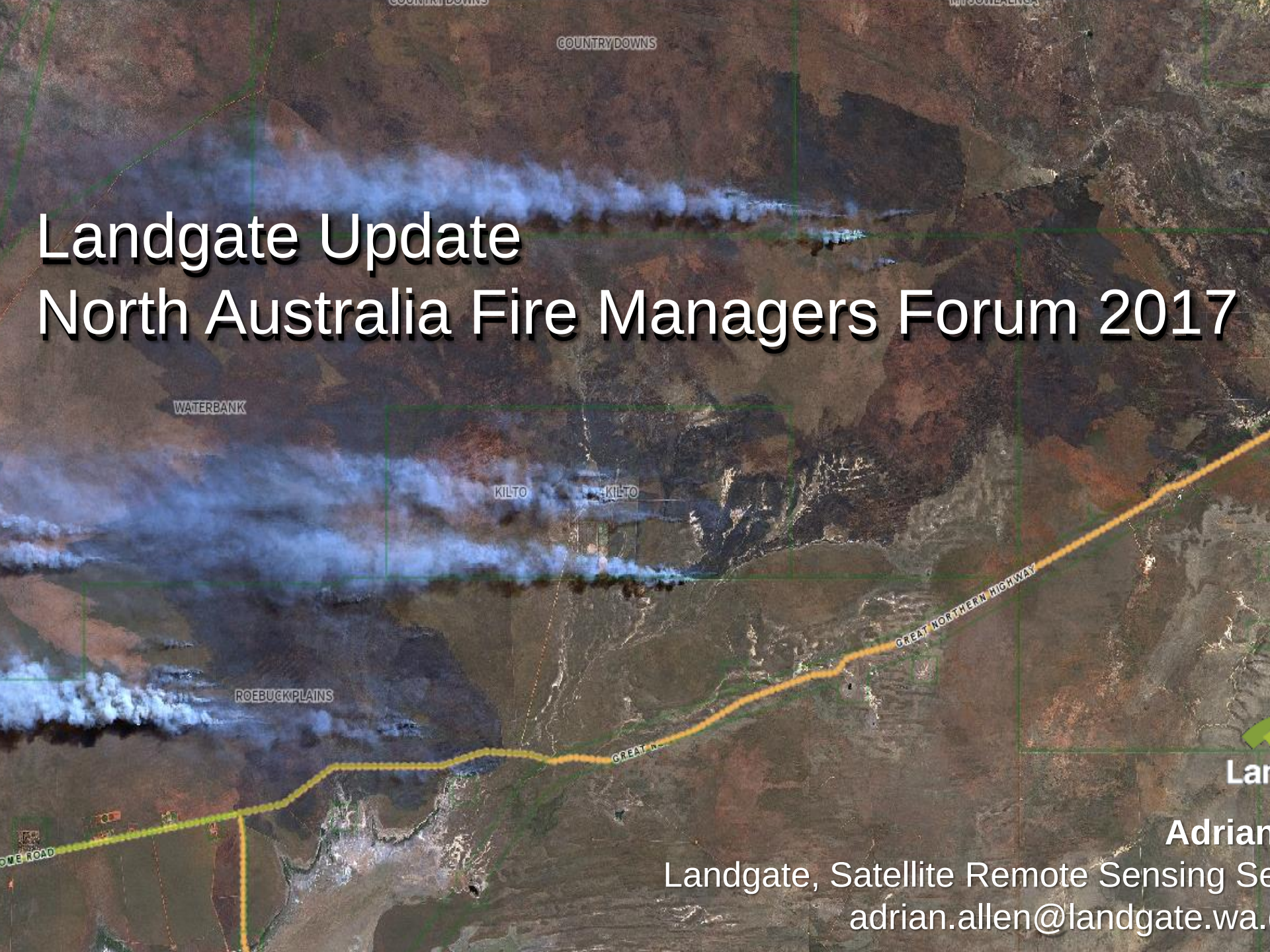

Landgate Update
North Australia Fire Managers Forum 2017

Adrian
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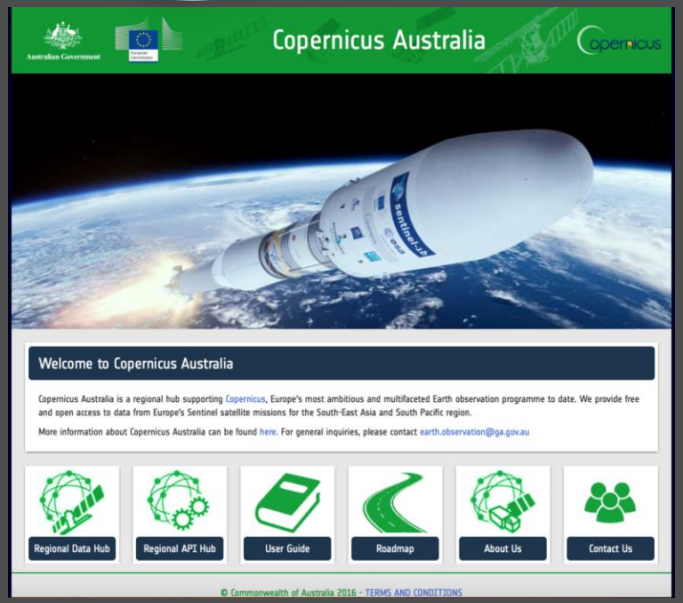
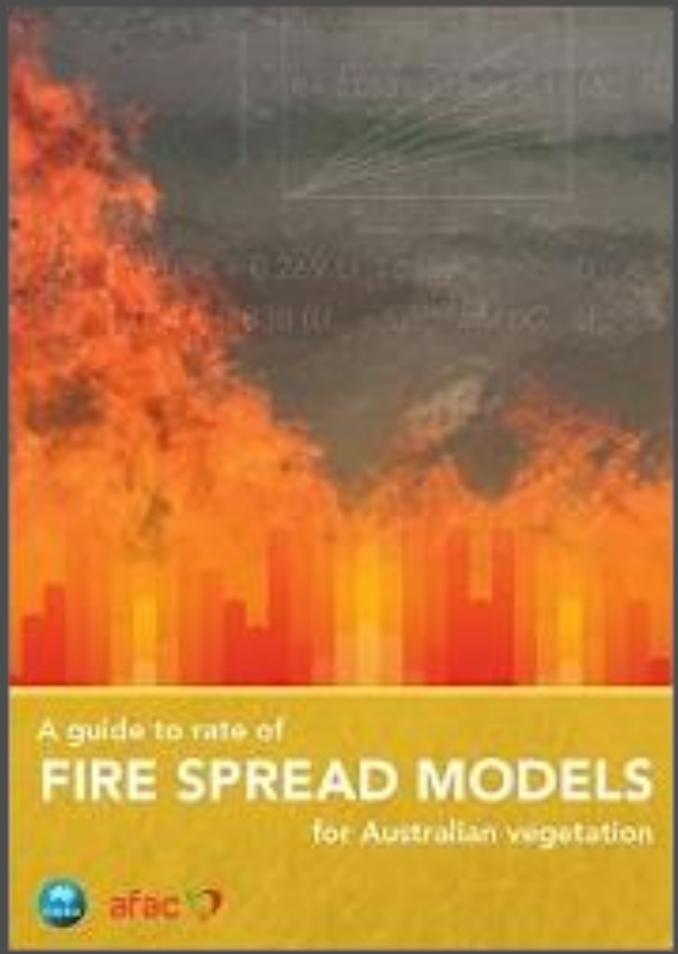
Partner in Copernicus Australia

- Australian Copernicus Data Hub
  (Landgate, Geoscience Australia, CSIRO, QDSITIA, NSW OEH)
- See http://www.copernicus.gov.au/
- Rapid access to the Sentinel satellite series.



