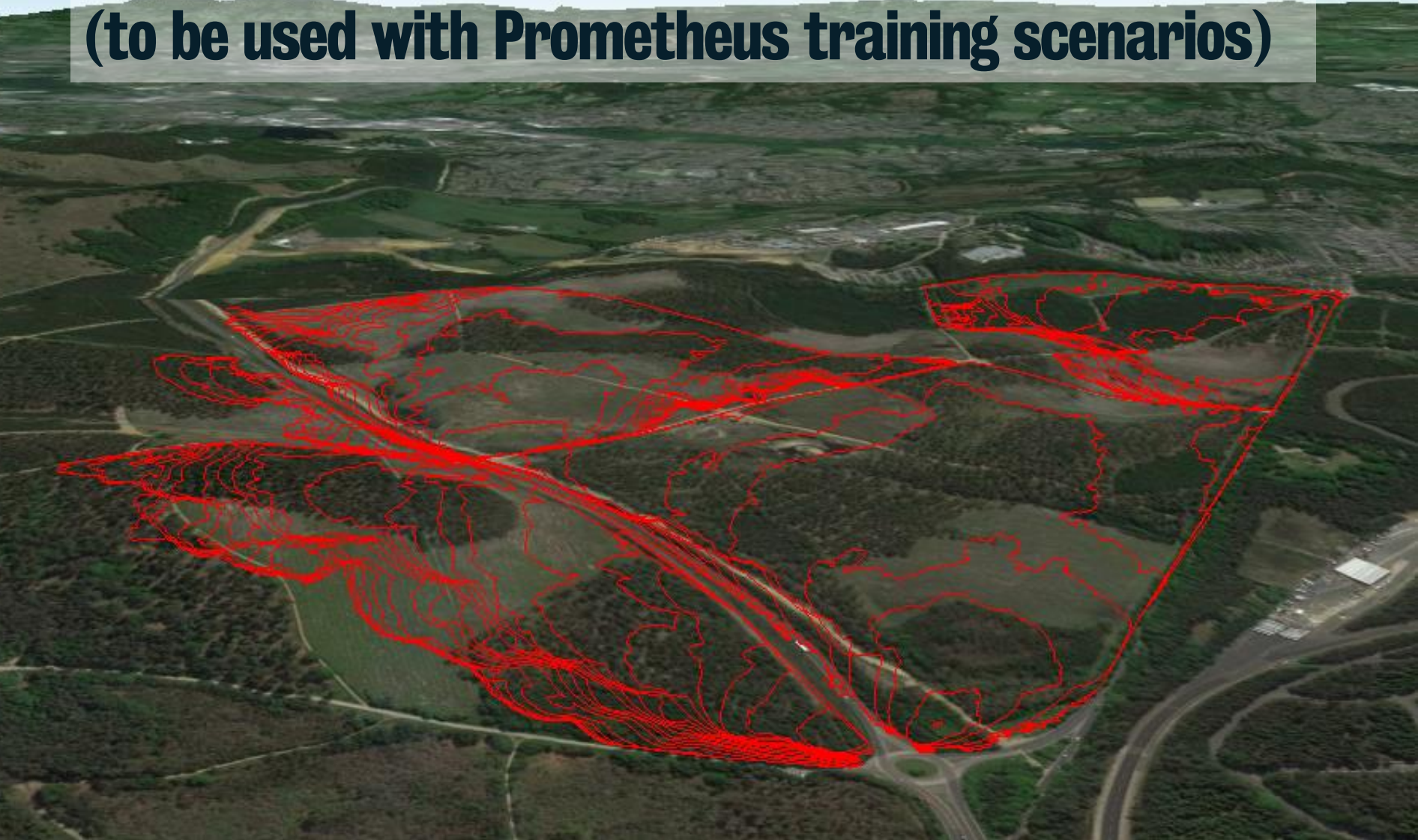


# SURFACE-TO-CROWN FIRE EXAMPLE

(to be used with Prometheus training scenarios)



