

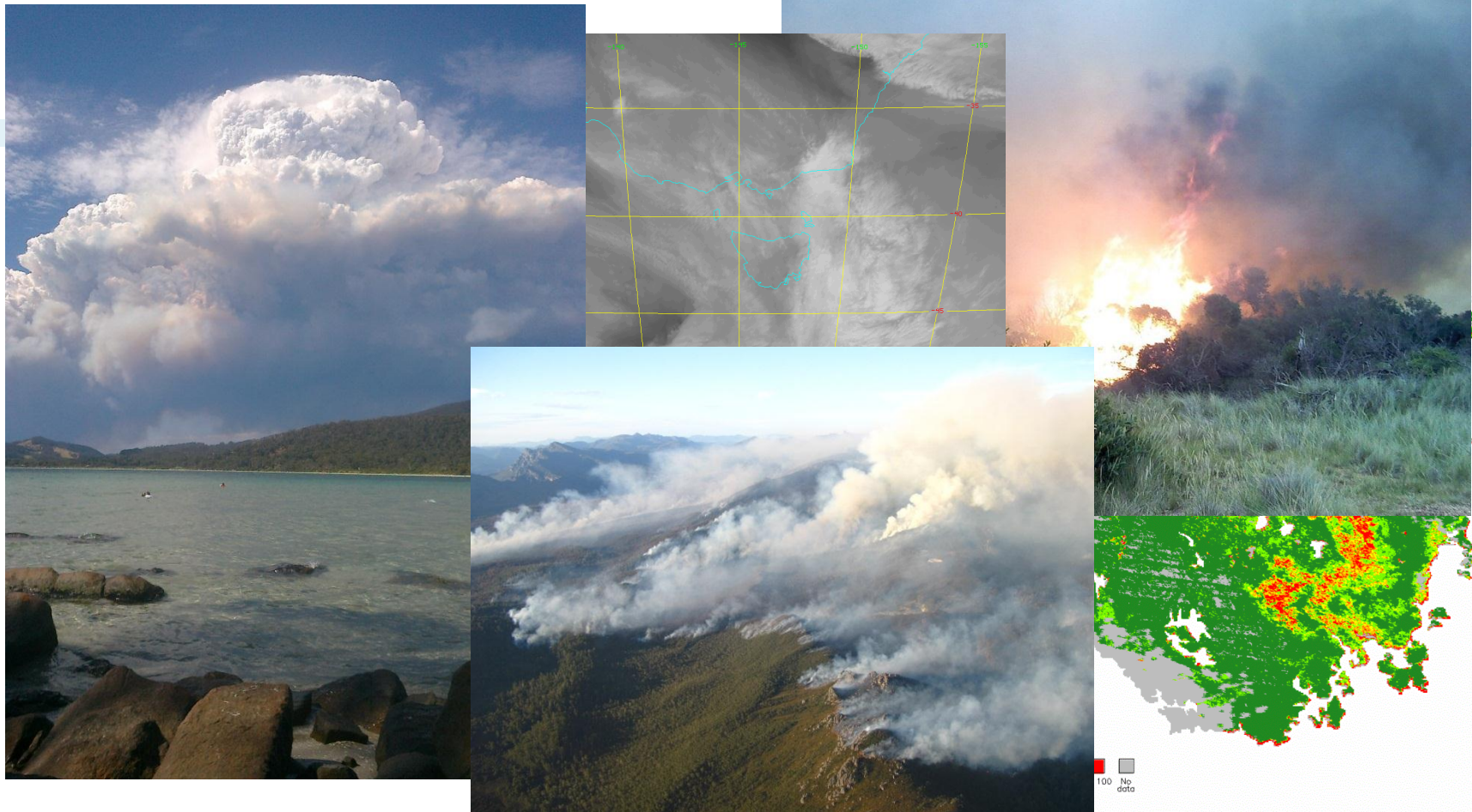


Australian Government

Bureau of Meteorology

Fire Weather Research and Development

John Bally





Australian Government

Bureau of Meteorology

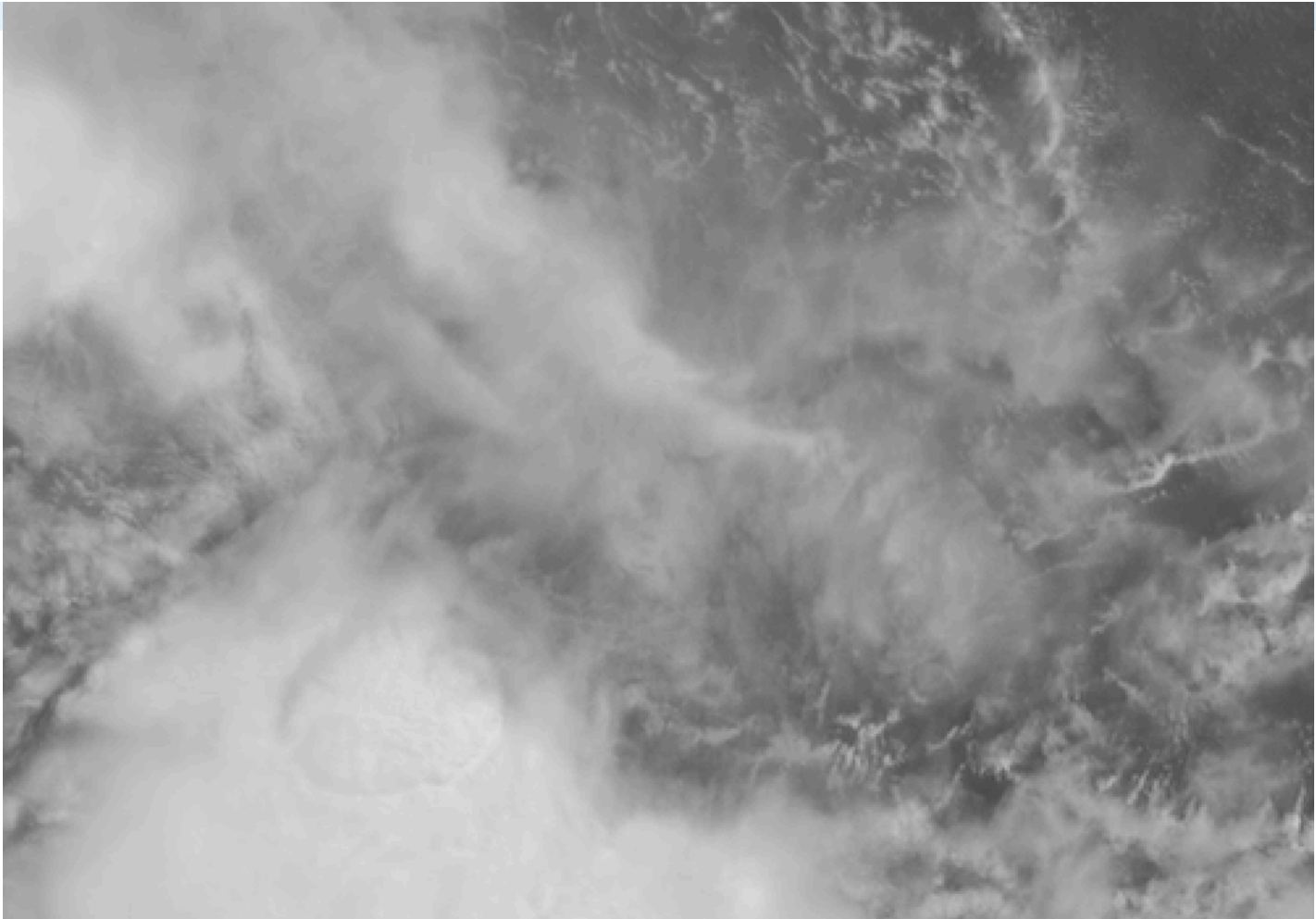
Observing Systems



Australian Government

Bureau of Meteorology

TC Hadi -- 10 Min

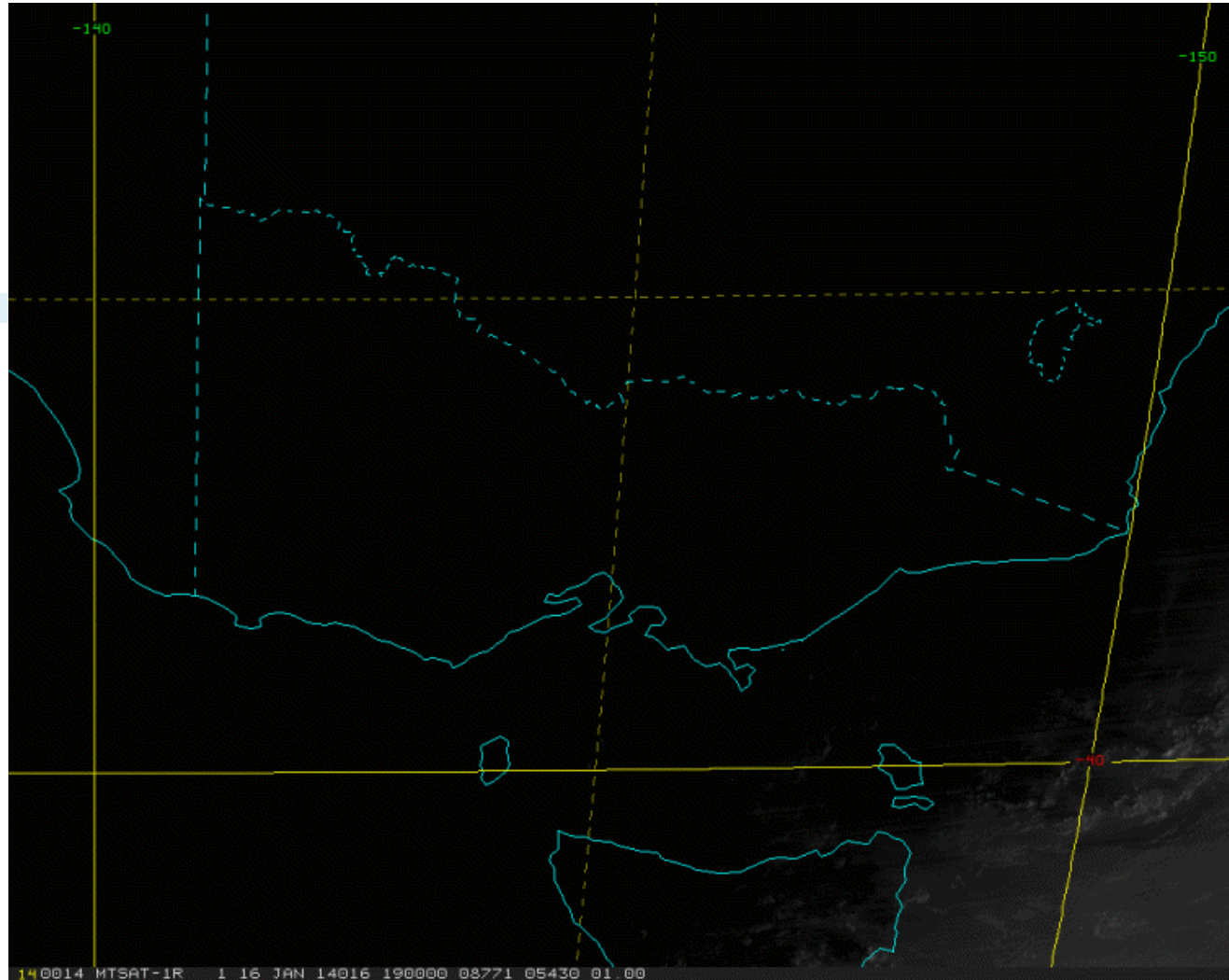




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Halls Gap fire and Vic / NW Tas cool change 17 January 2014