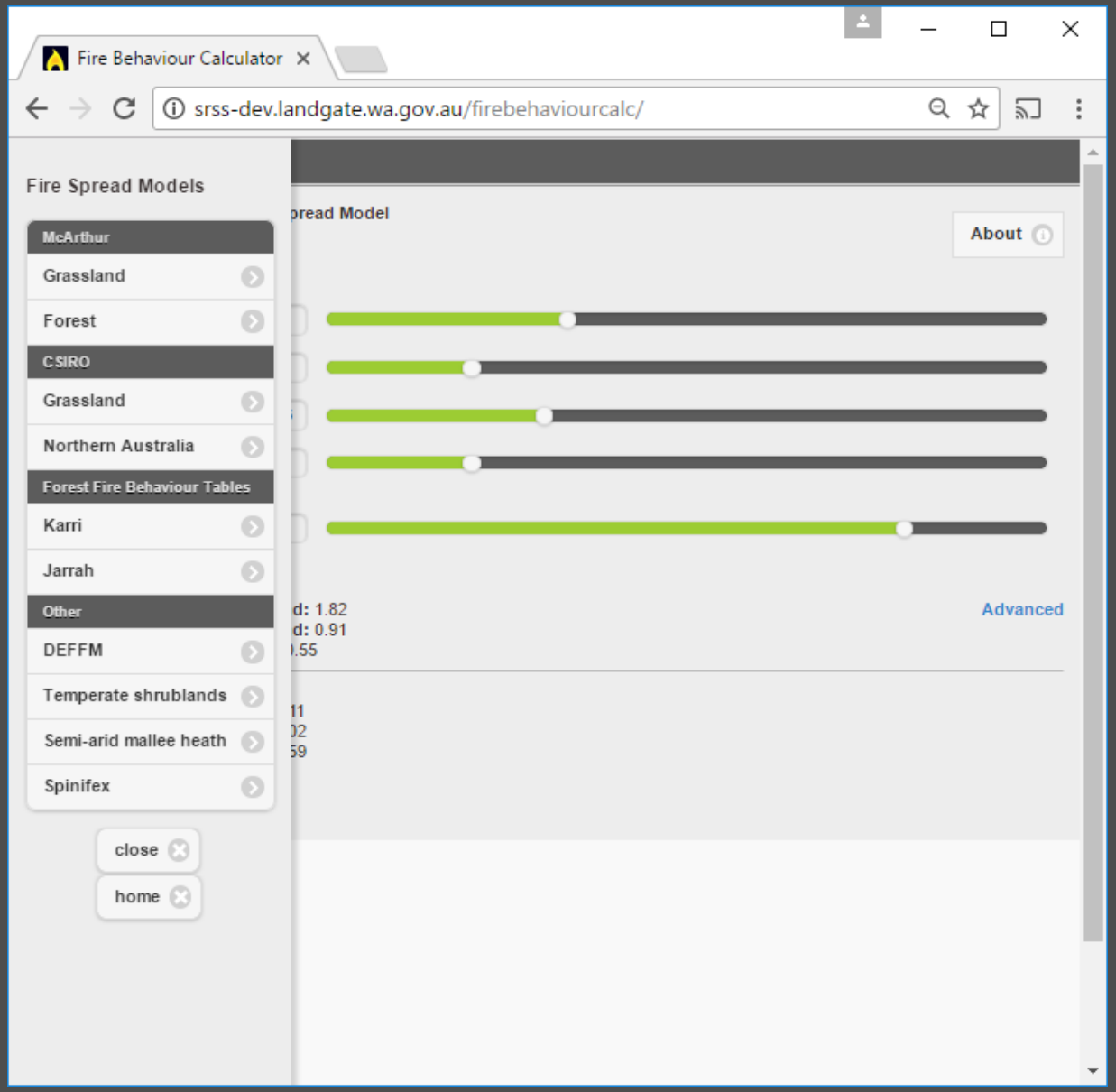
Fire Behaviour Calculator View

- Phone / tablet / website / desktop
- Recent fire spread models
- Managed code base
- Interoperable