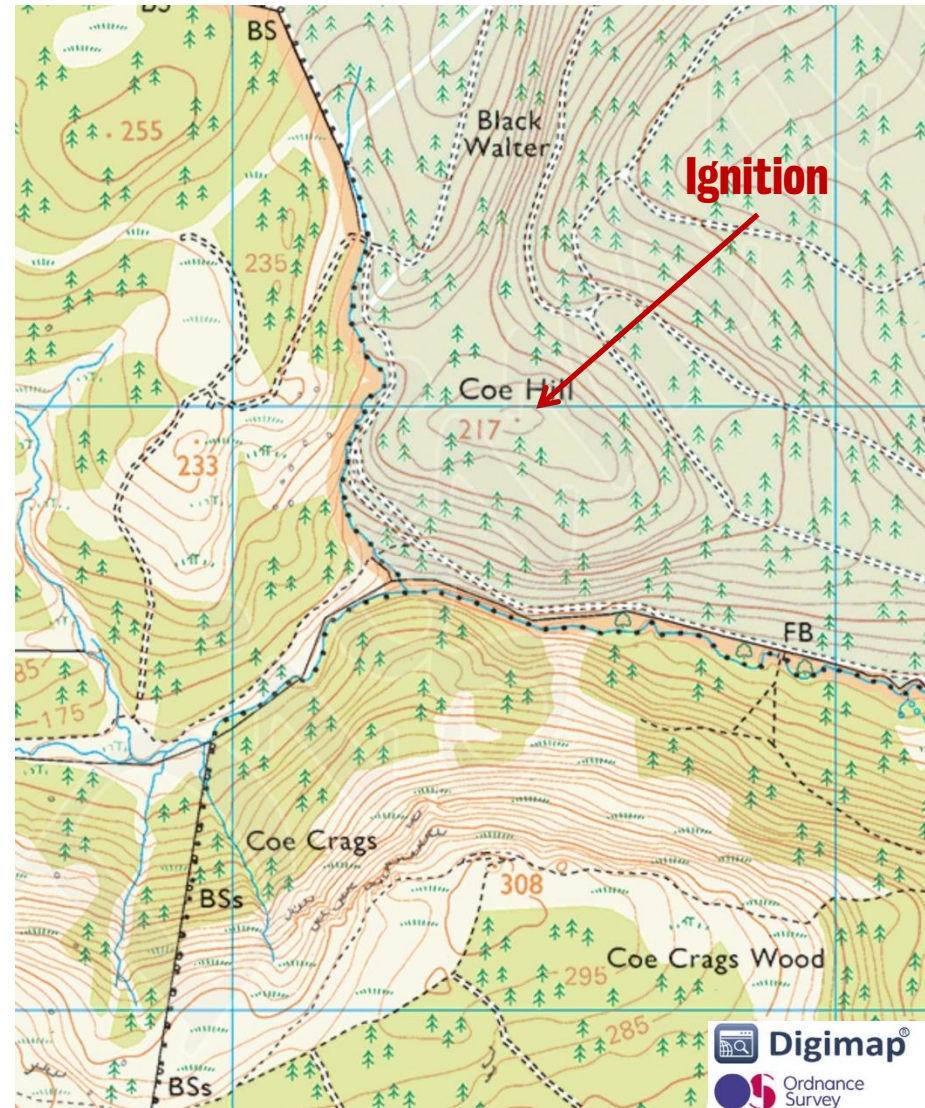
# LANDSCAPE MODEL 4: SURFACE-CROWN

## Open Simulation 7 – SurfaceCrown.fgm

- 14 km/hr wind
- SSW-wind [205°]
- Starts at top of hill
- 30% relative humidity
- Uniform fuel (pine plantation with surface and ladder fuels)
- Single POINT ignition

Run the ‘Surface-CrownFire’ simulation:

- What fire behaviour should we expect?
- Where will the fire spread?
- What are the fire alignments?