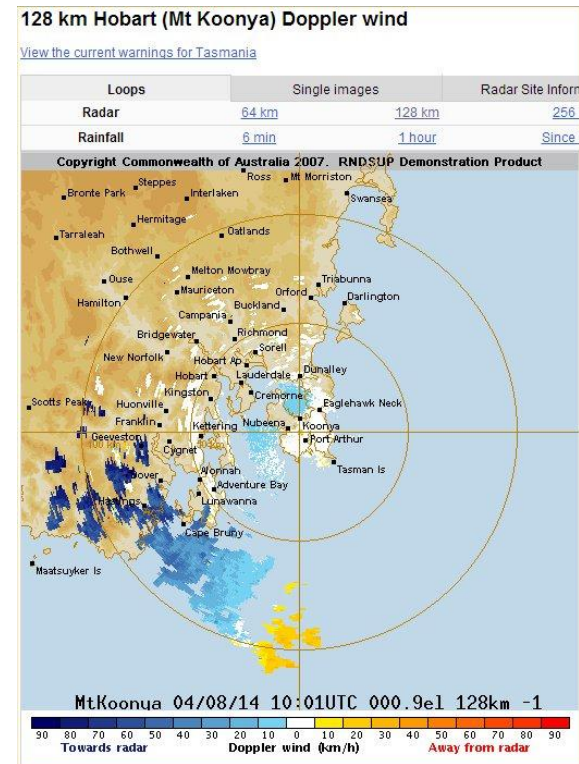
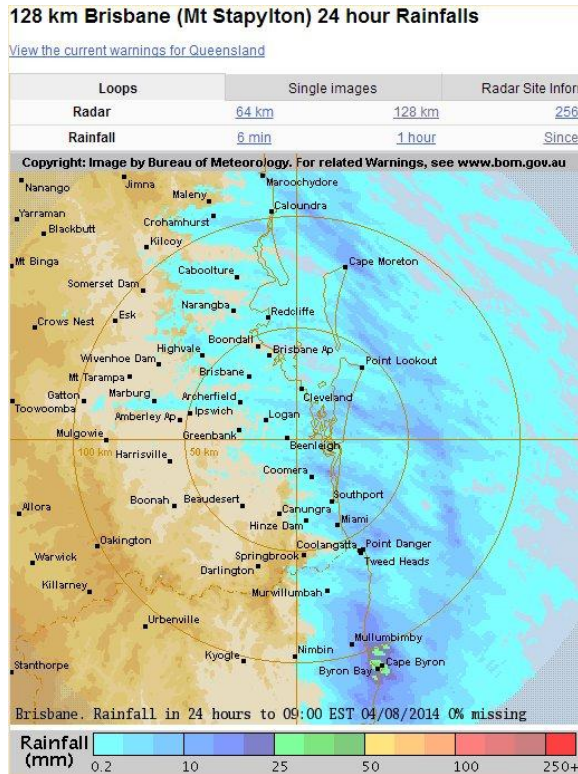


images courtesy JMA / BOM



Radars

- Stuff





Australian Government

Thunderstorm Warnings

IDN25900



BUREAU OF METEOROLOGY
NSW REGIONAL OFFICE
300 Elizabeth St, Sydney. Ph (02)92961555

TOP PRIORITY FOR IMMEDIATE BROADCAST

SYDNEY SEVERE THUNDERSTORM WARNING

Issued at 3:14 PM Thursday 20 March 2003.

