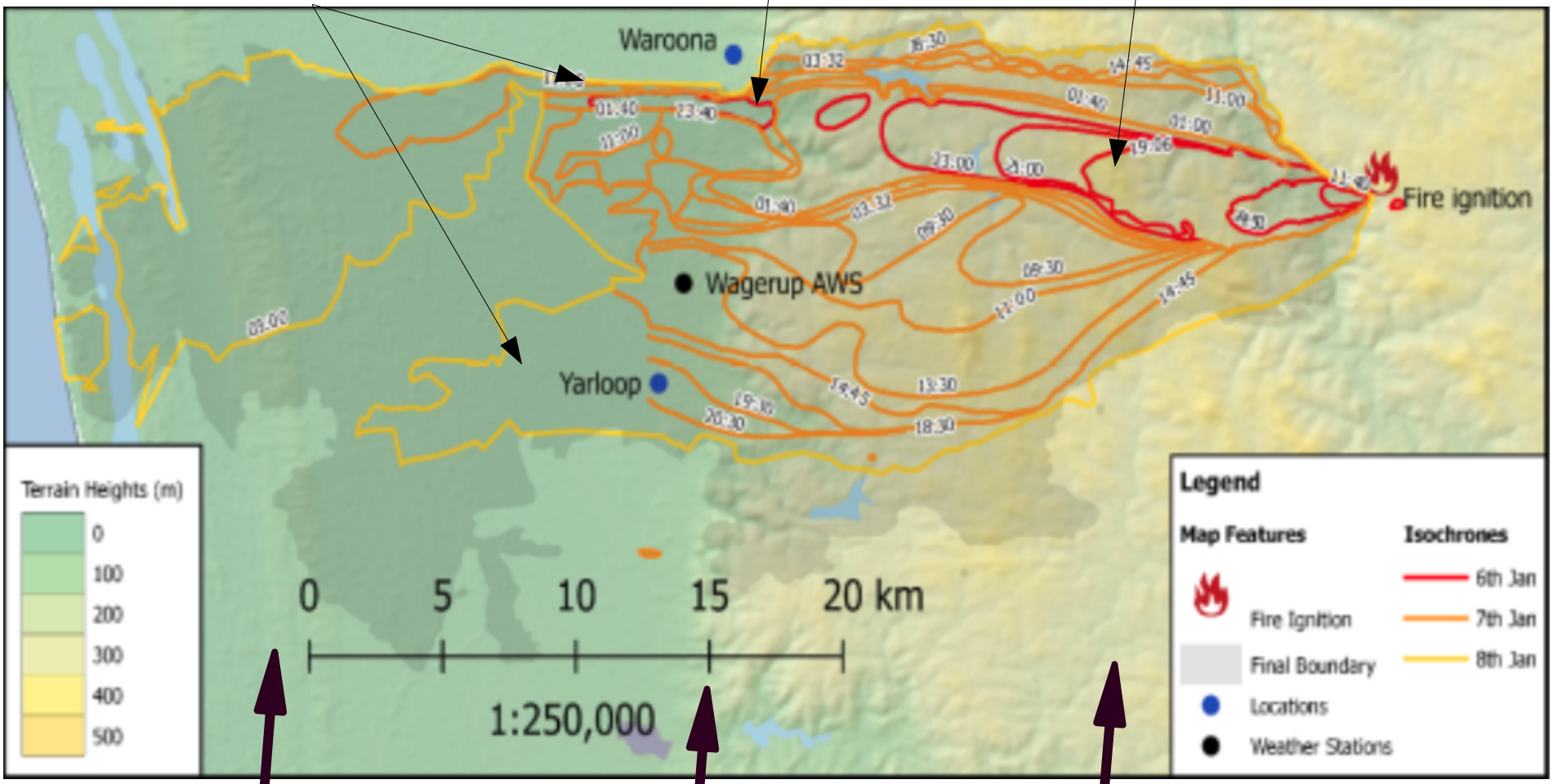
Waroona Fire

Emberstorms

Downslope run

PyroCB



Farmland and rural towns

Escarpment (~300m)

