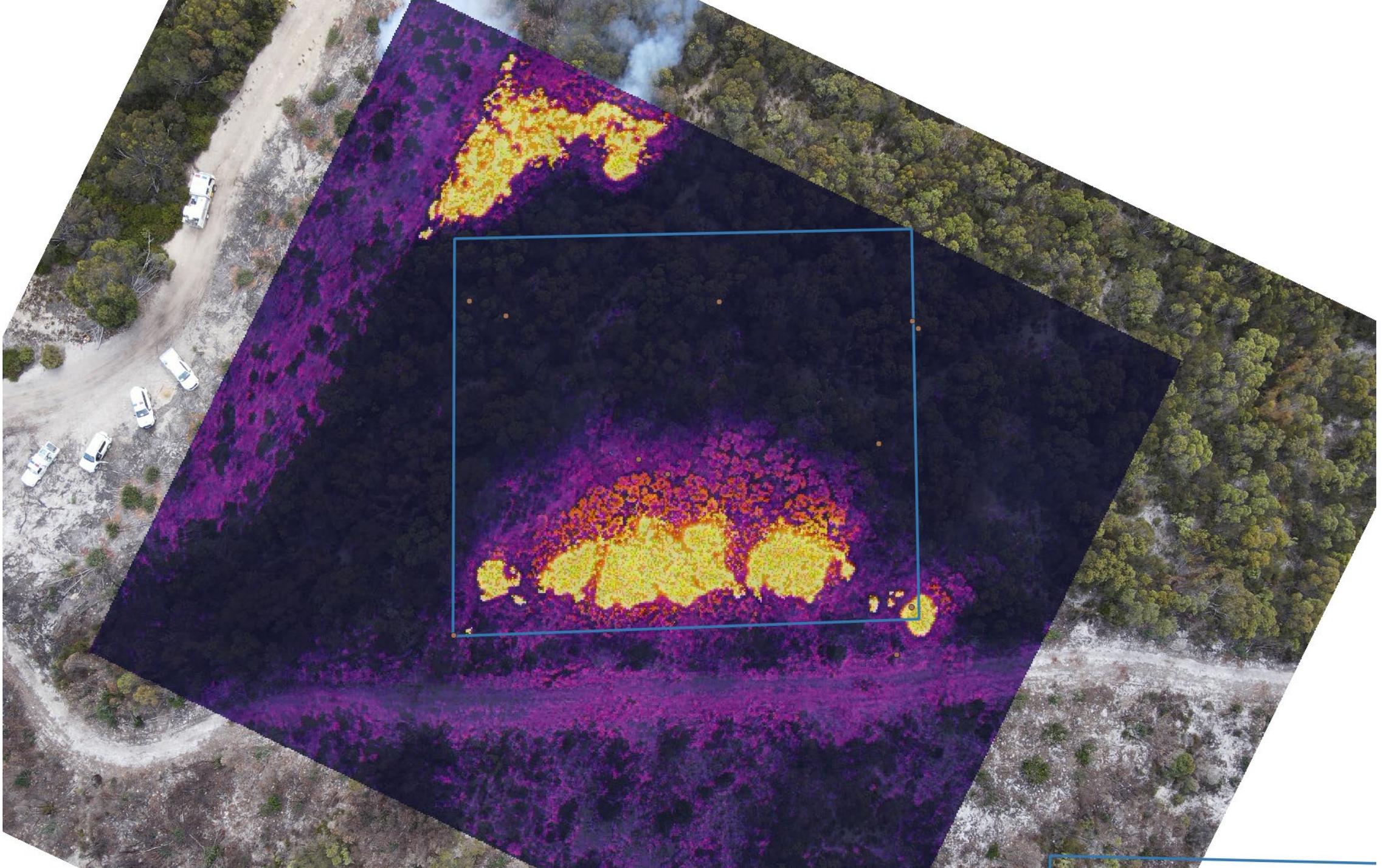
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