- **New project for 2017 / 2018**: Integrating MetEye data



Landgate Update - Firewatch / Aurora

NAFM 2017



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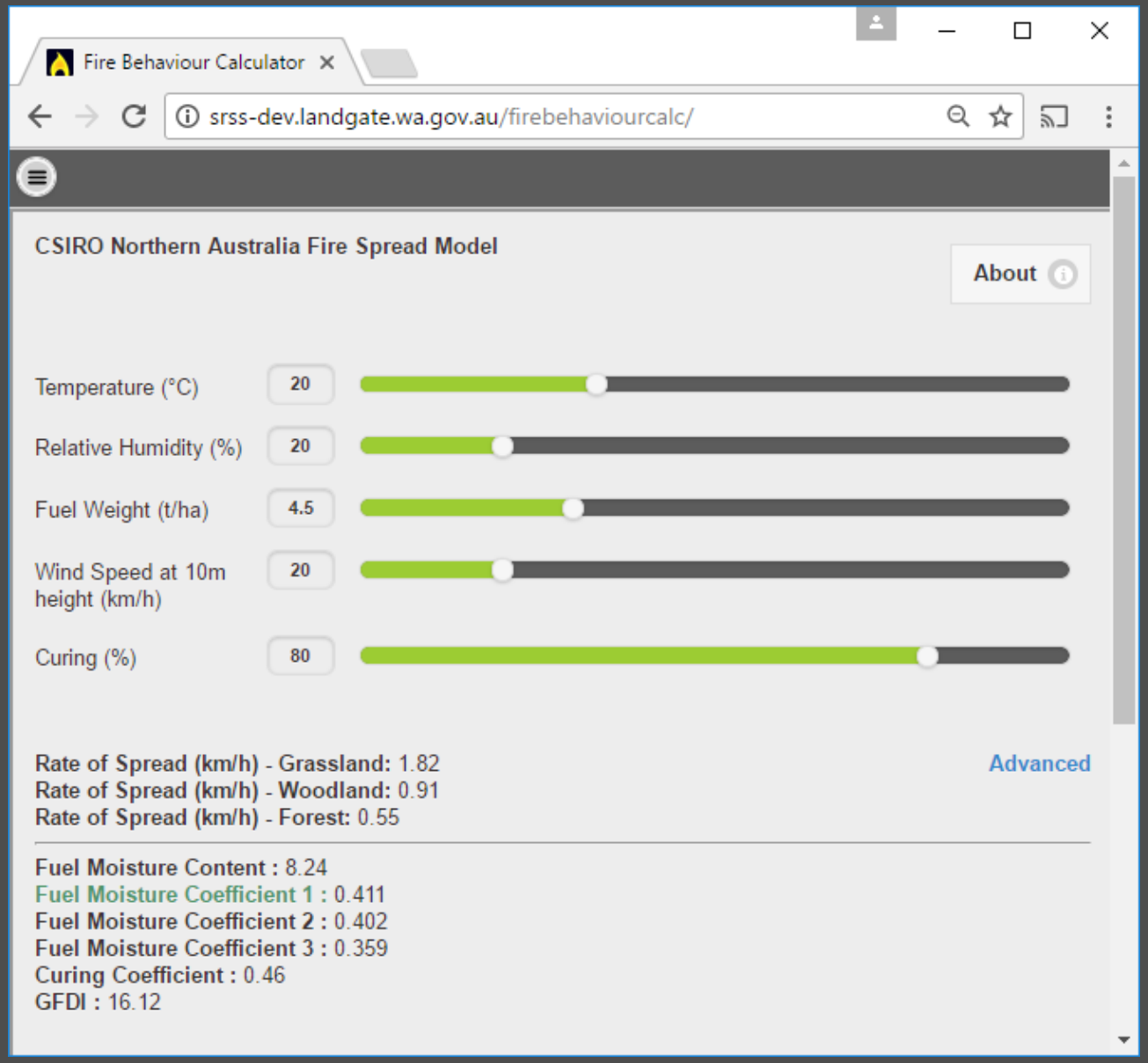