State forest and mining areas

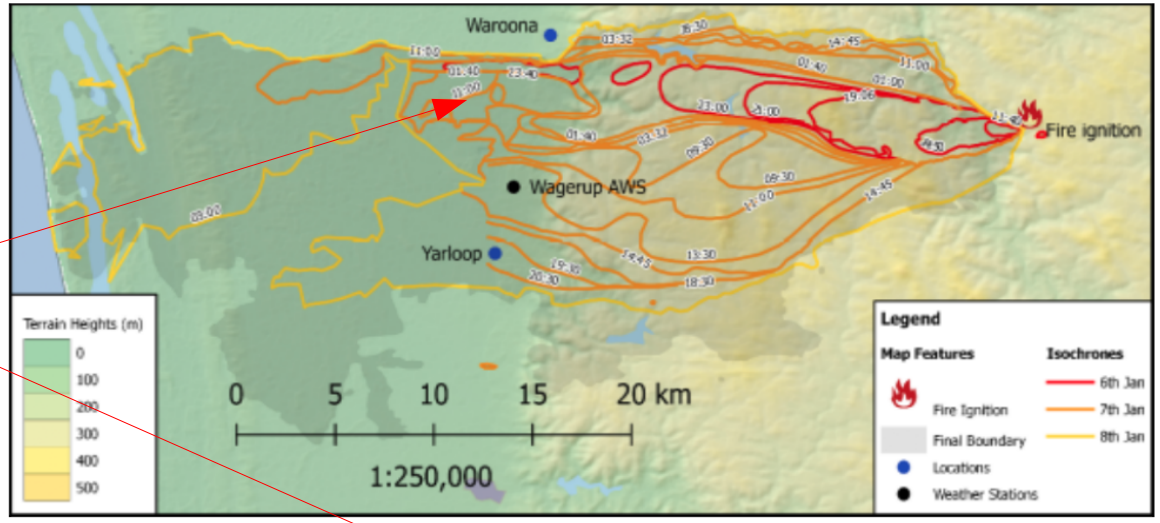
Simulated Fire

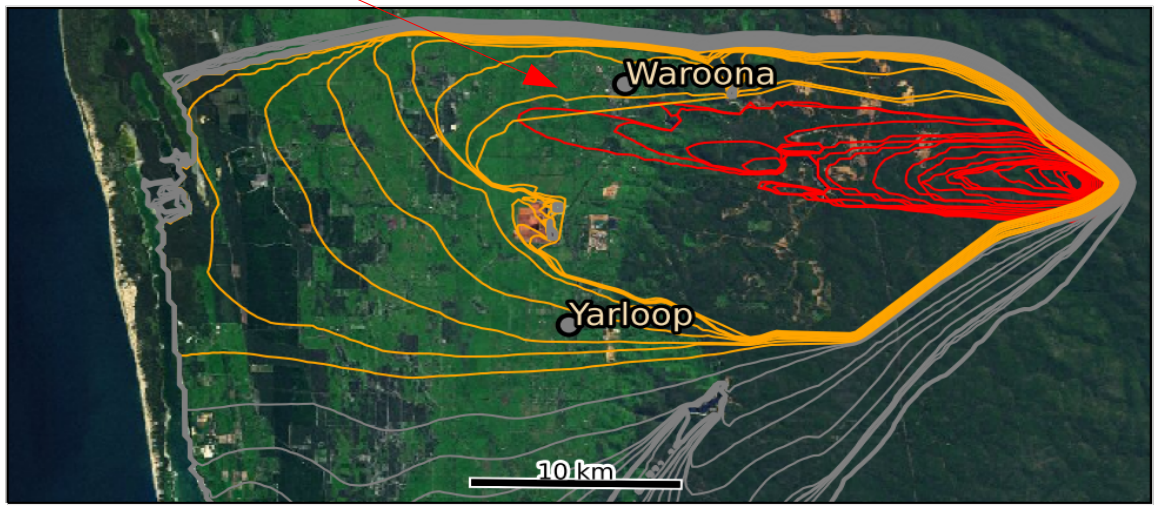
Initial polygon and spotting added by Harvey

Downslope run on first evening can be seen

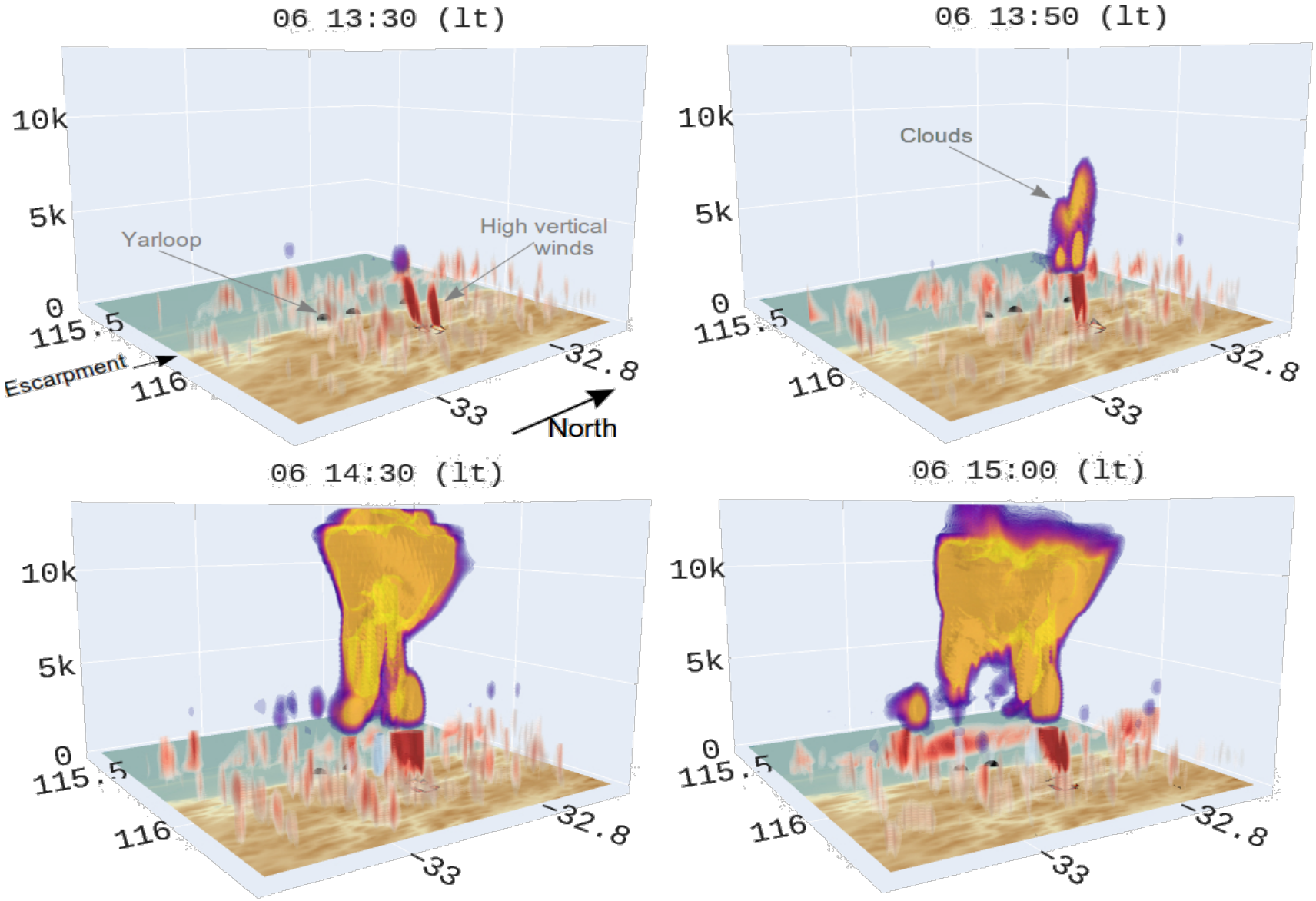
Second day coverage not unreasonable.