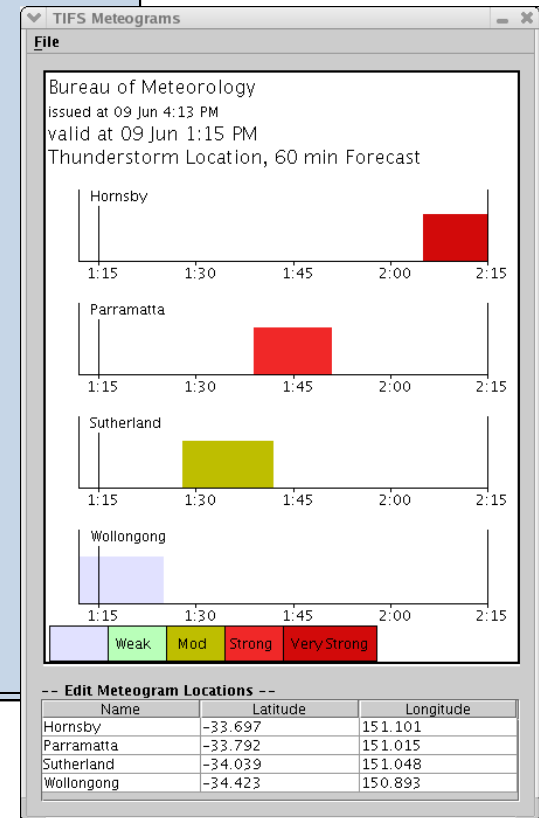
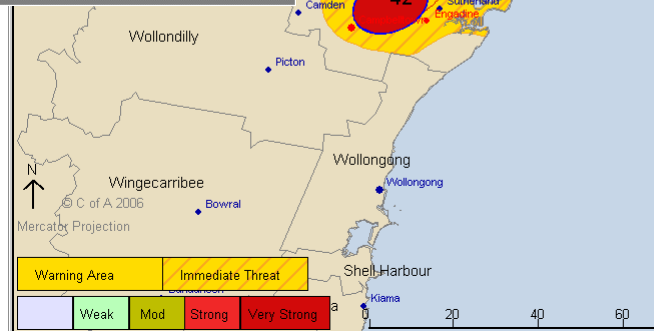
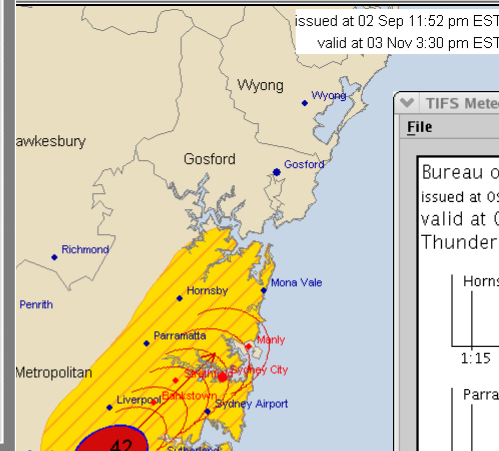
The Bureau of Meteorology in SYDNEY has issued a Severe Thunderstorm Warning for the following areas:

Gosford and
Wyang Council Areas.

This warning is current from 3:15 PM until 4:15 PM.

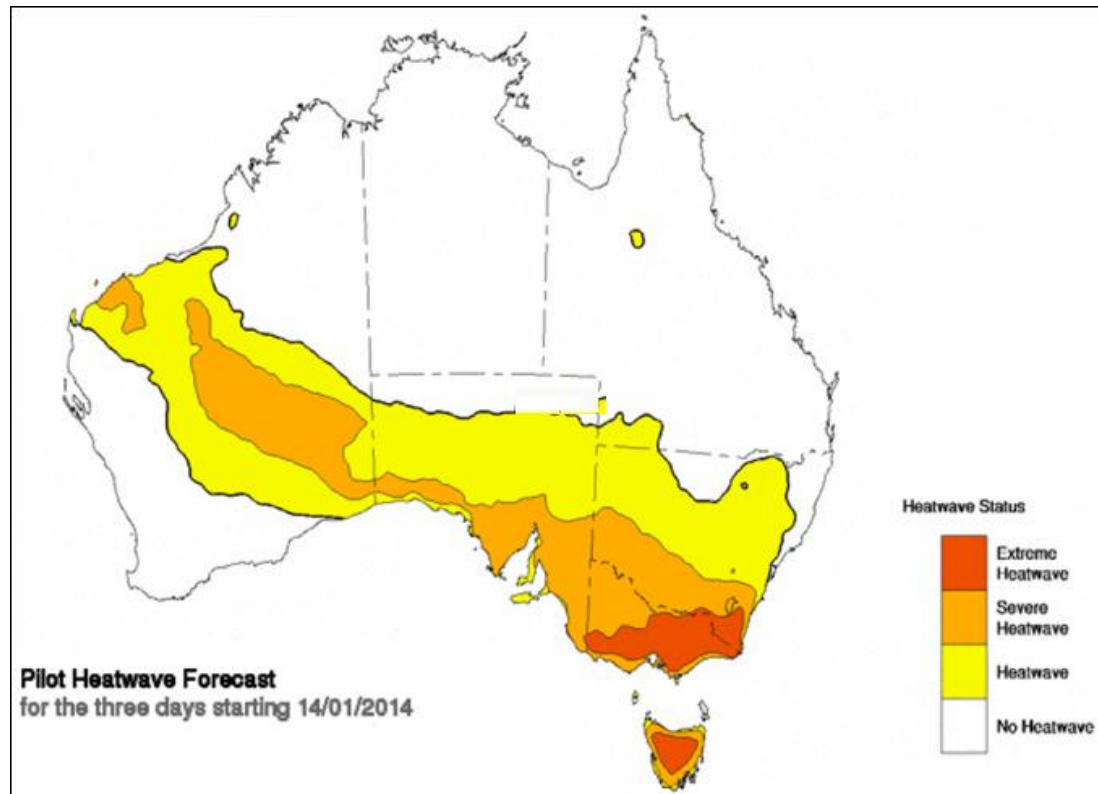
Thunderstorms were located near Dooralong and Calga at 3:15 PM. These thunderstorms are moving towards the east to southeast. Severe Thunderstorms are forecast to affect Wyong, Gosford and Woy Woy in the next 30 minutes and waters off Palm Beach and waters off Terrigal within 60 minutes.

Large hailstones and damaging winds are possible.