Fire Behaviour Calculat

srss-dev

CSIRO Northern Australi

Temperature (°C)

Relative Humidity (%)

Fuel Weight (t/ha)

Wind Speed at 10m height (km/h)

Curing (%)

Rate of Spread (km/h) - C
Rate of Spread (km/h) - W
Rate of Spread (km/h) - F

Fuel Moisture Content : 8
Fuel Moisture Coefficien
Fuel Moisture Coefficien
Fuel Moisture Coefficien
Curing Coefficient : 0.46
GFDI : 16.12

Fire Behaviour Calculator

srss-dev.landgate.wa.gov.au/firebehaviourcalc/

CSIRO Northern Australia Fire Spread Model

About

Model Description

CSIRO Northern Australia Fire Spread Model (Cheny and Sullivan, 2008)

This model is suitable for tropical grassland fuel types, woodlands and open forests with a dominant grassy fuel understory, It was taken from *Cruz M. G., Gould J. S. Alexander M. E., Sulivan A. L. McCaw W. L., Mathews S. (2015) A Guide to Rate of Fire Spread Models for Australian Vegetation. (CSIRO) Land and Water Flagship, Canberra, ACT, and AFAC Melbourne, Vic, 125pp. (Page 42)*

The Curing coefficient ϕC [Eqn. 3.9]:

$$\phi C = \frac{1.12}{1 + 59.2 * \exp(-0.124(C - 50))}$$

The fuel moisture content MC [Eqn. 3.8]:

$$MC = 9.58 - 0.250T + 0.138RH$$

The fuel moisture coefficient ϕM [Eqn. 3.7]:

$$\phi M = \begin{cases} \exp(-0.108MC) & , MC < 12\% \\ 0.684 - 0.0342MC & , MC \geq 12\%,\ U_{10} < 10kmh^{-1} \\ 0.547 - 0.0228MC & , MC \geq 12\%,\ U_{10} \geq 10kmh^{-1} \end{cases}$$

Rate of spread for open grassland [Eqn. 3.5]

$$R_g = \begin{cases} (0.054 + 0.269U_{10})\phi M \phi C & , U_{10} \leq 5kmh^{-1} \\ (1.4 + 0.838(U_{10} - 5)^{0.844})\phi M \phi C & , U_{10} > 5kmh^{-1} \end{cases}$$

Rate of spread for woodland [Table 3.7]