Model does not include impacts from control attempts.

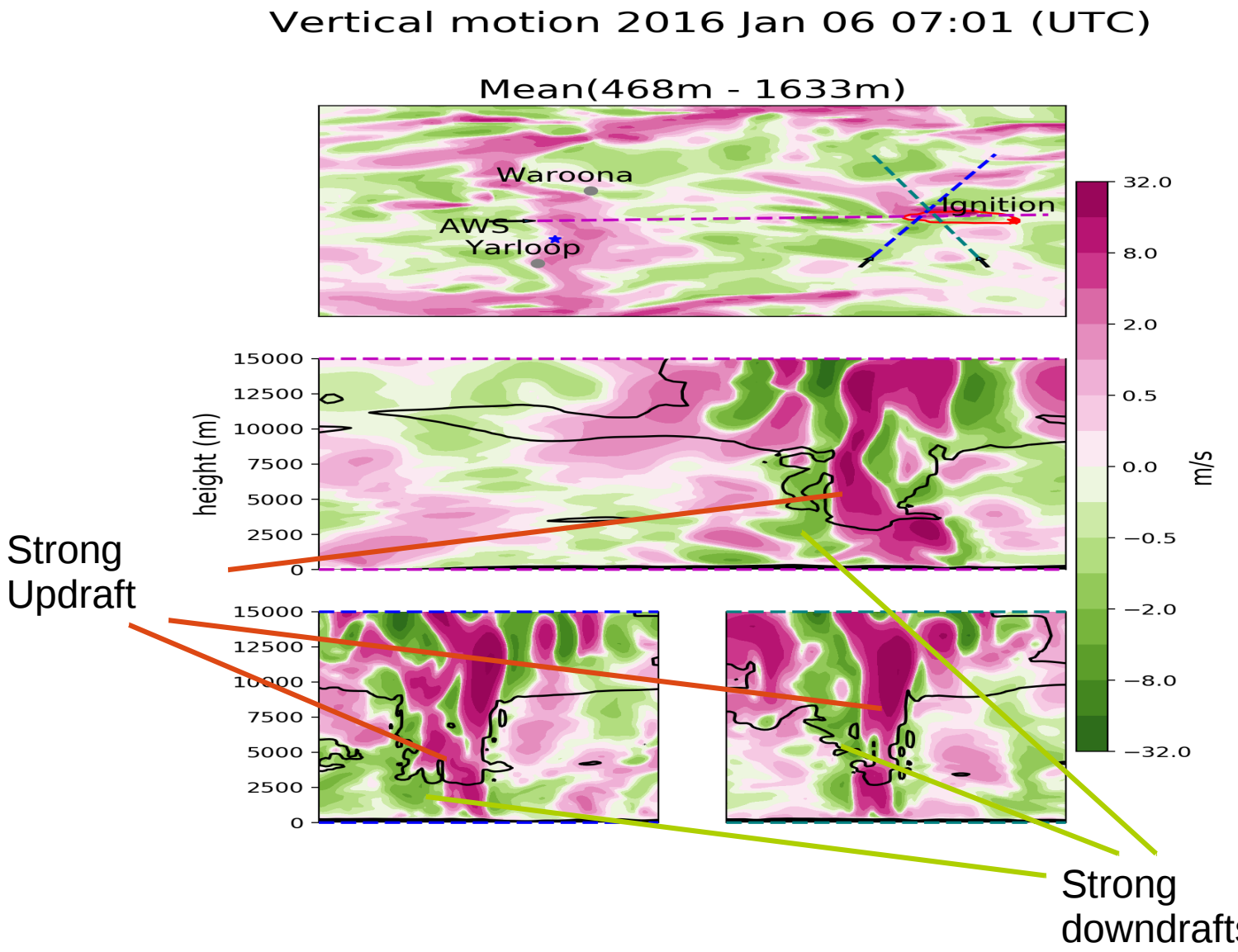




Pyrocumulonimbus (PyroCB)