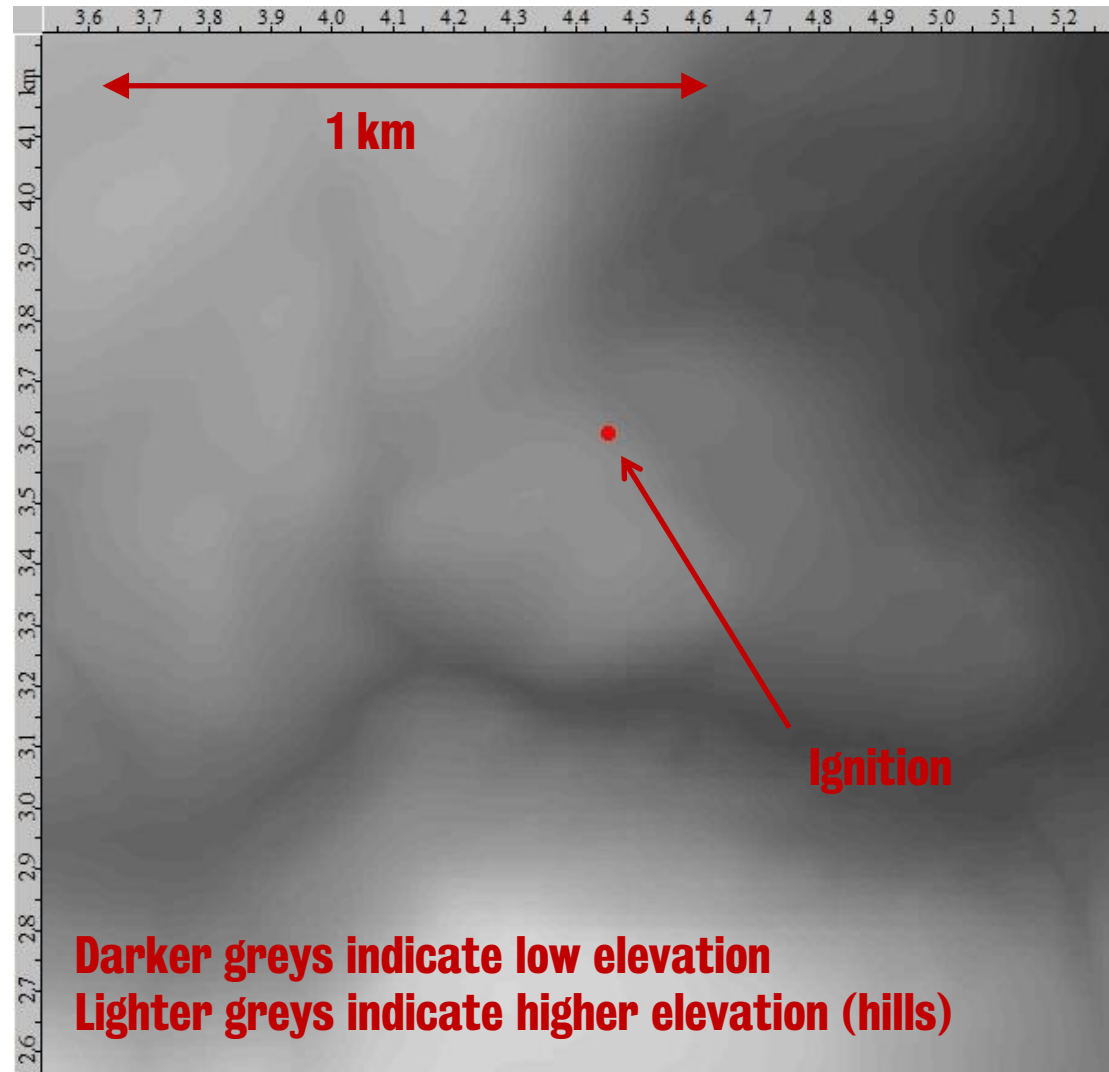
# LANDSCAPE MODEL 4: SURFACE-CROWN

## Open Simulation 7 – SurfaceCrown.fgm

- 14 km/hr wind
- SSW-wind [205°]
- Starts at top of hill
- 30% relative humidity
- Uniform fuel (pine plantation with surface and ladder fuels)
- Single POINT ignition

Run the ‘Surface-CrownFire’ simulation:

- What fire behaviour should we expect?
- Where will the fire spread?
- What are the fire alignments?