Predicting extremes: Pilot heatwave service





Australian Government

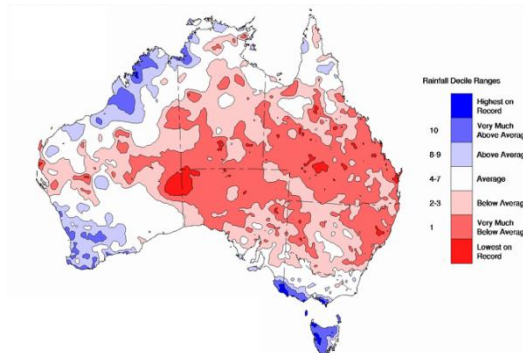
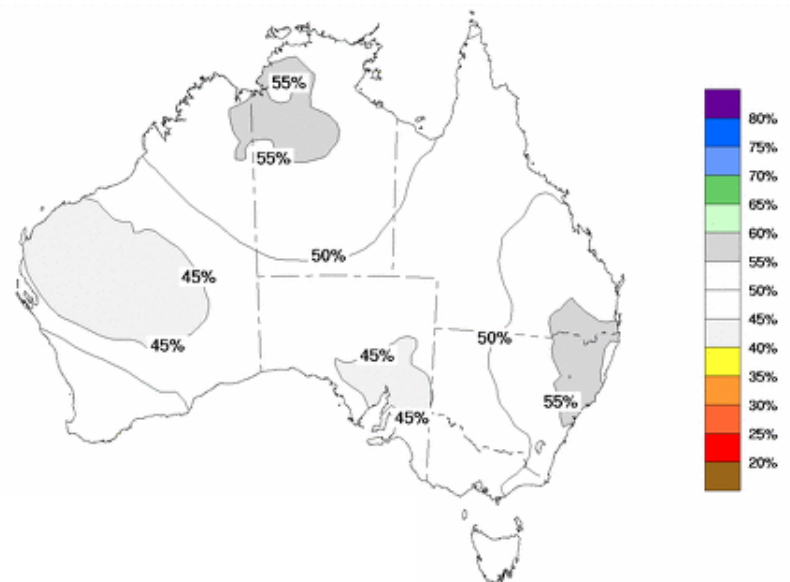
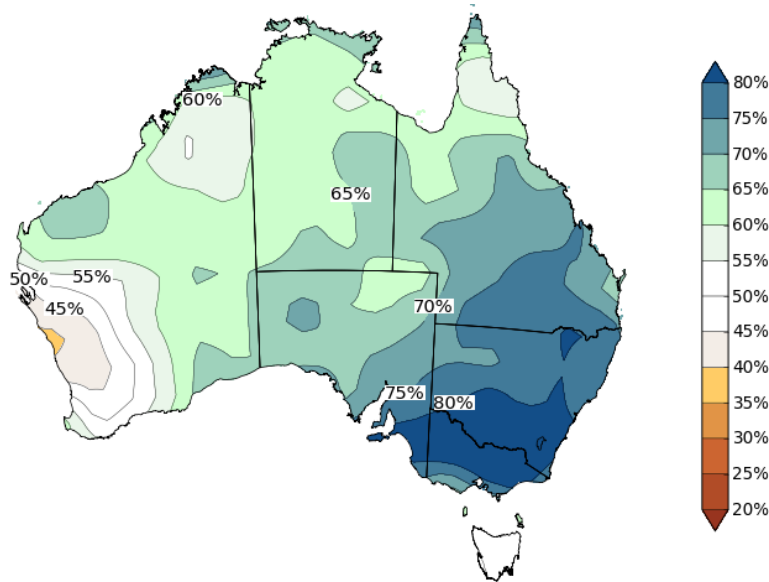
Bureau of Meteorology

Climate



Australian Government
Bureau of Meteorology

New dynamical seasonal outlooks



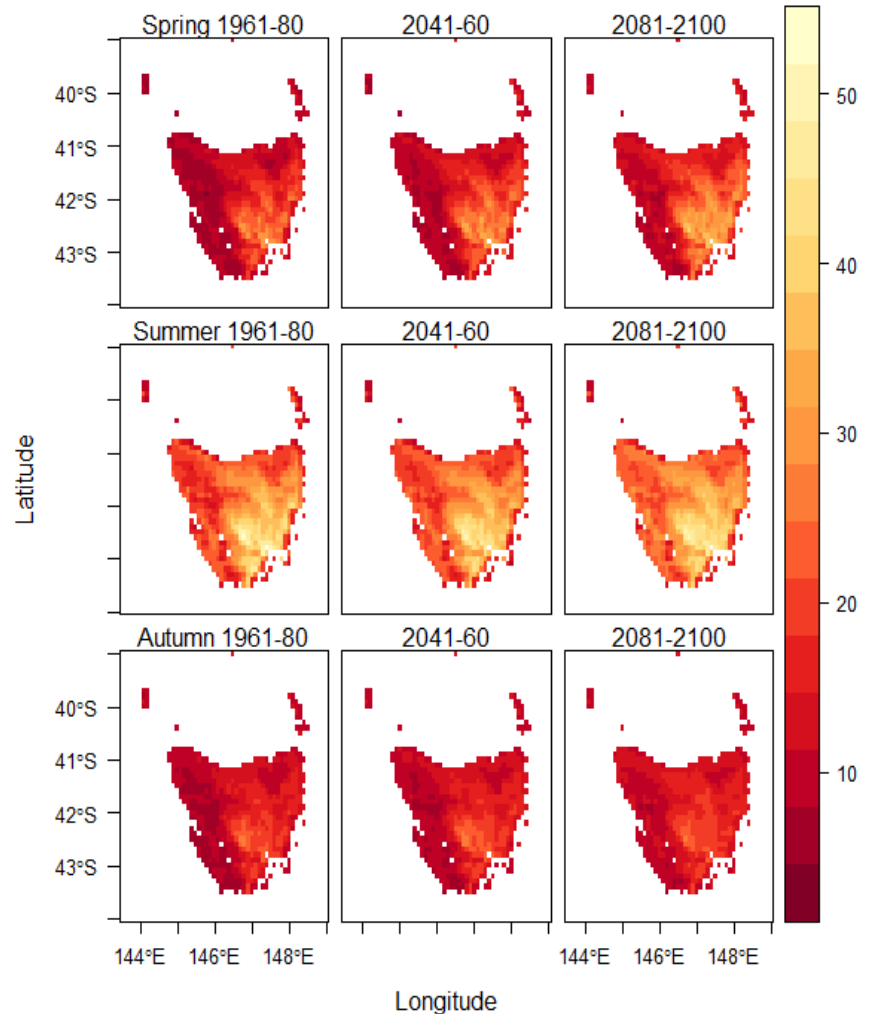


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Bureau of Meteorology

ACE CRC/UTas (with BoM involvement)