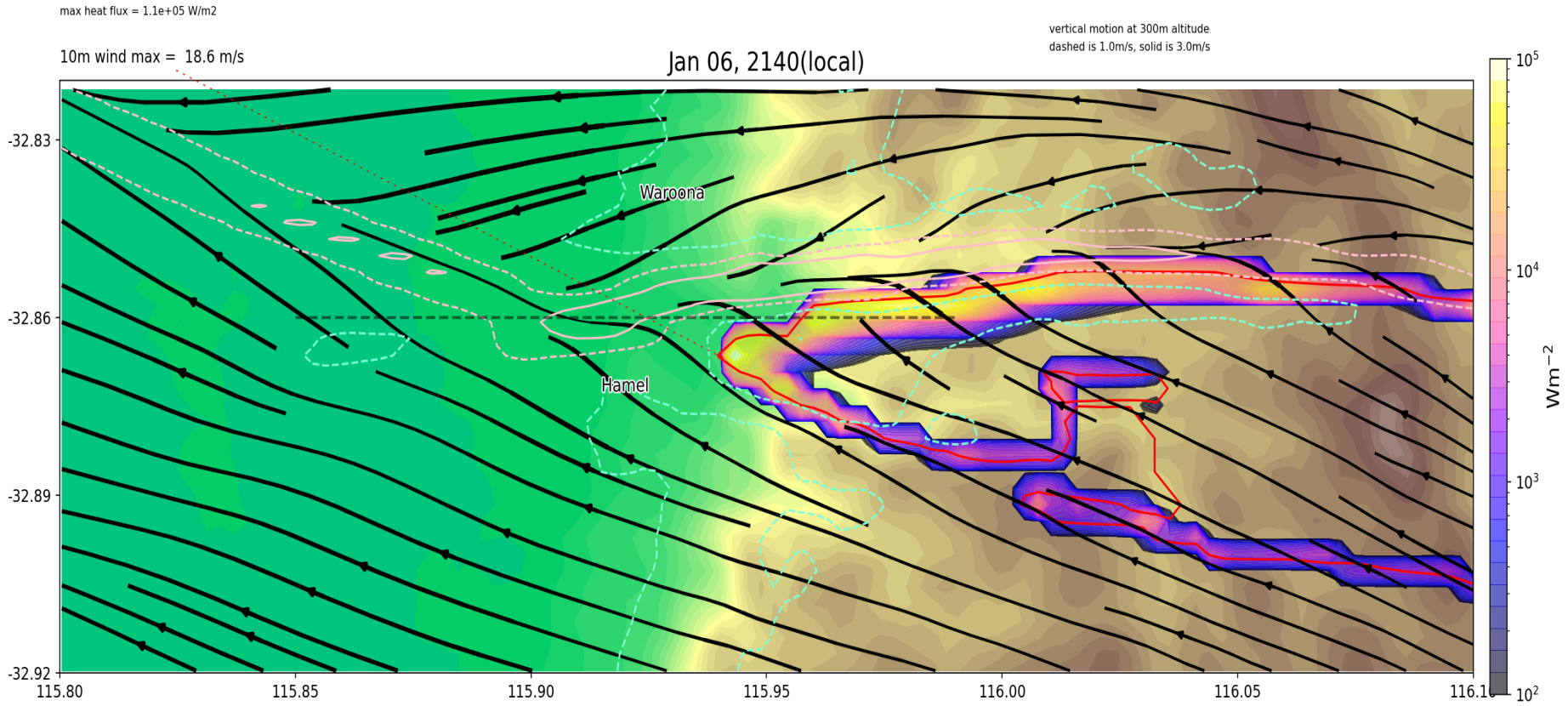


PyroCB Transect

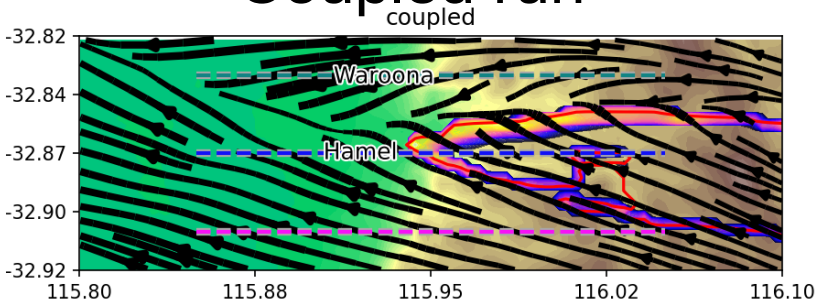


Emberstorm

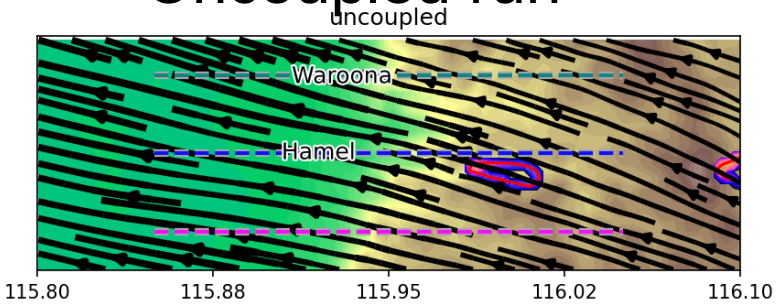
Driven by high down slope winds with strong entrainment.