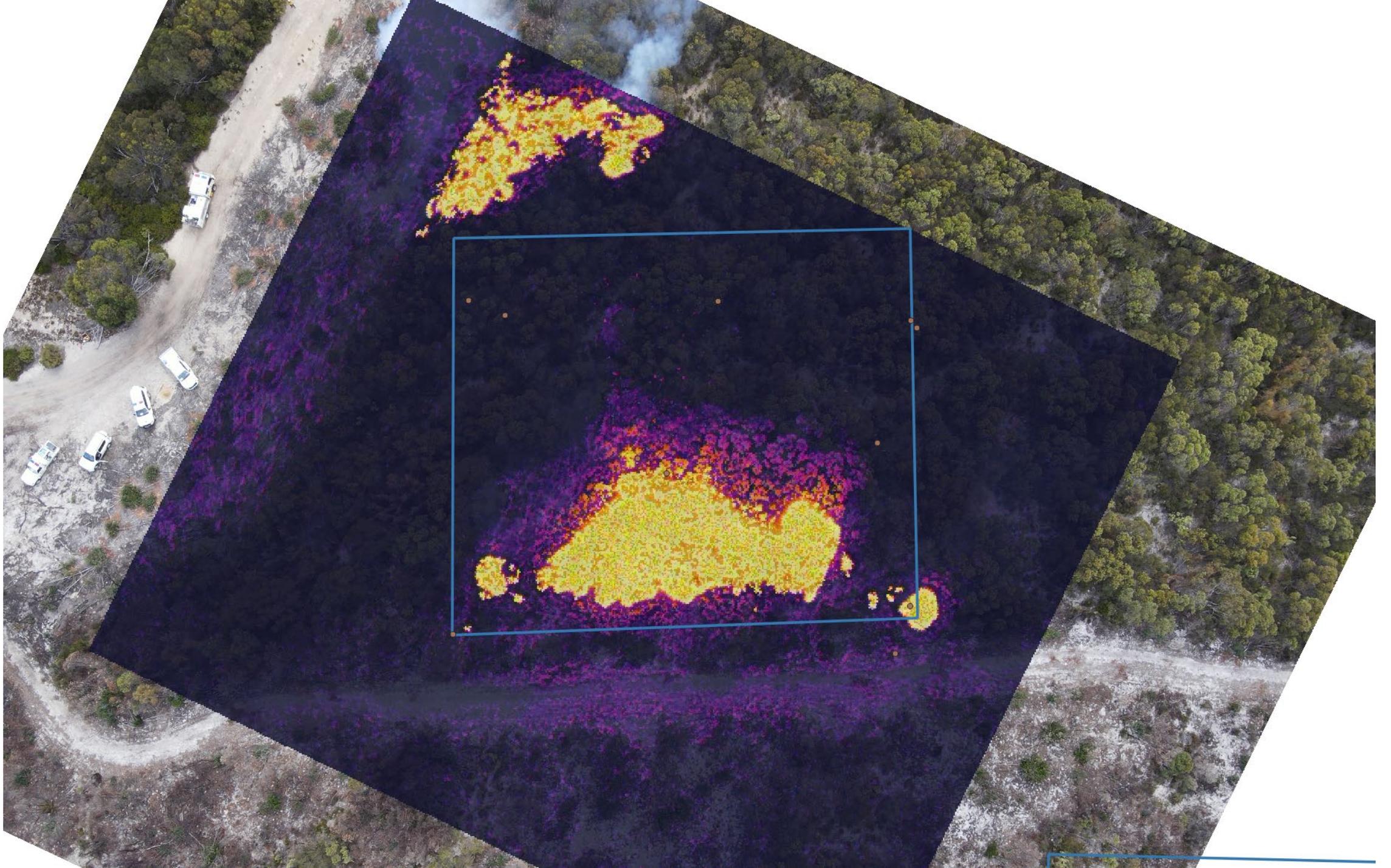