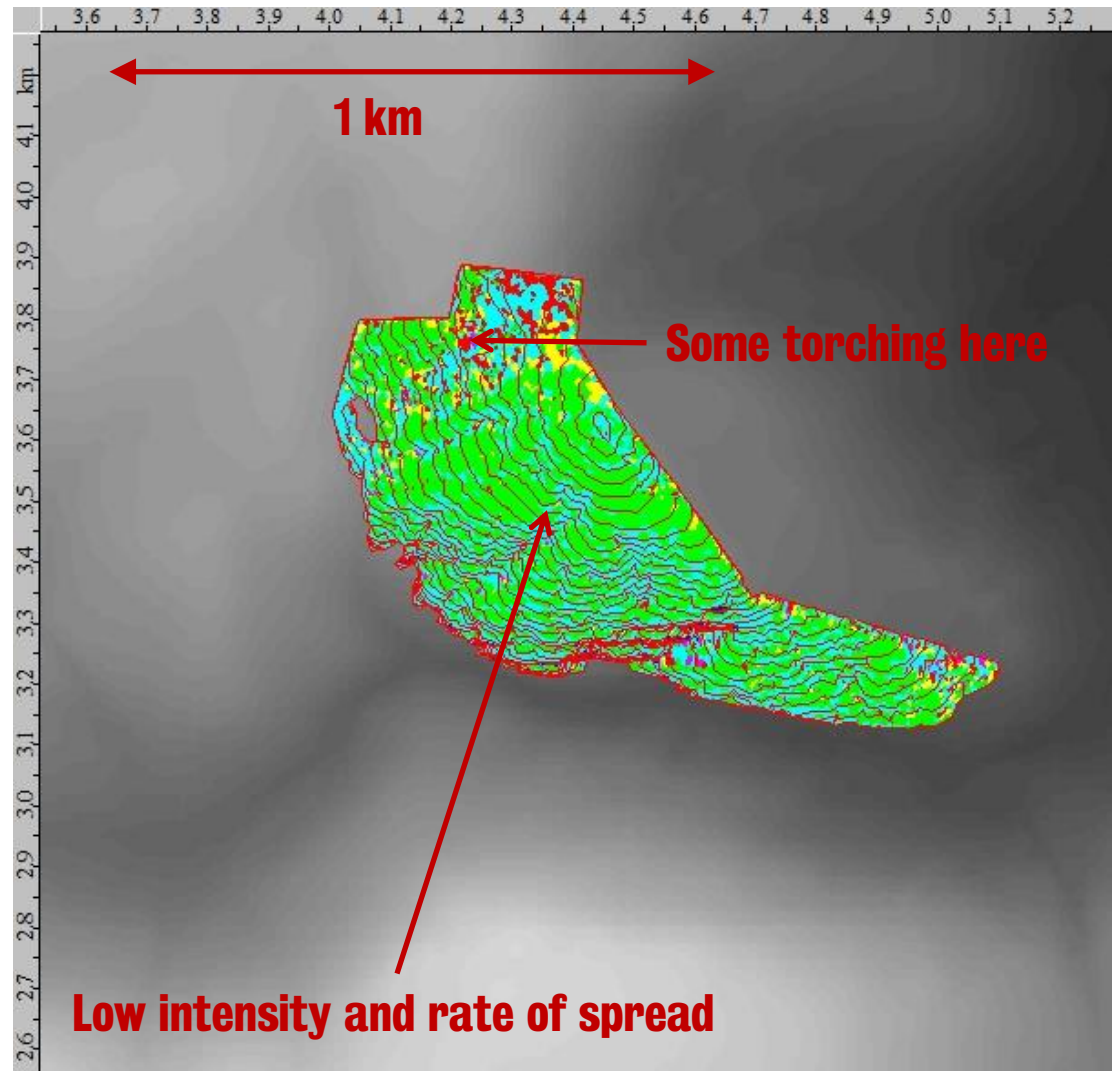


# LANDSCAPE MODEL 4: SURFACE-CROWN

- 14 km/hr wind
- SSW-wind [205°]
- Starts at top of hill
- 30% relative humidity
- Uniform fuel (pine plantation with surface and ladder fuels)
- Single POINT ignition