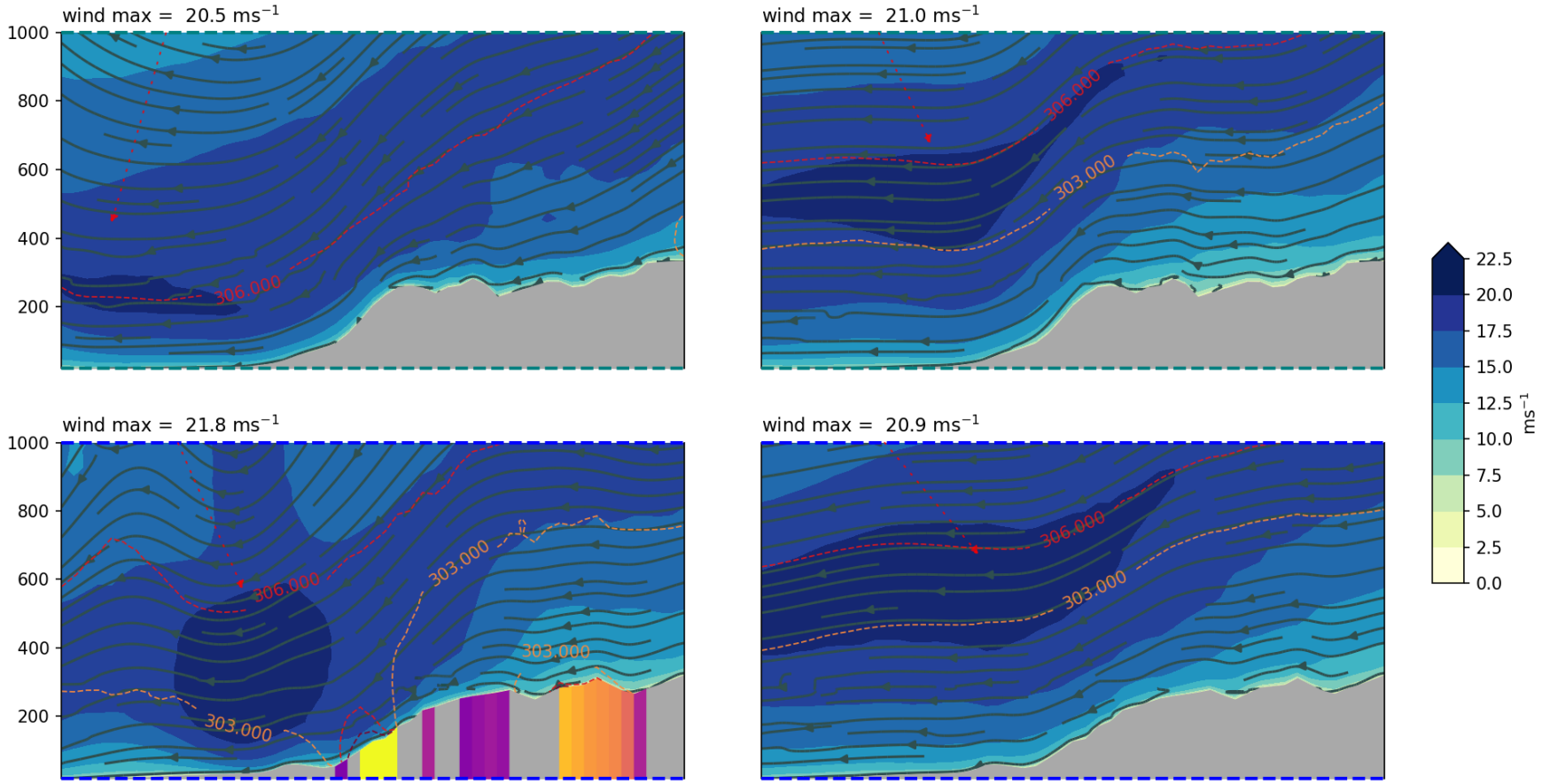
Coupled run

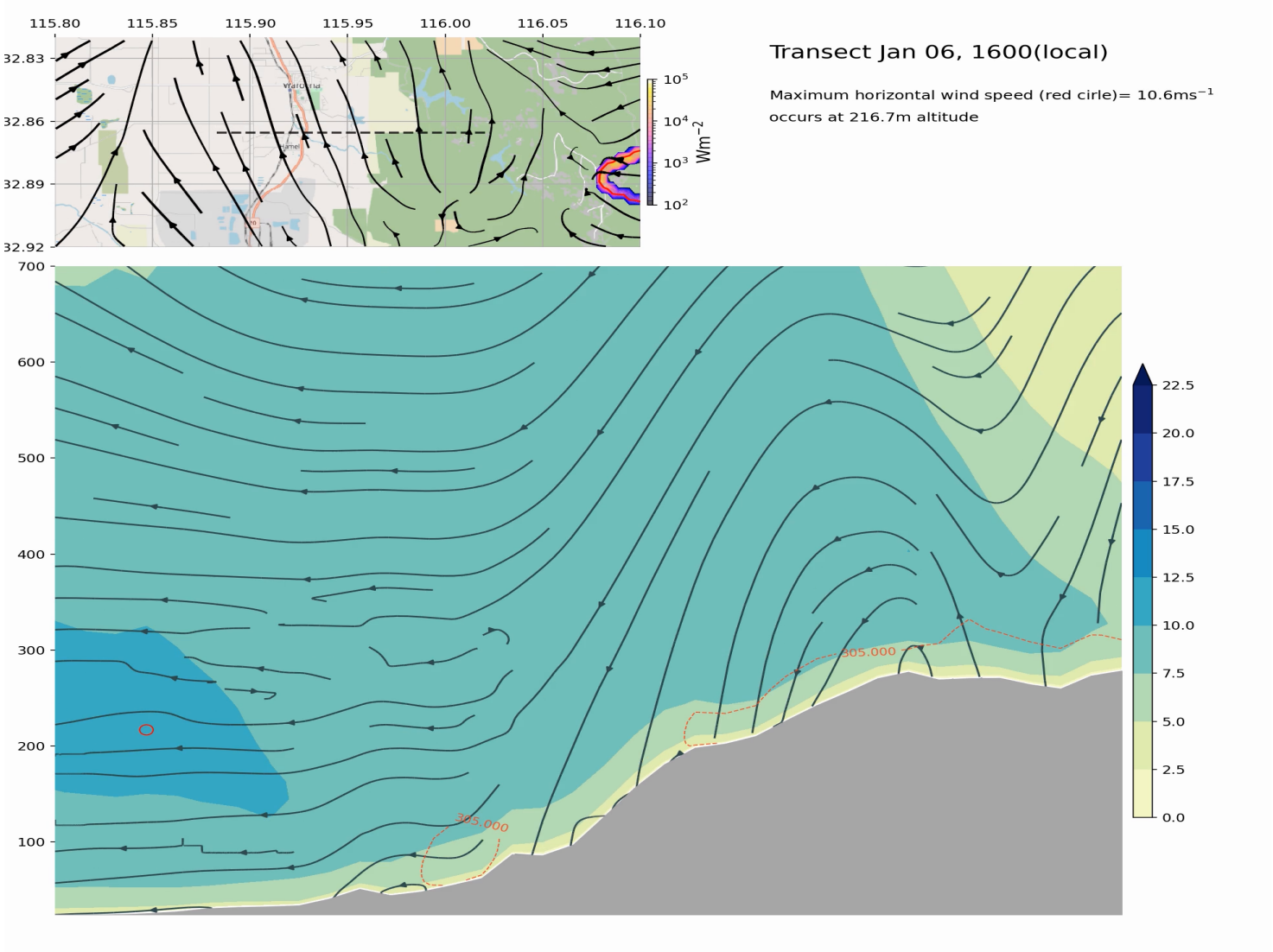