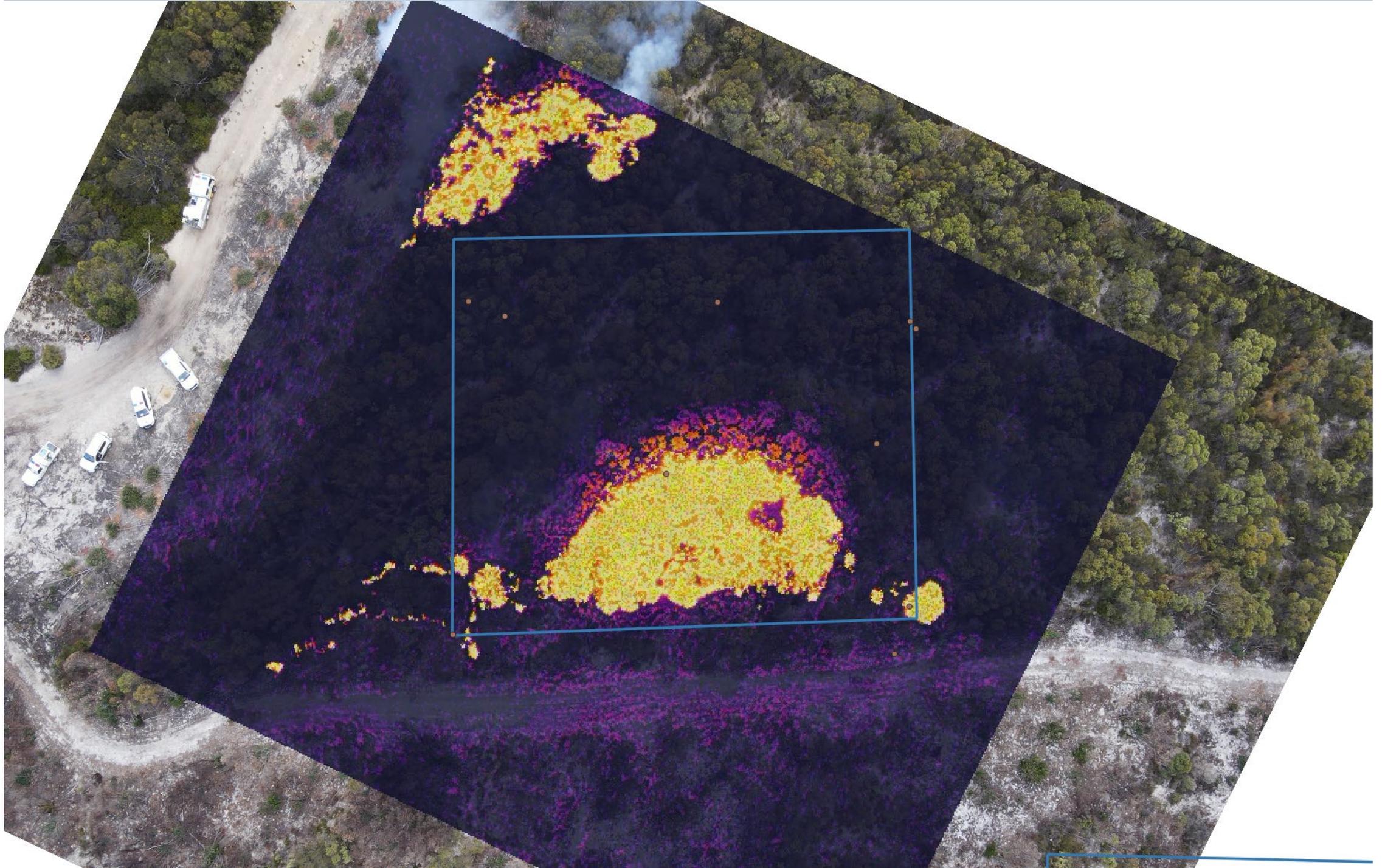


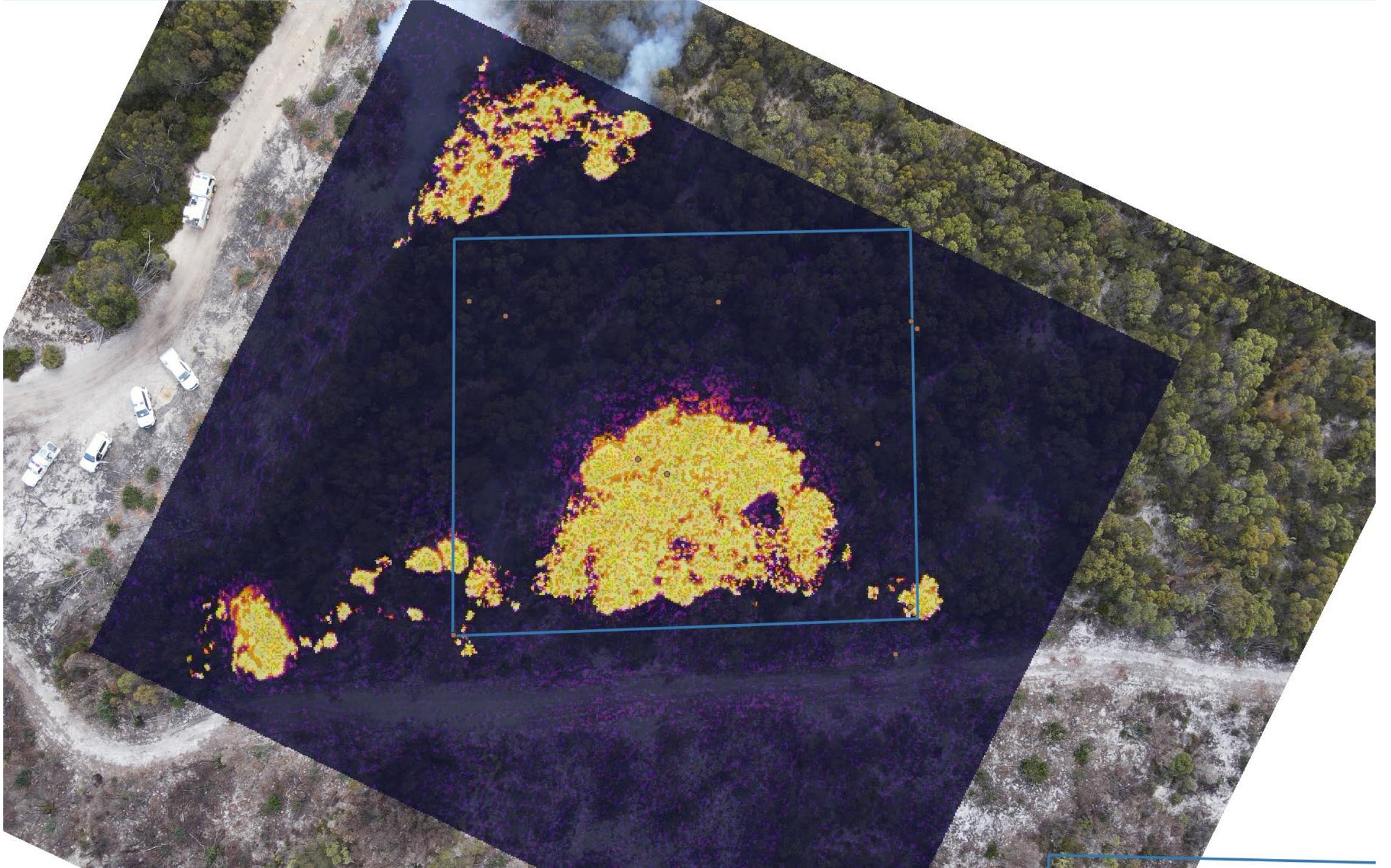