## Fire behaviour:

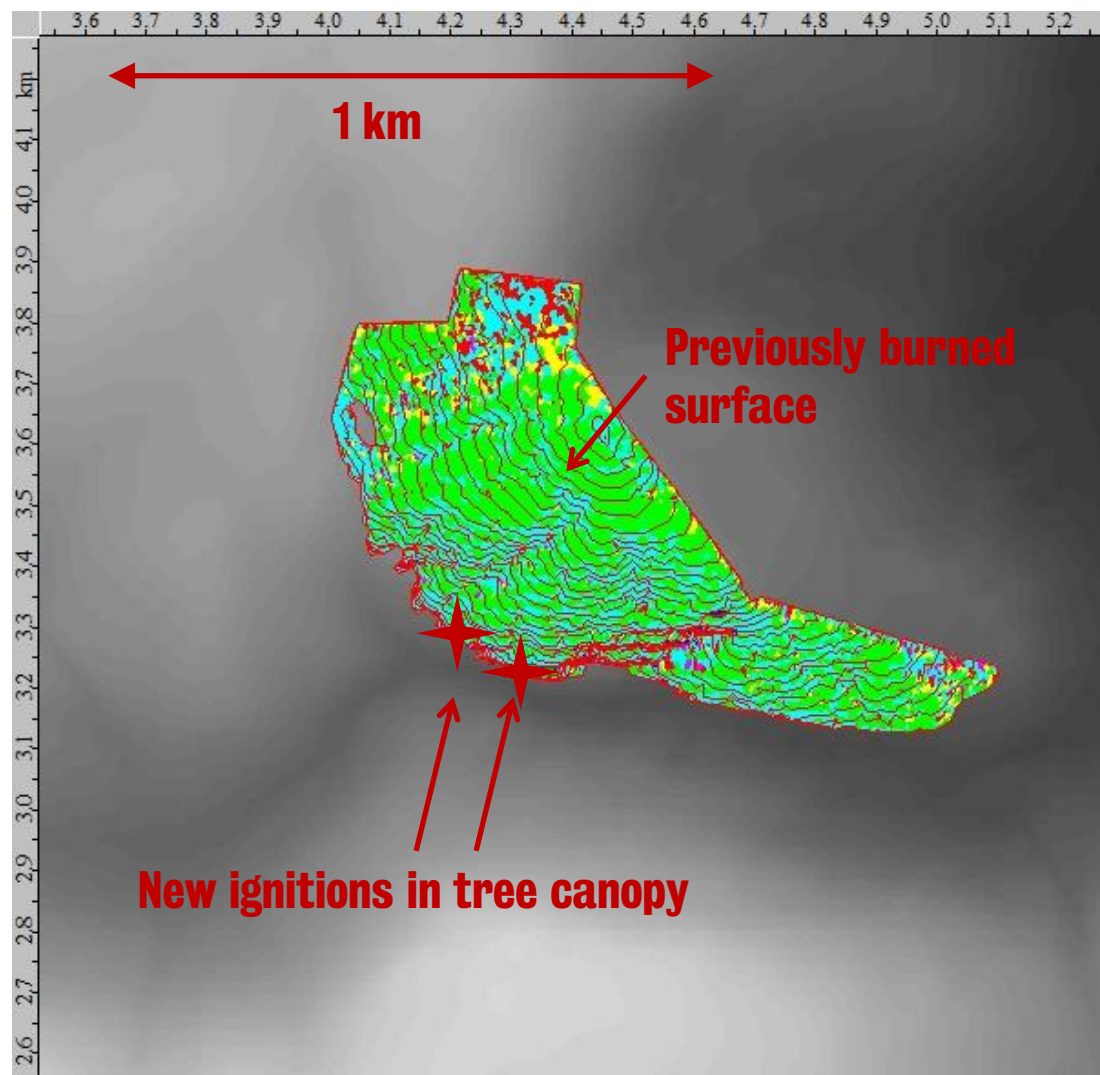
- Fire is blocked by fire breaks to the north and east
- Fire moves as a backing fire downslope and against the wind (alignment = 1), occasionally torching trees with ladder fuels, only 500 m in 8 hours.
- Fire slows significantly as it reaches the steep valley bottom



# LANDSCAPE MODEL 4: SURFACE-CROWN

Now run the ‘Crown’ simulation. At this point, the fire moves into the trees at the bottom of the slope, as indicated on the map, the wind is still from SSW and 14 km/hr:

- What fire behaviour should we expect?
- Where will the fire spread?
- What are the fire alignments?