Uncoupled run

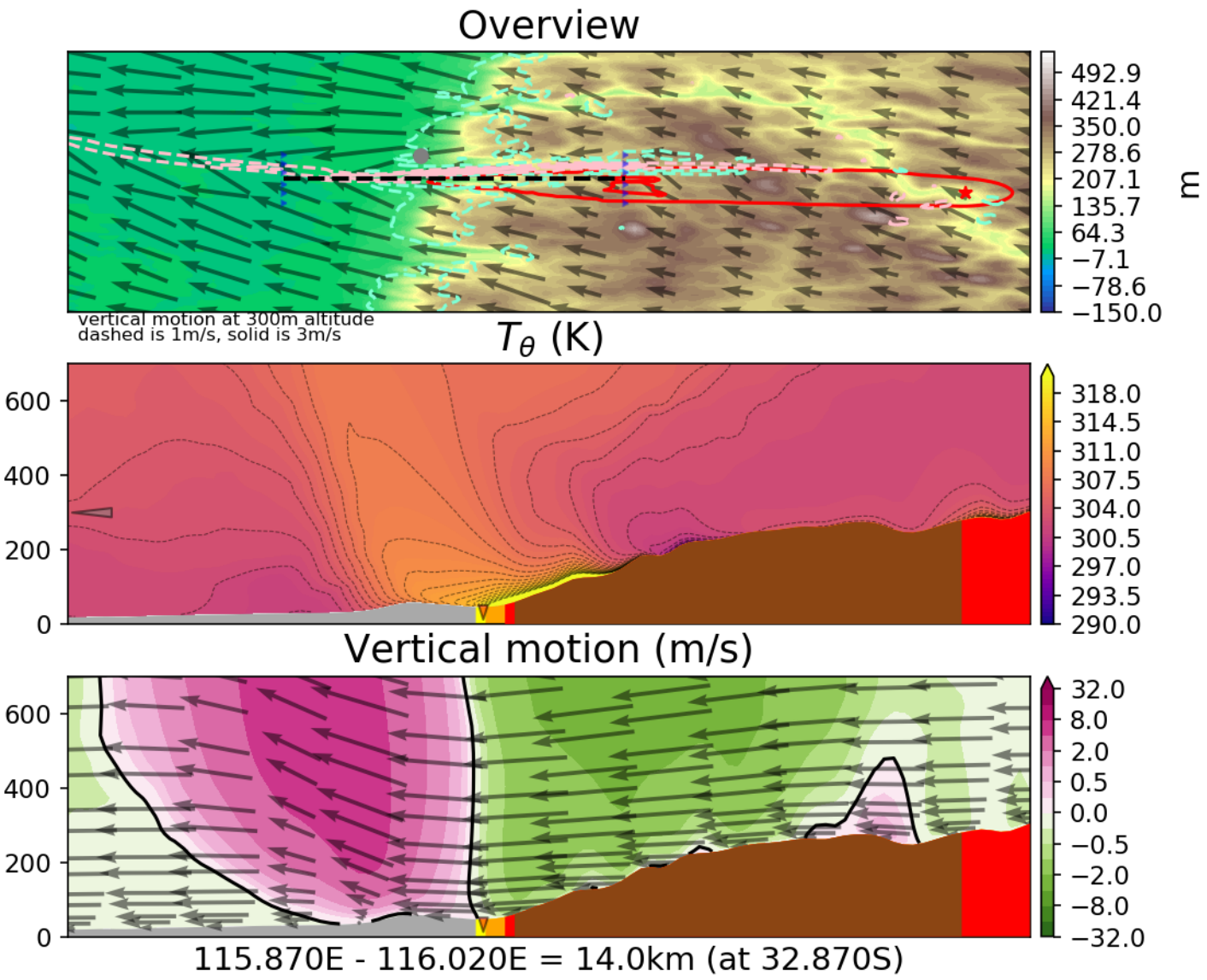


Horizontal wind Transects