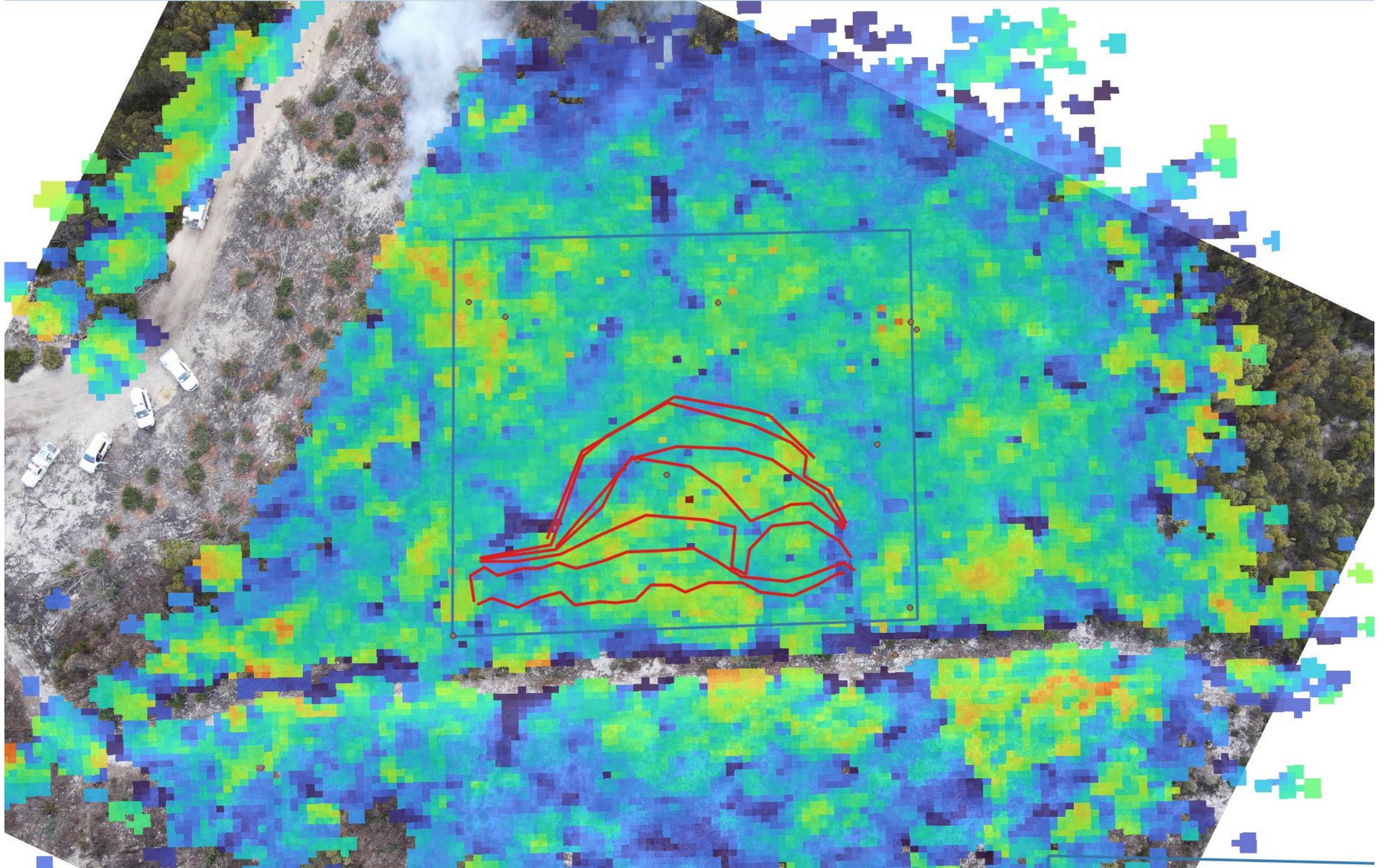




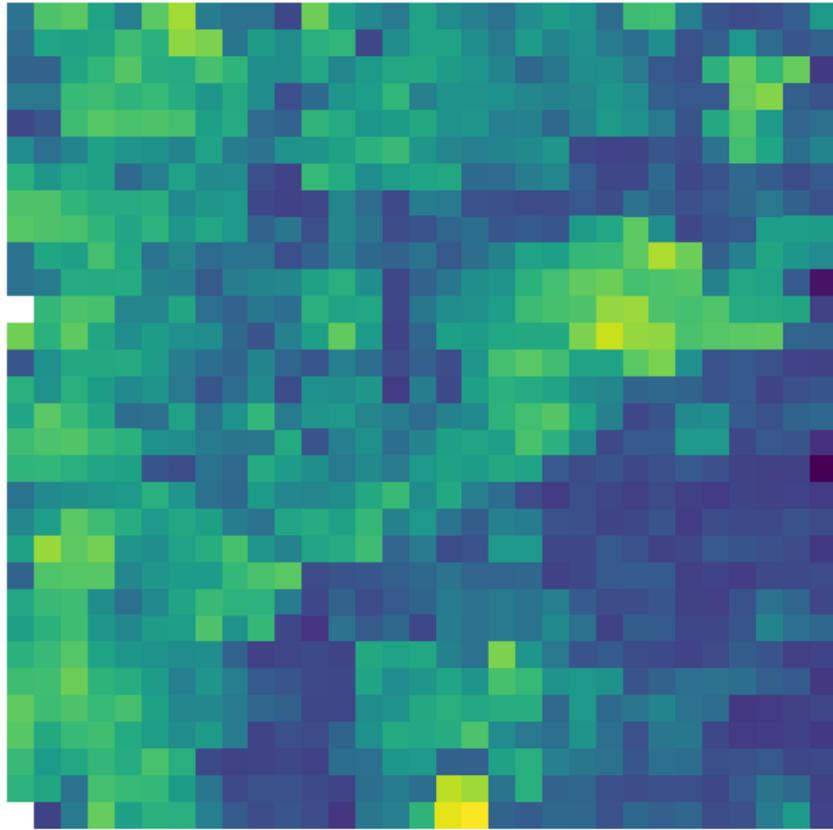