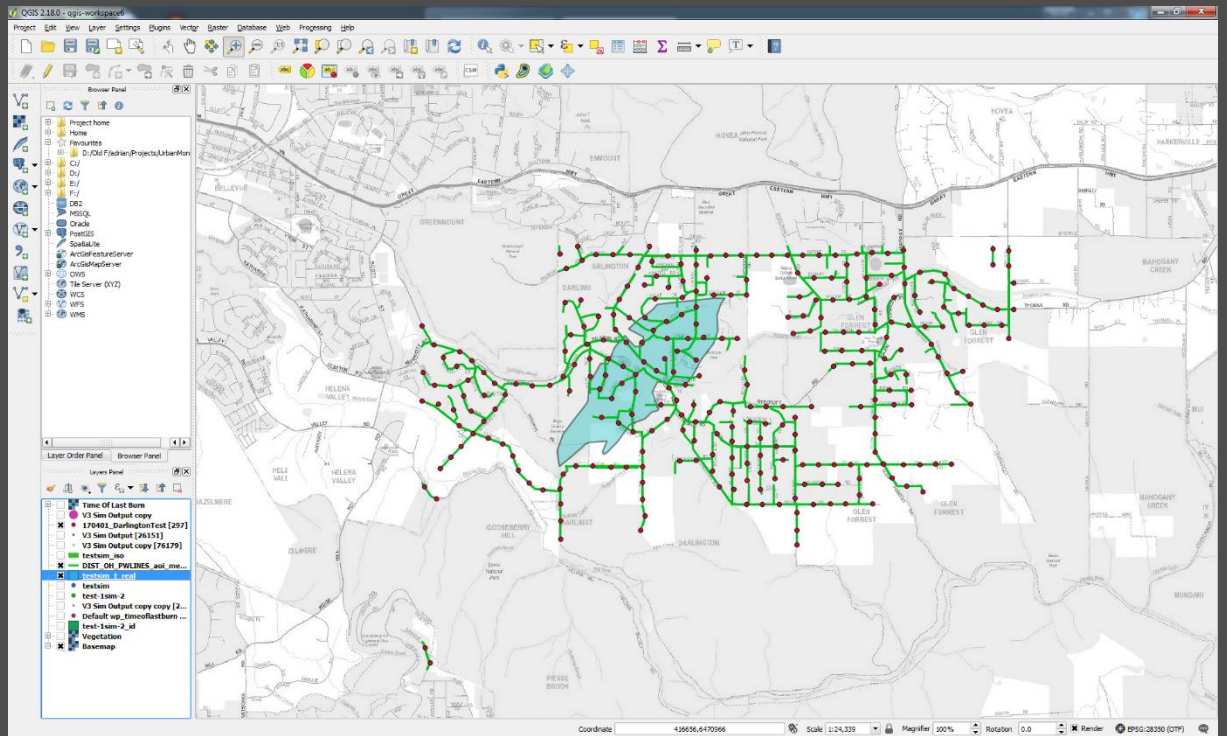
$$R_w = R_g \times 0.5$$

Rate of spread for open forest [Table 3.7]

$$R_f = R_g \times 0.3$$

Bushfire Consequence Analysis Project with DFES, for Western Power

Develop a new fire risk map for the power network based on fire start consequences.



Landgate Update - Firewatch / Aurora

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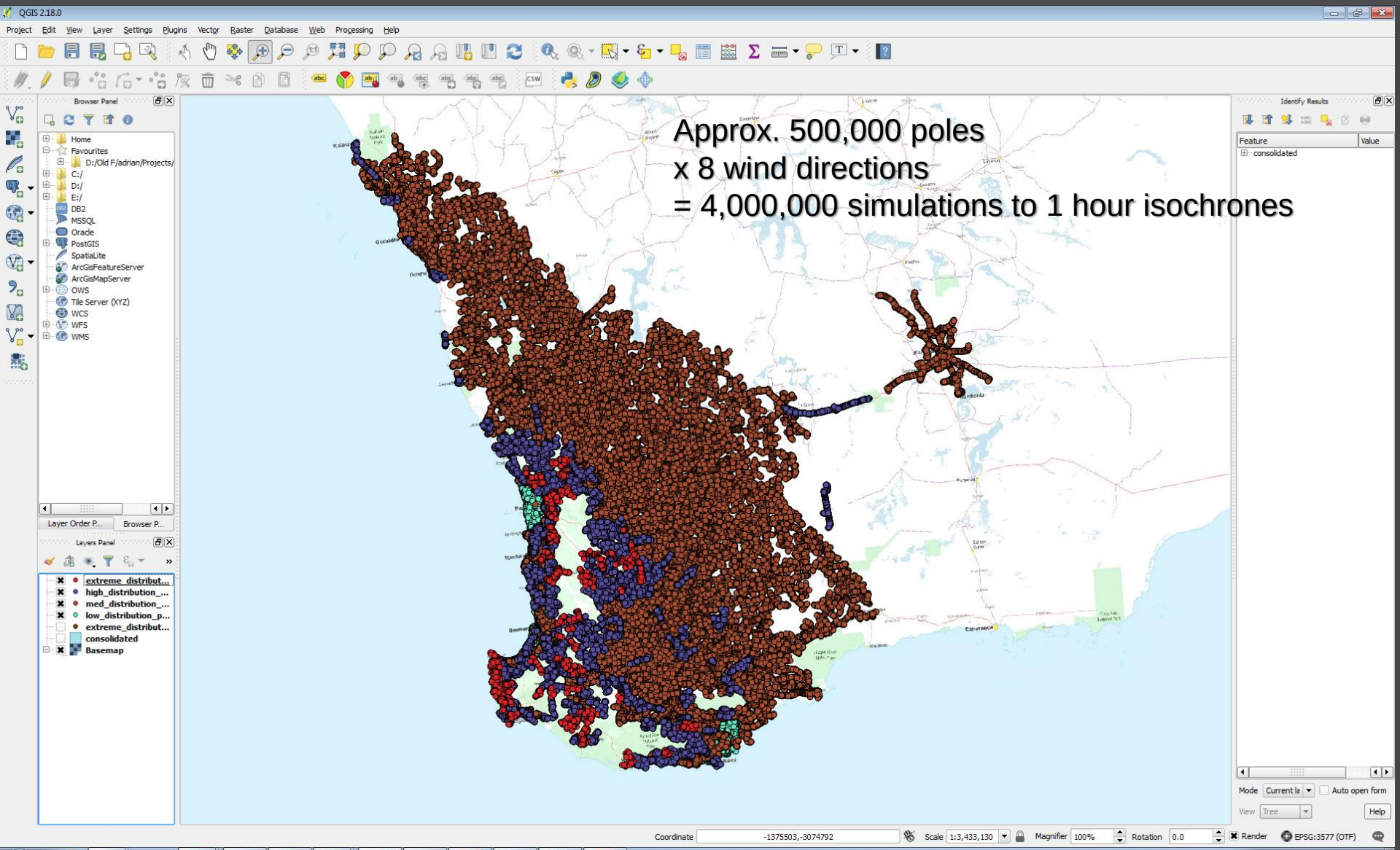