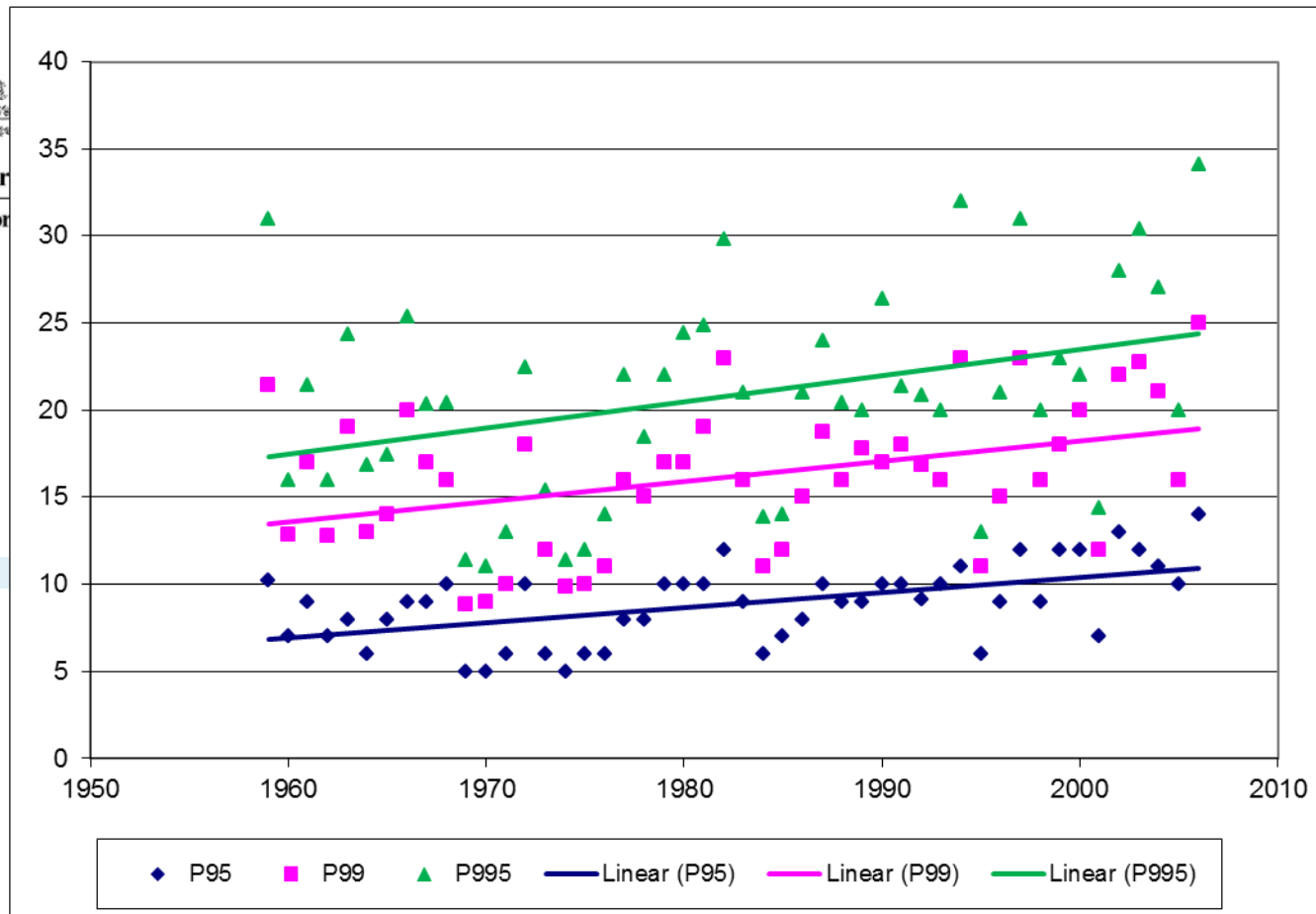
Future fire danger
climatology recently
completed using CFT
data





Australian Government

Bureau of Meteorology



Plot of percentile values for each fire season 1960-2006 at Hobart Airport. The 95th percentile values are plotted in blue, 99th in pink and 99.5th in green. Linear regression lines are plotted in corresponding colours.

From Fox-Hughes 2008 Aust. Met Mag.



Australian Government

Bureau of Meteorology

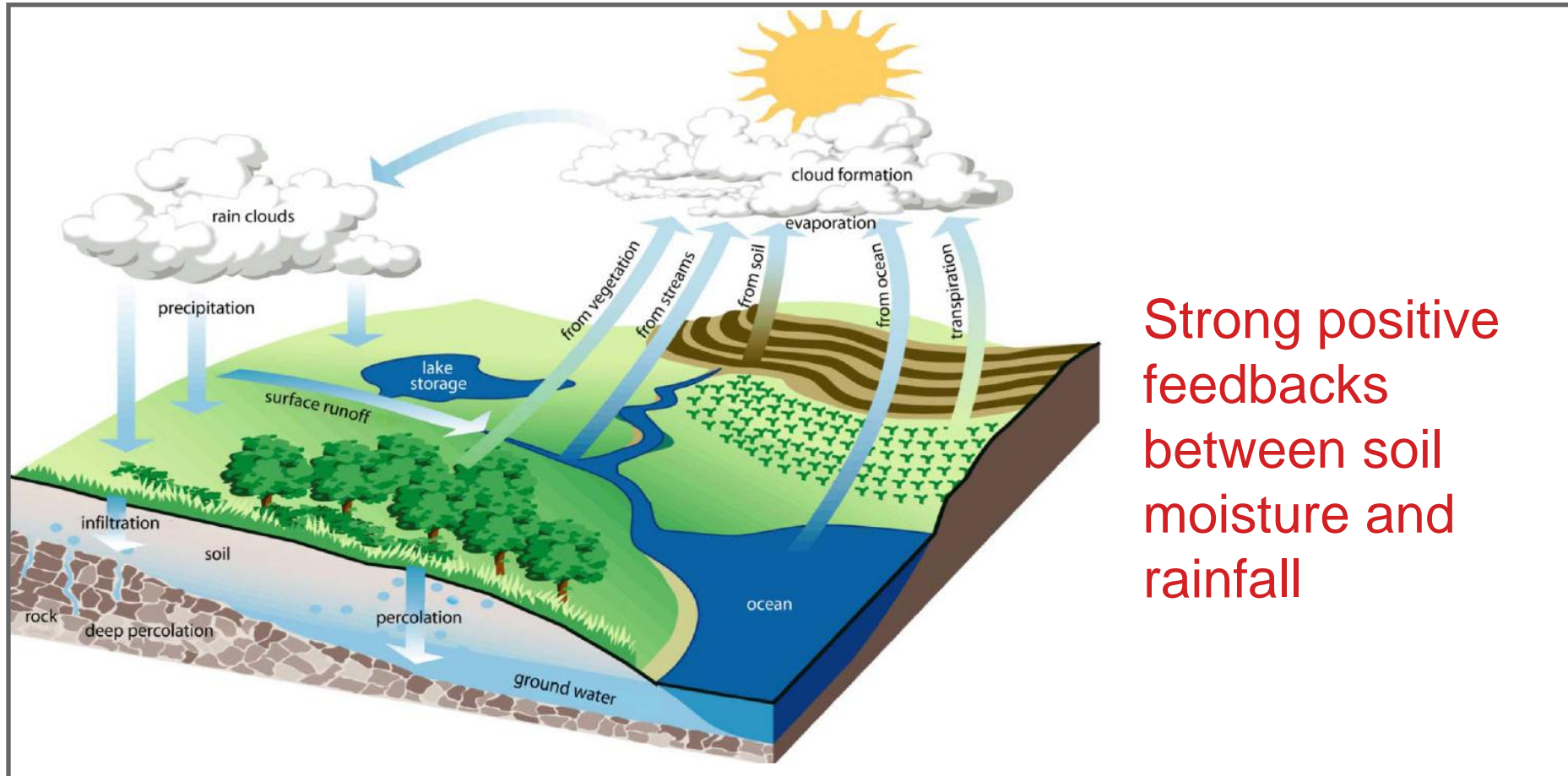
Fuels



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Landscape dryness

Warning for fires, floods, heatwaves and landslips.