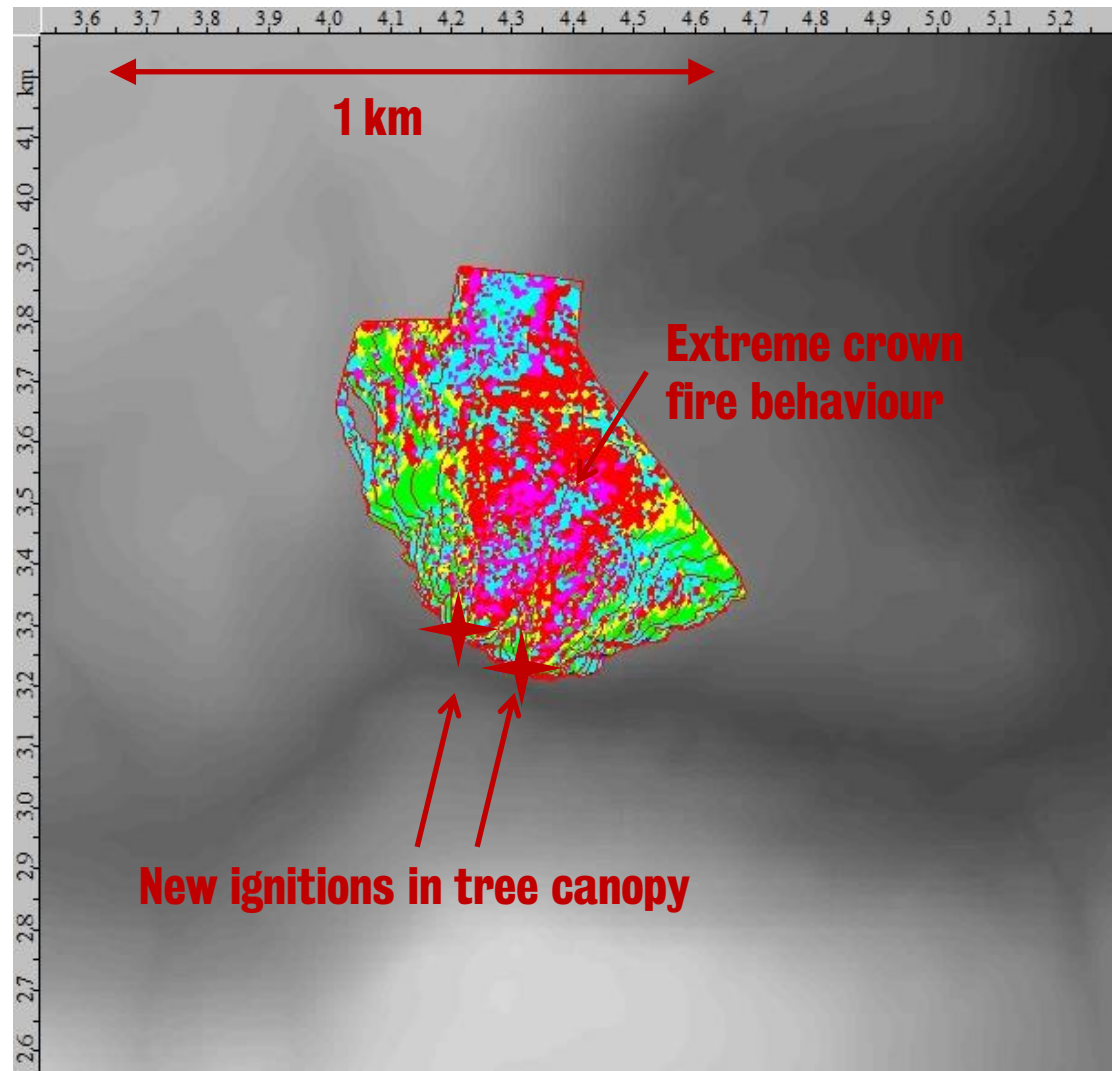


# LANDSCAPE MODEL 4: SURFACE-CROWN

- 14 km/hr wind
- SSW-wind [205°]
- New ignitions at the bottom of the hill
- 30% relative humidity
- Uniform fuel (pine plantation with surface and ladder fuels)
- Two points of ignition in the canopies of trees above previously burned surface

Fire behaviour:

- Fire moves very quickly upslope with the wind as a crown fire (alignment = 3)



**thomas.smith@kcl.ac.uk**  
**@DrTELS**

**@KCLGEOGRAPHY**  
**facebook.com/KCLGeography**

# NERC

## SCIENCE OF THE ENVIRONMENT



**National Centre for Earth Observation**

NATURAL ENVIRONMENT RESEARCH COUNCIL



**Field Spectroscopy Facility**

NATURAL ENVIRONMENT RESEARCH COUNCIL



# FIREfficient

Operational tools for improving efficiency in wildfire risk reduction in EU landscapes



This project is co-funded by the European Union

**KING'S**  
*College*  
**LONDON**  
**Geography**