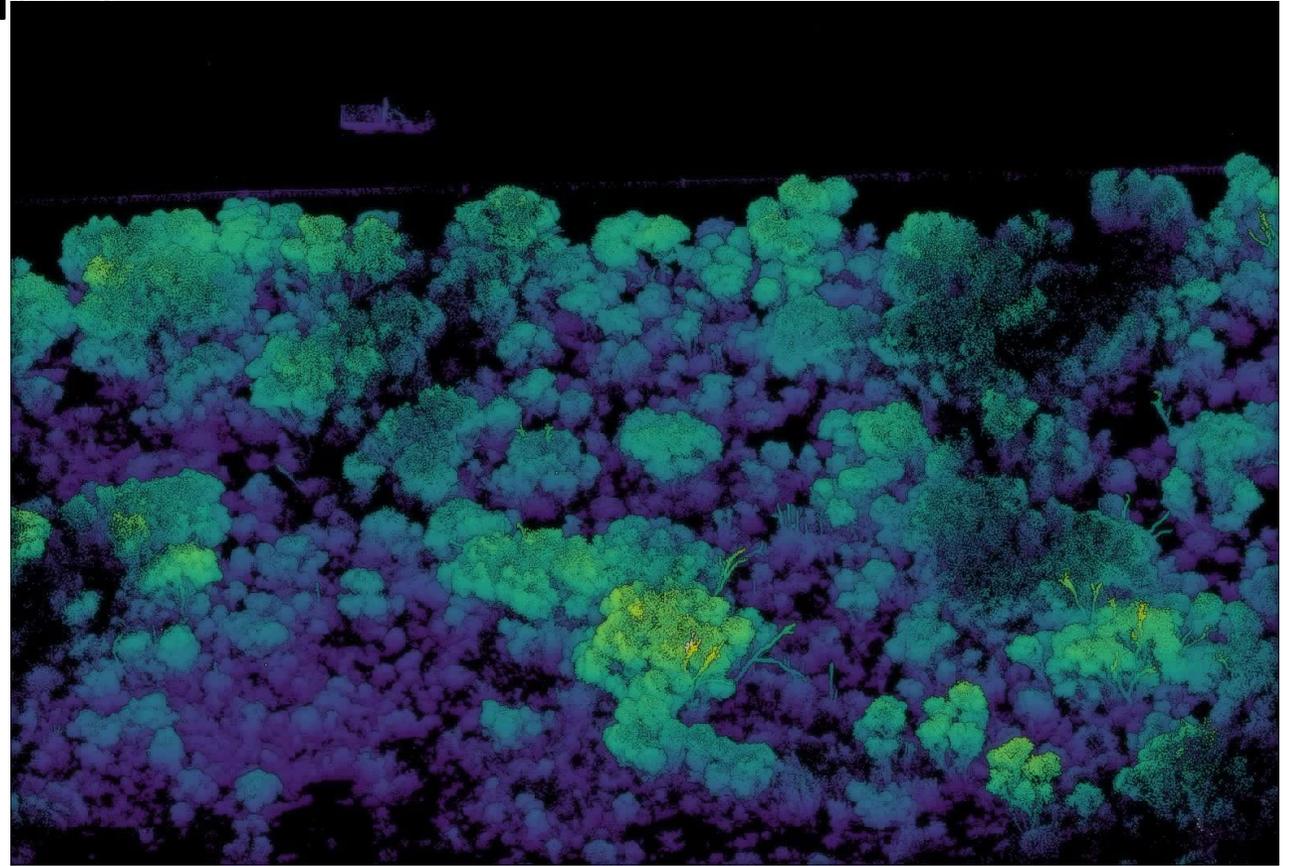