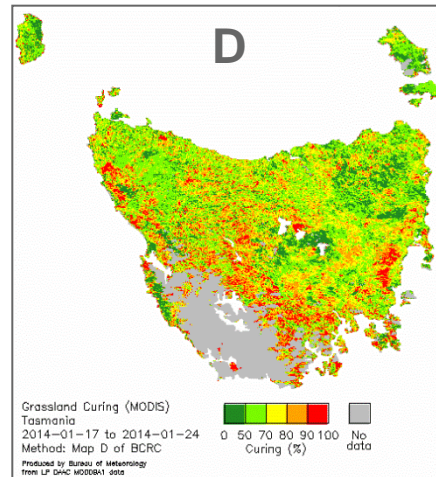
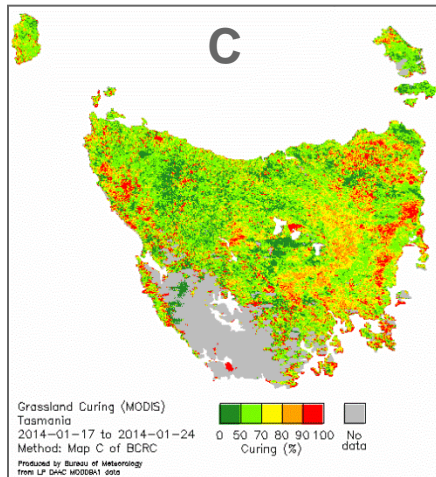
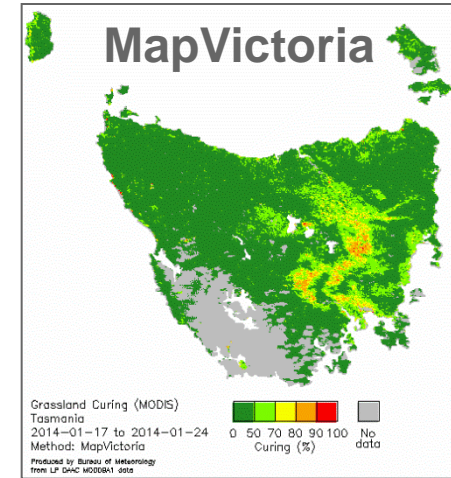
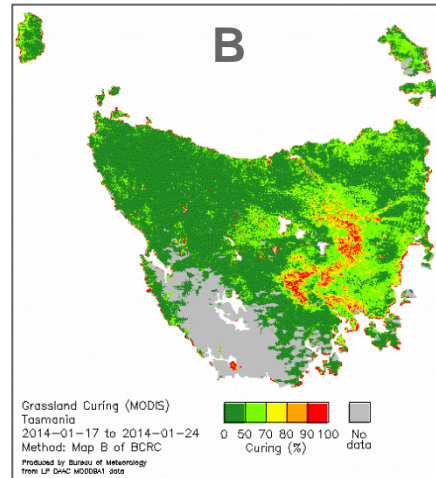
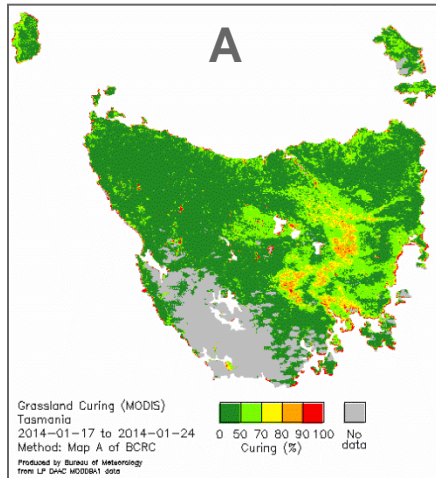
Strong positive
feedbacks
between soil
moisture and
rainfall



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Grassland satellite curing algorithms



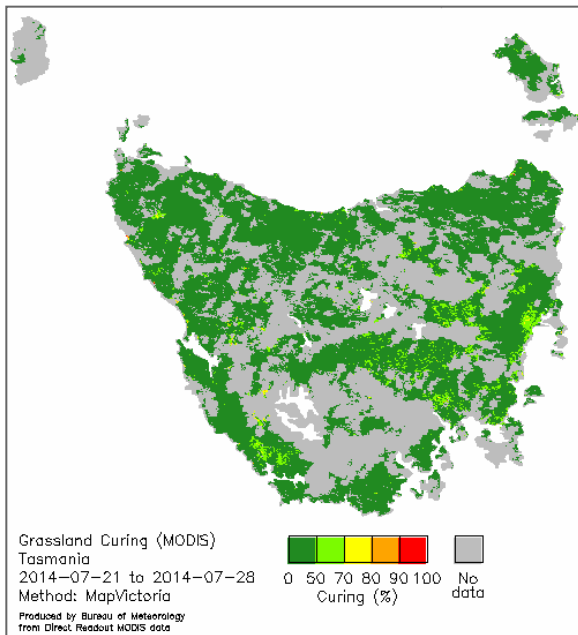


Optional gap filling

- Gaps in 8-day observing window
- Optionally fill gaps with values from earlier windows, and show age