Proposed fuel loads surrogates for urban areas

For areas mapped as grass, define a methodology to determine tonnage according to number of buildings in 1 ha raster cell

- 0-2 buildings p/ha (R2) = 4.5 t/ha (natural)
- 3-5 buildings p/ha (R5) = 1.5 t/ha (grazed)
- 6-15 buildings p/ha (R15) = 0.5 t/ha (eaten out)
- 15+ buildings p/ha (>R15) = 0.0 t/ha

Firewatch Update

- Partnering with Geoscience Australia to provide a National fire hotspot mapping system.

- Landsat imagery
  Will be providing new band combinations and a better enhancement.

- Grassland curing product, with DFES, DPaW and BoM.

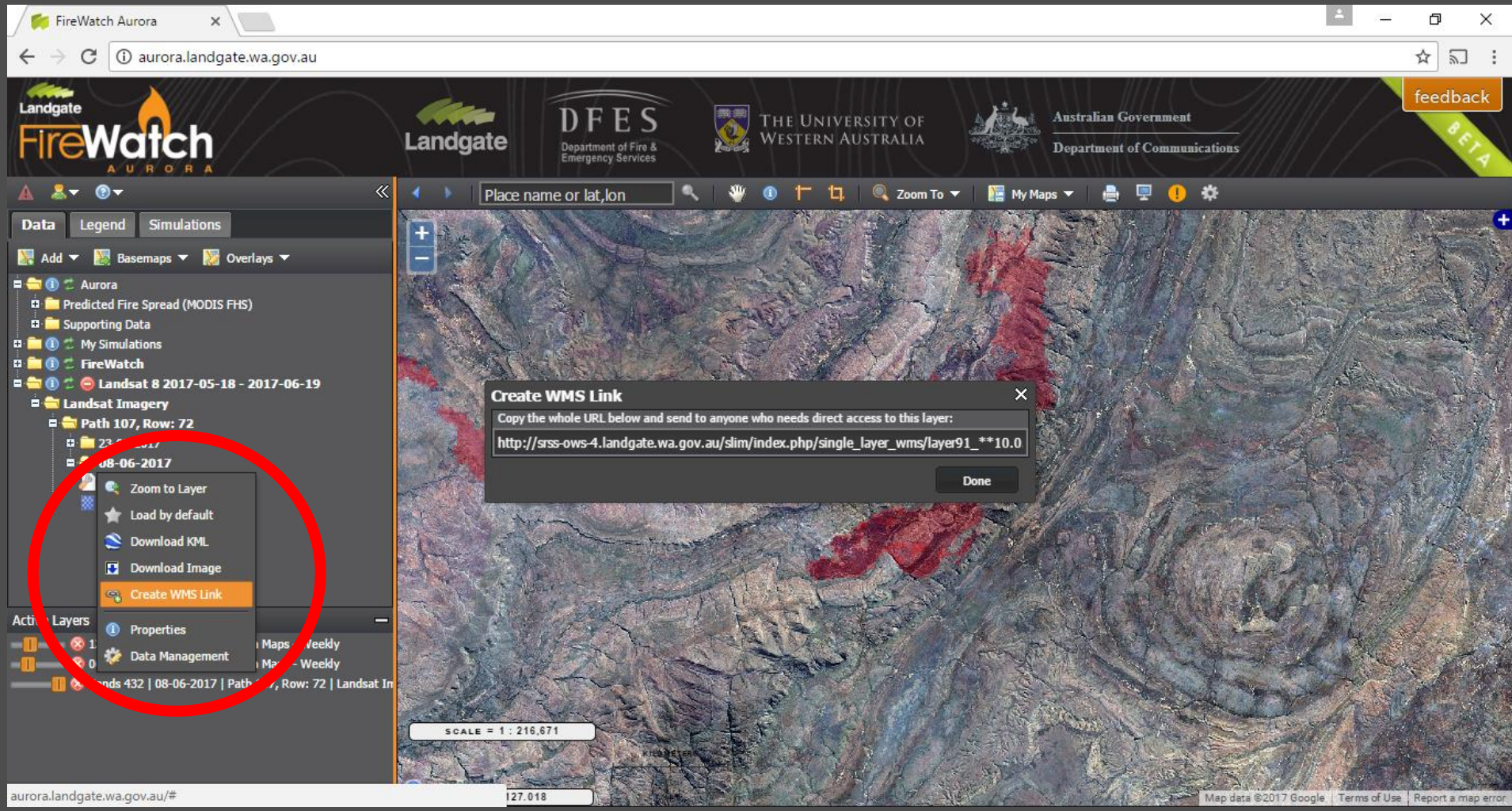
- ***New Project 2017/2018*** *– begin to enable access to Sentinel 2 data through Firewatch and Aurora*