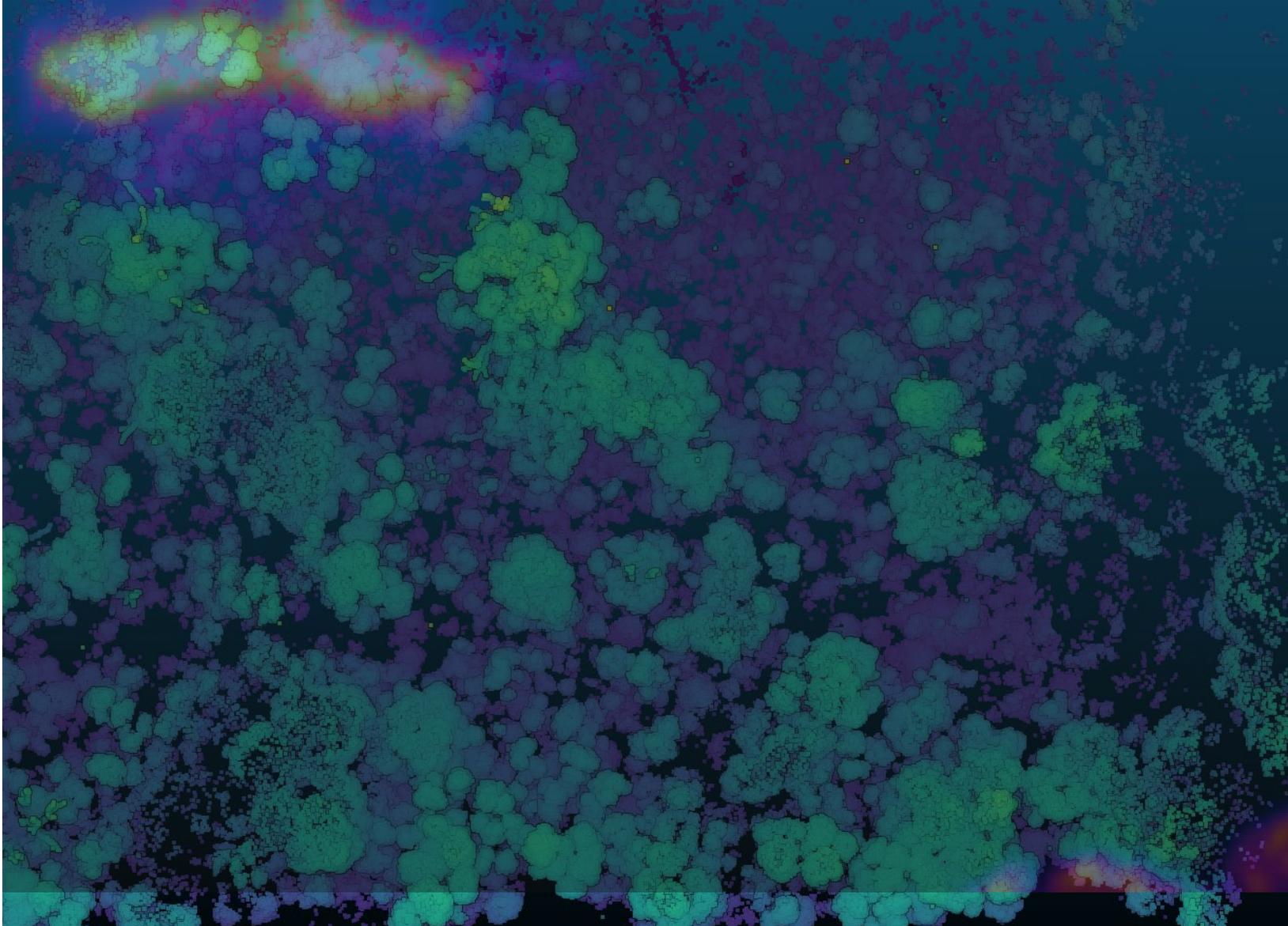


Muirranata Plot example



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Next Step – AI Deep Learning Fuel elements