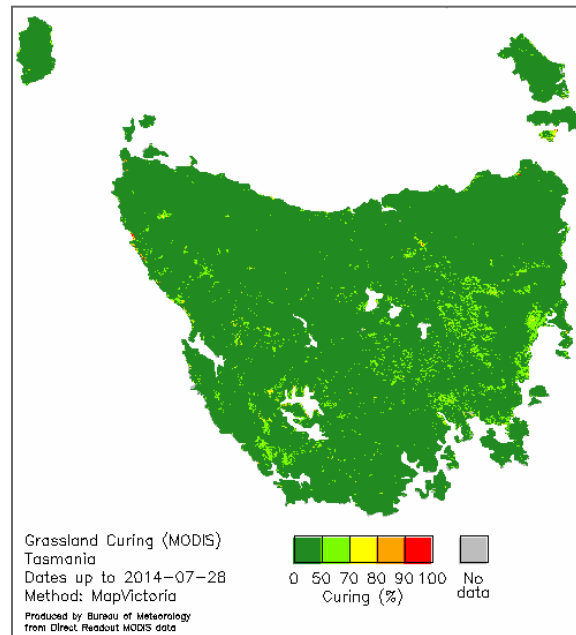
Unfilled

Observed over 21-28 July



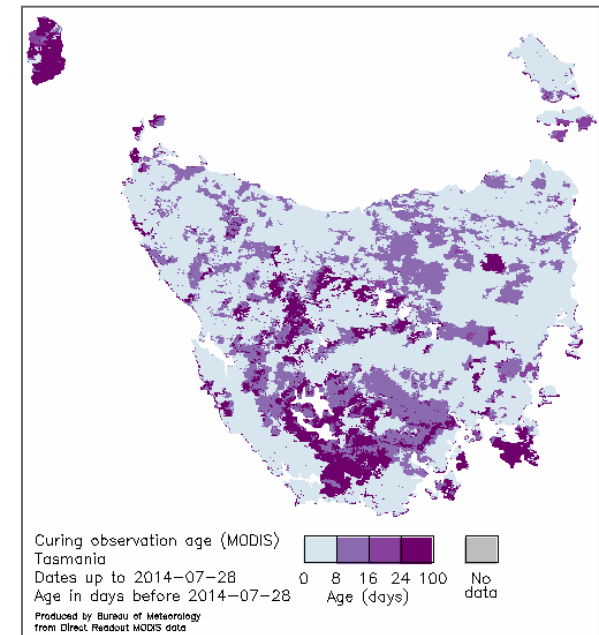
Filled

Observed up to 28 July



Observation age

Days before 28 July

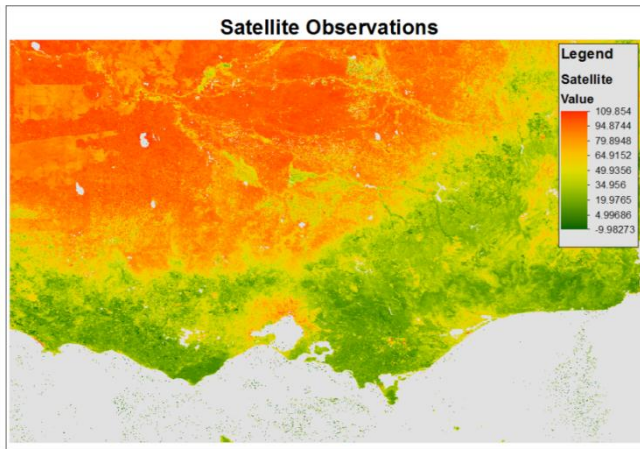


These examples are from winter - Filling and the age layer were introduced after the 2013/14 season

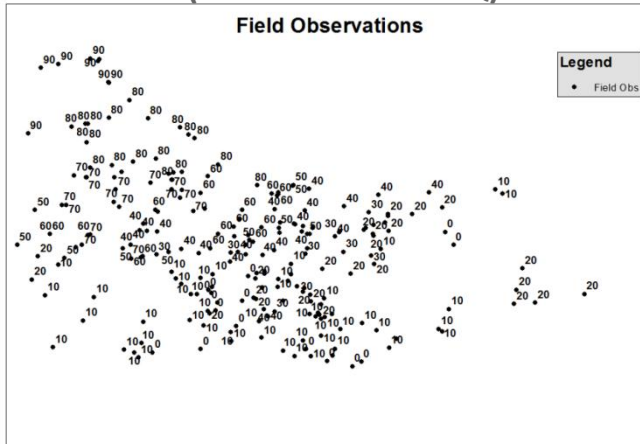


Vic CFA curing

MODIS Map Victoria (from Bureau)



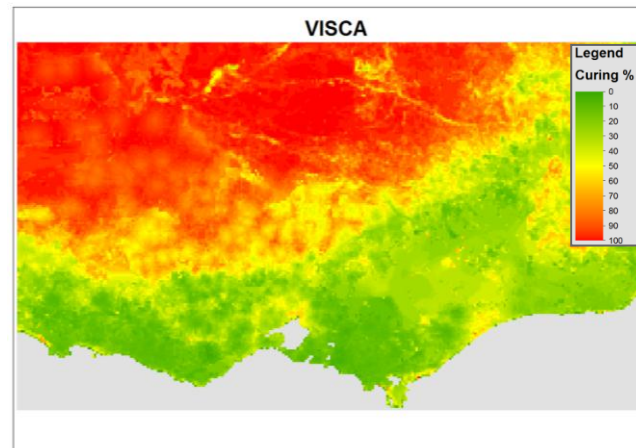
Field Data (Collated at CFA HQ)



Vic CFA blends satellite and field data

- Extensive network of visual observers
- Satellite data adjusted towards nearby field data

Final Curing Map





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Local BoM research

(Paul Fox-Hughes)

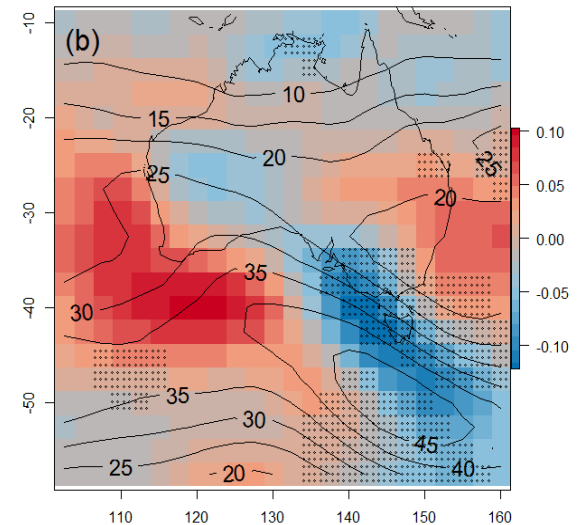
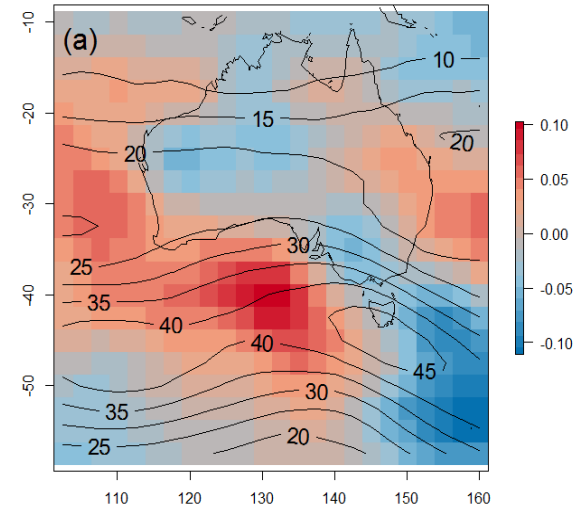