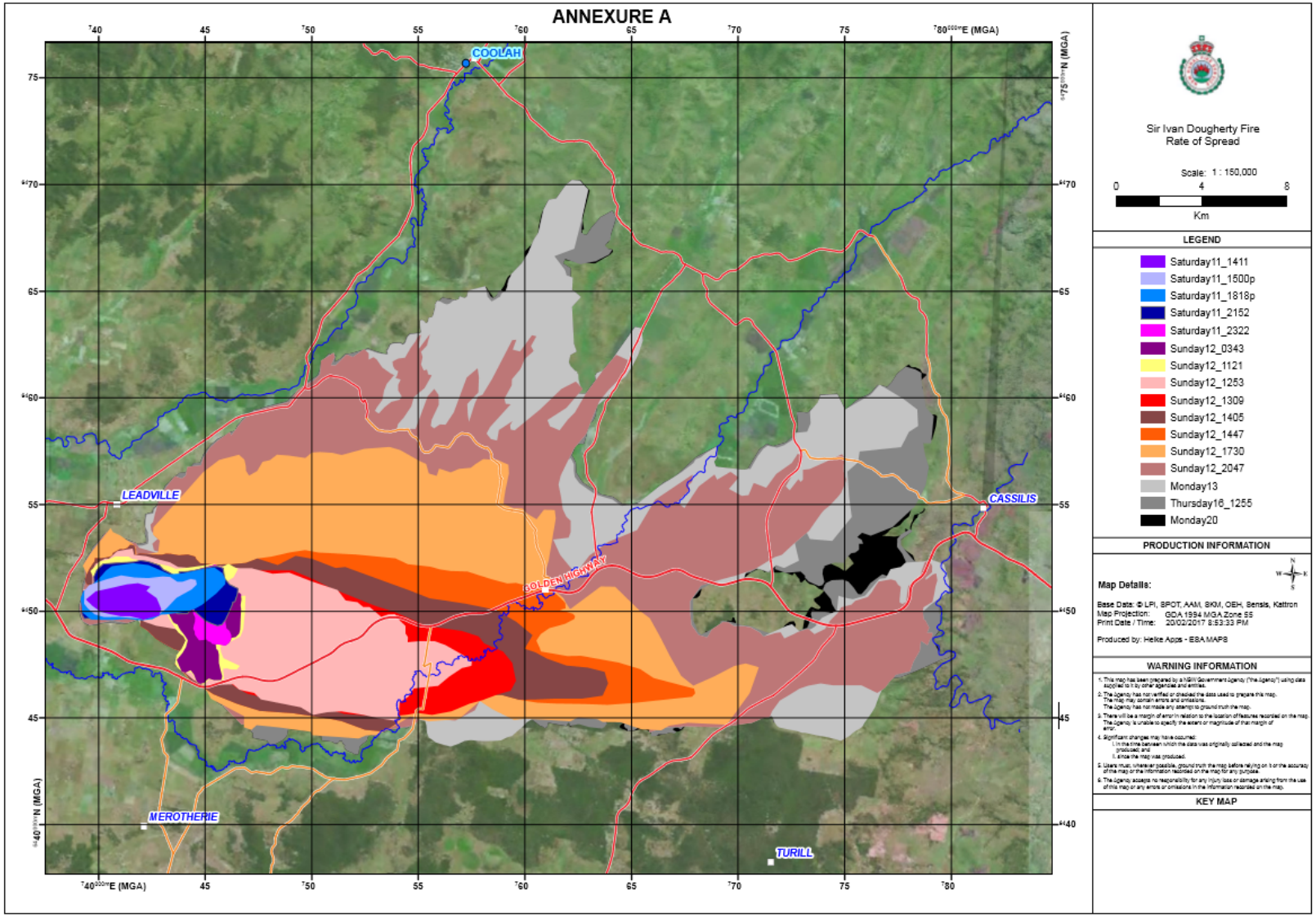




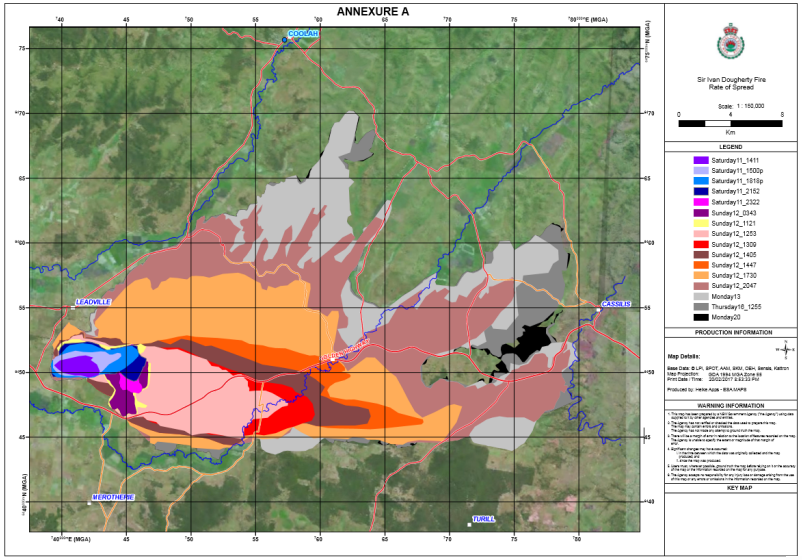
Emberstorm Jan 06 13:40 (UTC)