Aurora Update

- DFES has developed a TRK
- Download and WMS access to all imagery (Landsat, MODIS, AVHRR, VIIRS, Himawari-8)
- Dry Eucalypt Forest Fire Model (DEFFM)
- Moving to a 100m national output grid - from 200m
- Head fire summary report viewable from each simulation
- Printing size now range from A4 to A0
- Draw and save polygon and line tool

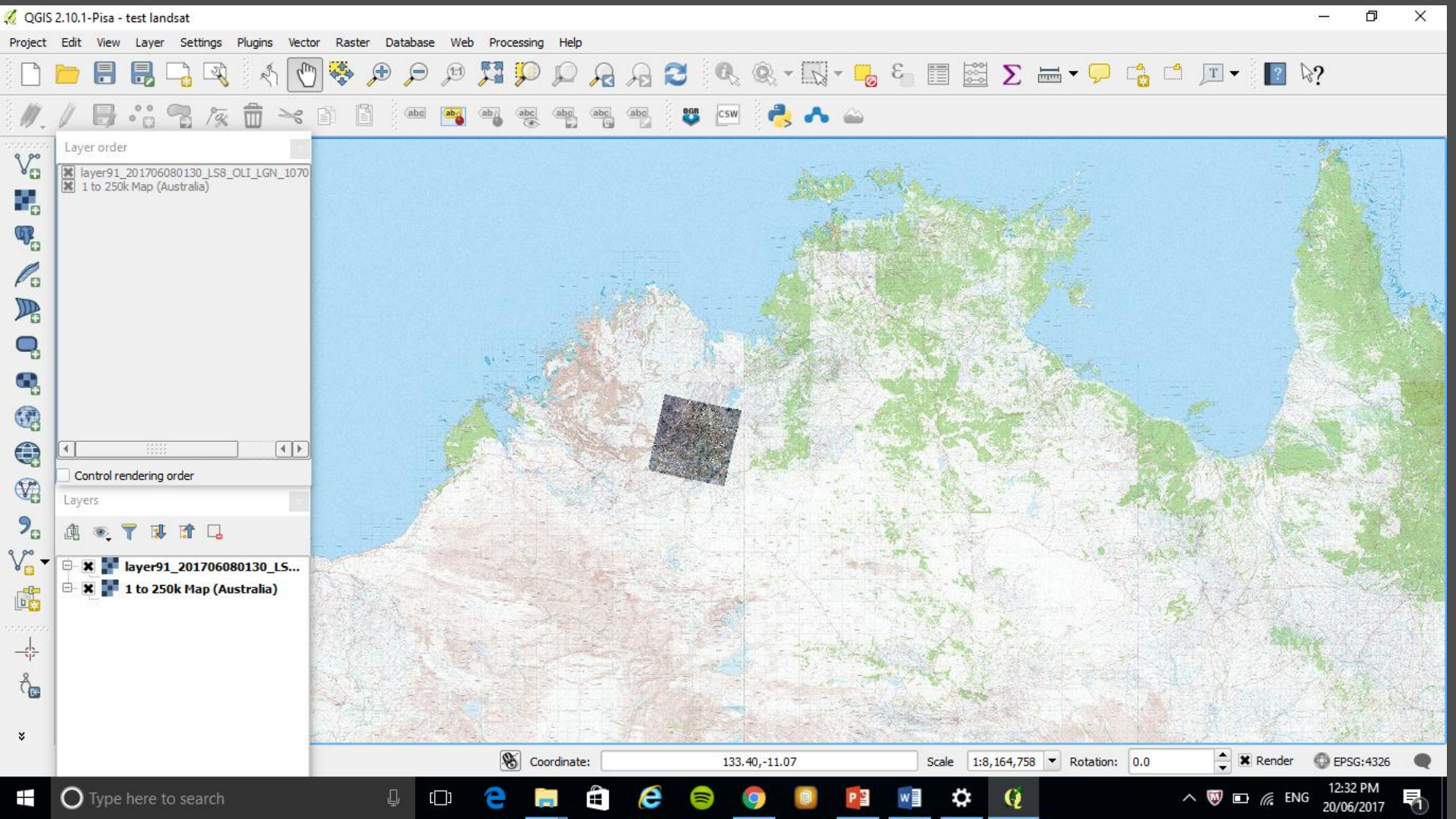
Landgate Update - Firewatch / Aurora

NAFM 2017



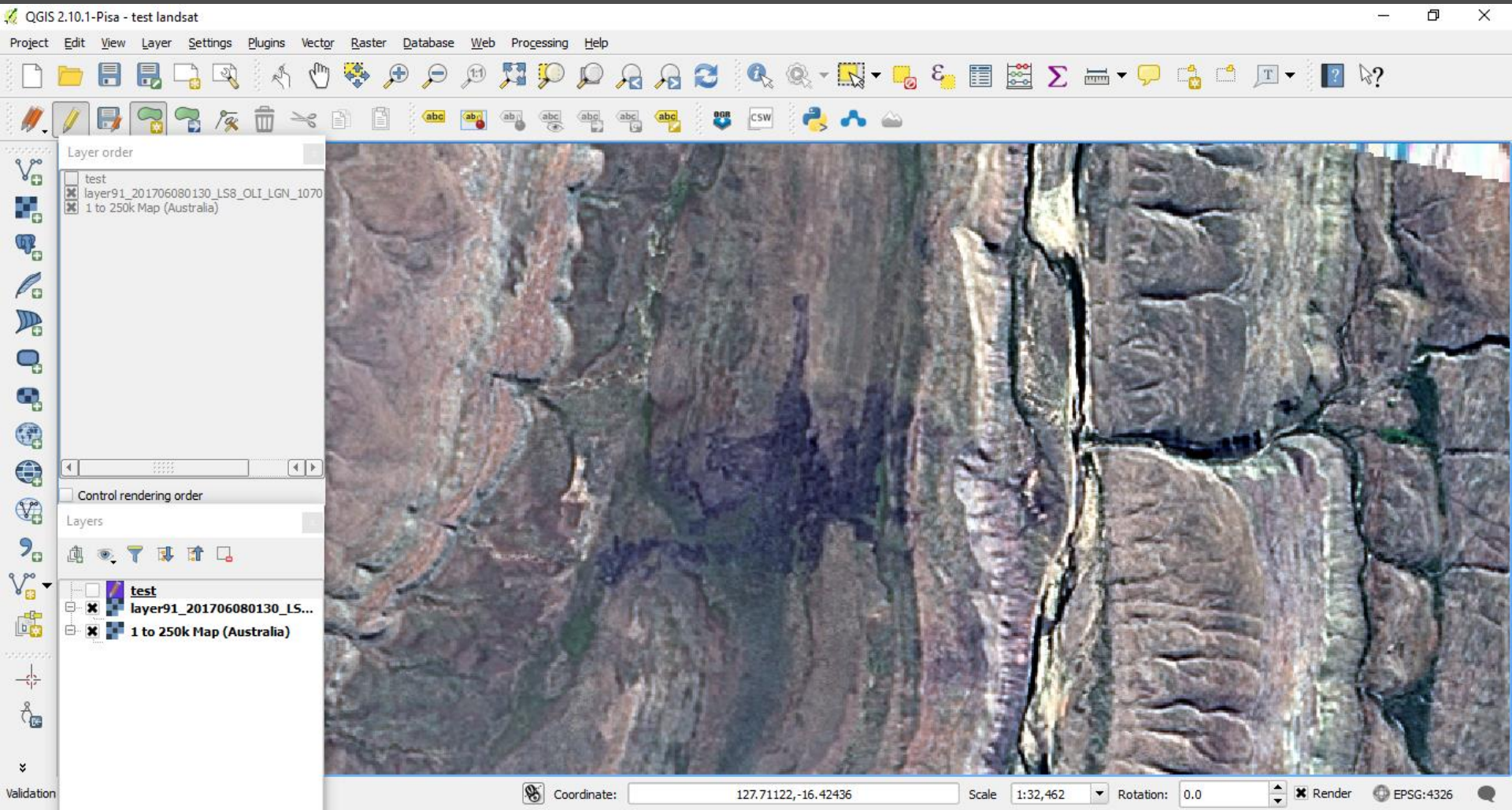
Landgate Update - Firewatch / Aurora

NAFM 2017



Landgate Update - Firewatch / Aurora

NAFM 2017



Aurora Update

- Added time of impact isochrones to the download fire spread ZIP file
- Ability to enter a wind origin bearing
- Disaster Recovery / Failover sites developed in AWS cloud http://auora-dr-aws.landgate.wa.gov.au
- Modify variables – curing values and drought factor values and grassland model selection
- Offer to include other states vegetation data
- ***New Project 2017/2018*** *– integrate the BoM ADFD data in replacement of ACCESS weather.*

Thank you

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Landgate SRSS
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Firewatch
firewatch.landgate.wa.gov.au

Landgate Update - Firewatch / Aurora

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