Sir Ivan Spread



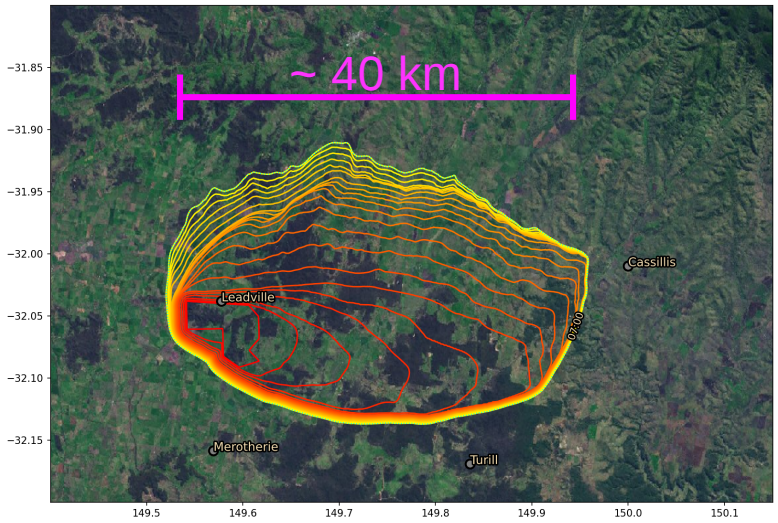
Sir Ivan Spread

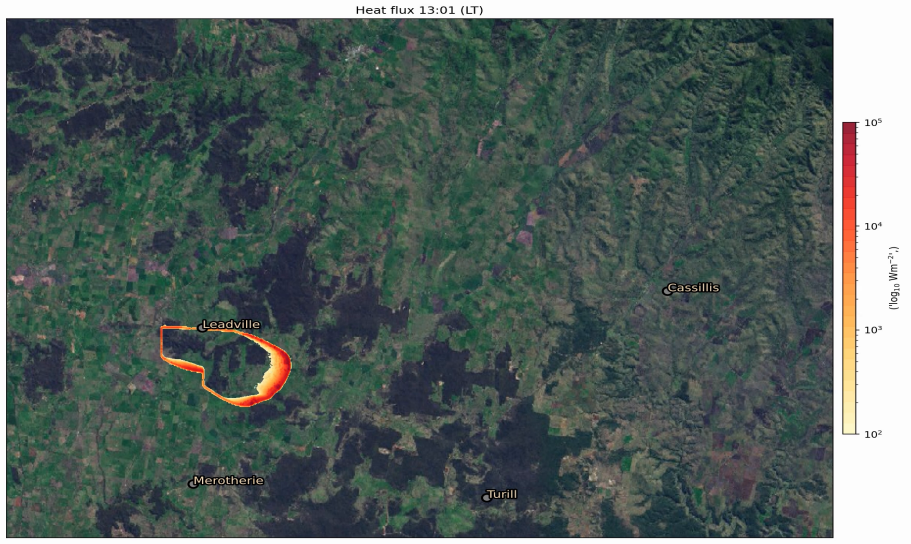


Spread is reasonably well captured

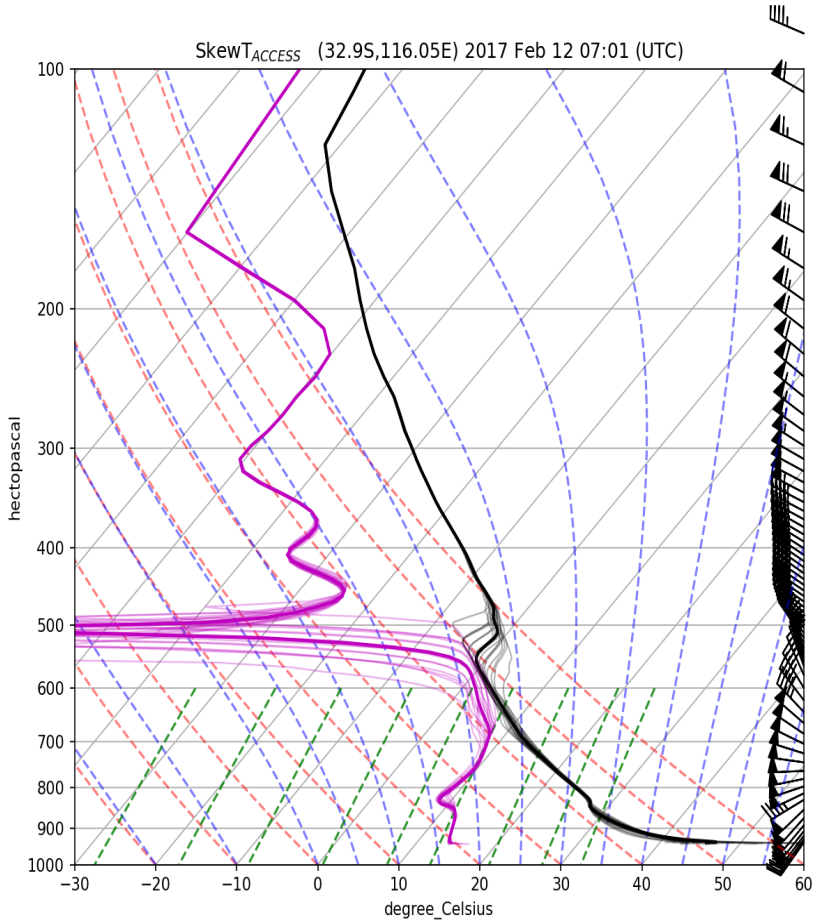
Bottom left: hourly firefront contours

Bottom right: intensity





Kevin's PFT

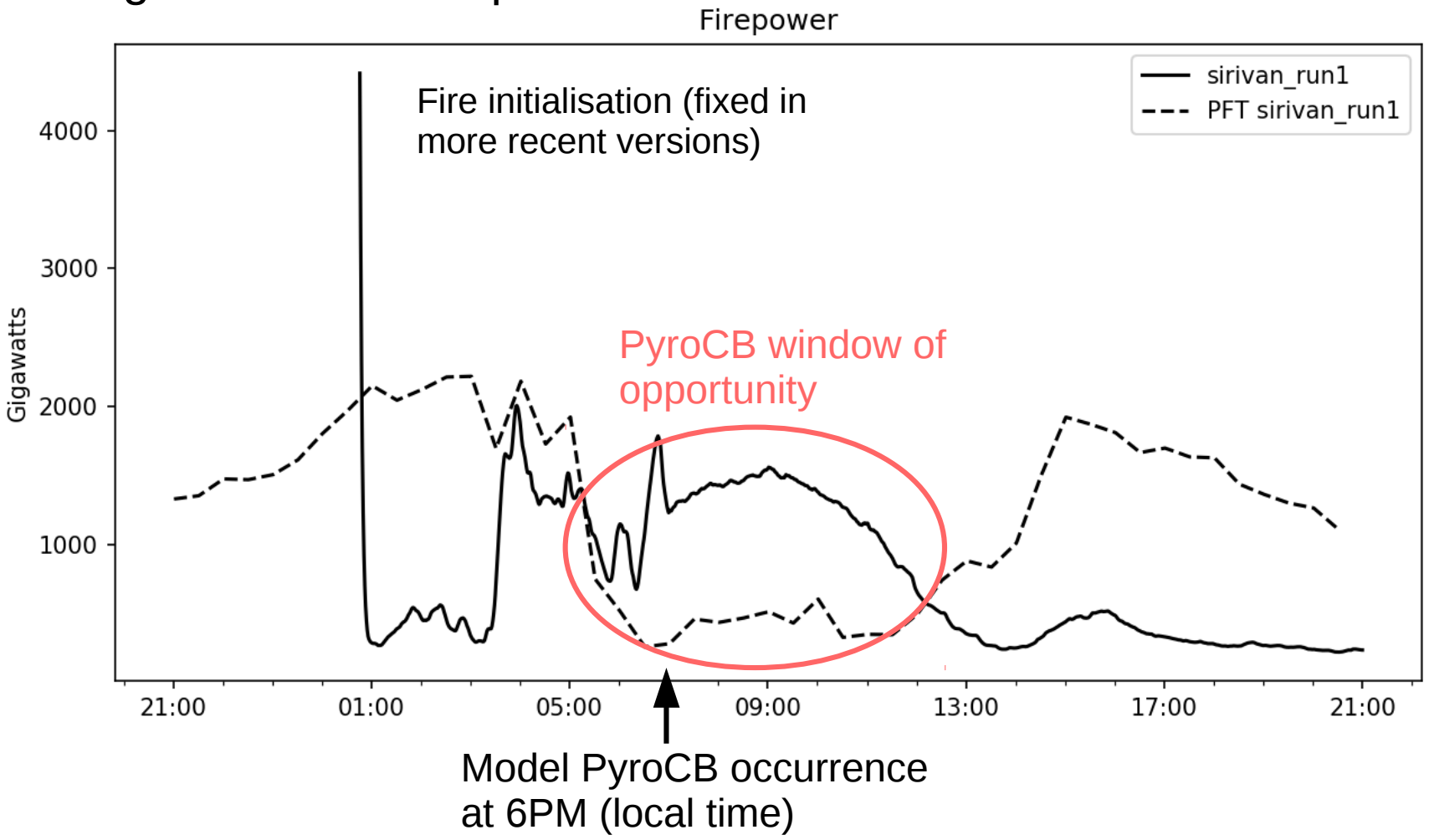


Theoretical energy requirement to form PyroCB

$$PFT = C\,(Z_{fc})^2\,U\,b_{fc}$$

PFT: PyroCB Firepower Threshold
C : constant
Z_{fc} : free convection altitude
U : wind speed
b_{fc} : ML escape energy required

Model PFT calculated upwind of the fire, compared against integrated model firepower.



Brief PyroCB