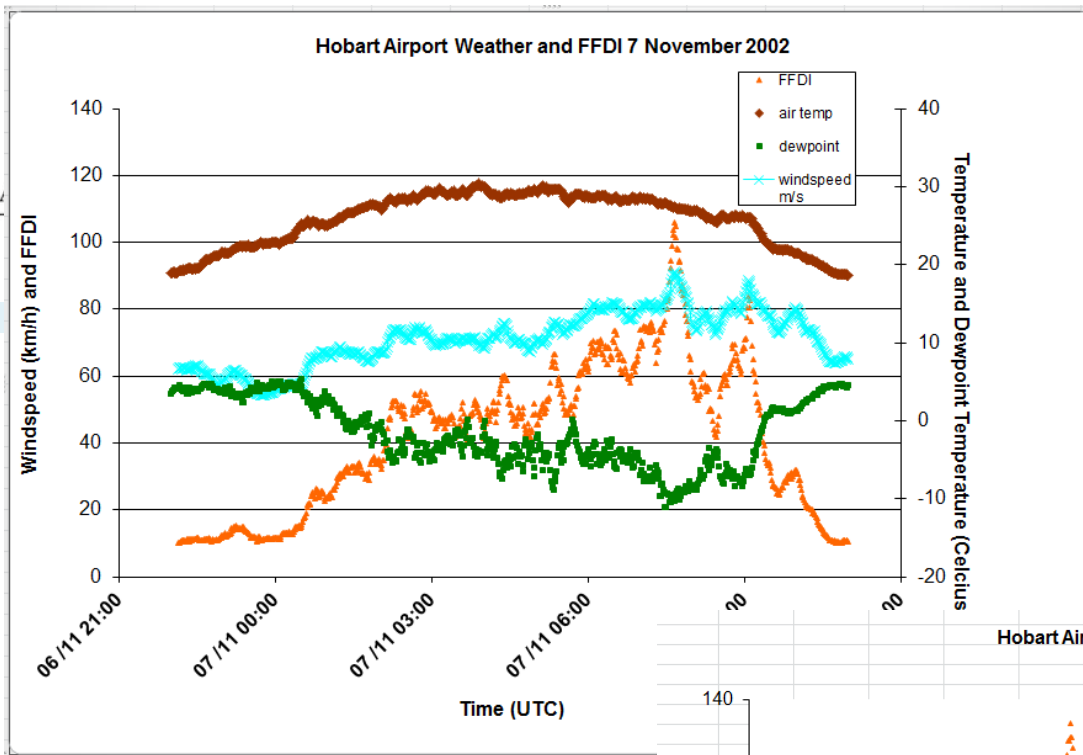
Australian Government

Bureau of Meteorology

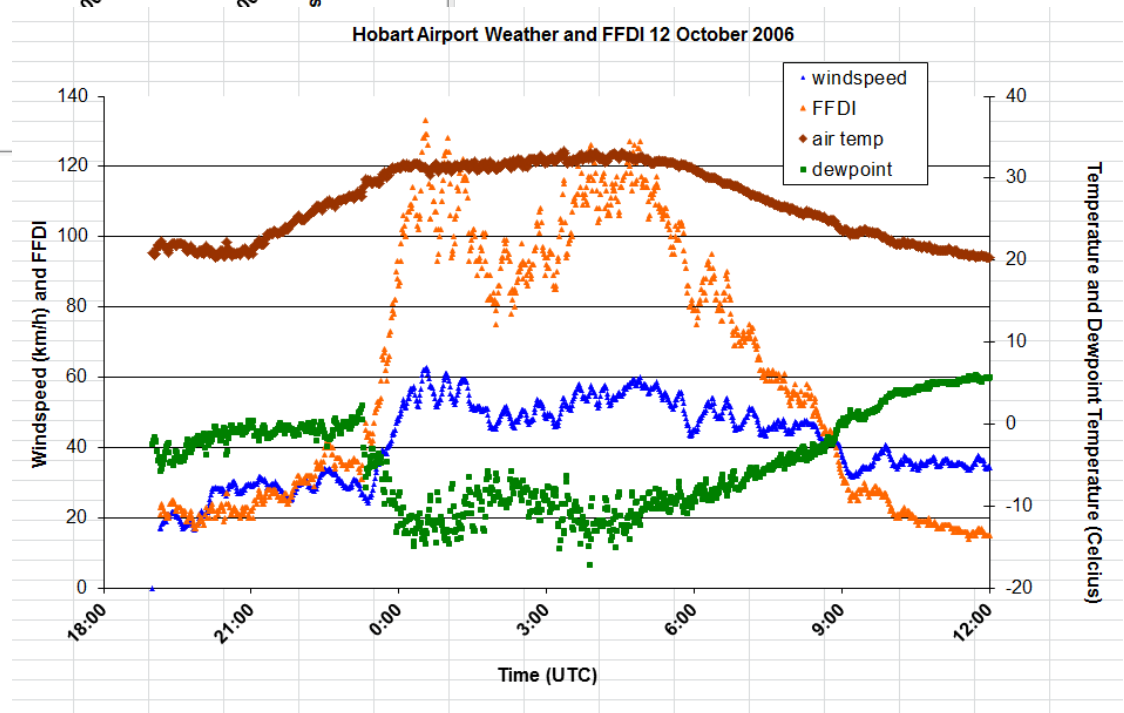
Sudden low humidity events

Abrupt increases in fire danger:
Climatology and
characteristics
Advanced warning signs





Abrupt FFDI increases can be extremely dangerous (e.g. Wangary SA 2005)



"Normal" events, while still dangerous, are less unpredictable.

Which type of event is likely can be distinguished by synoptic structures, potentially days in advance.



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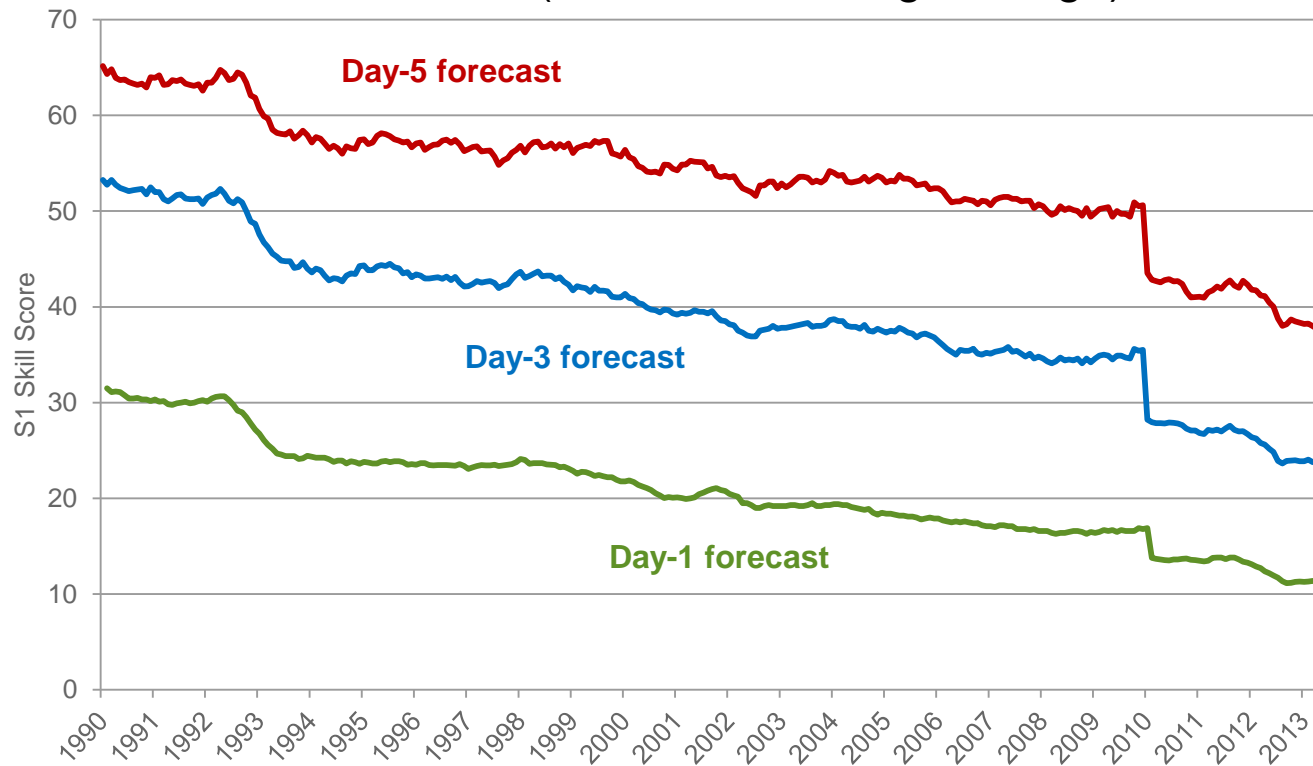
Weather Models



Australian Government

Bureau

Weather Model forecast skill score (12-month moving average)





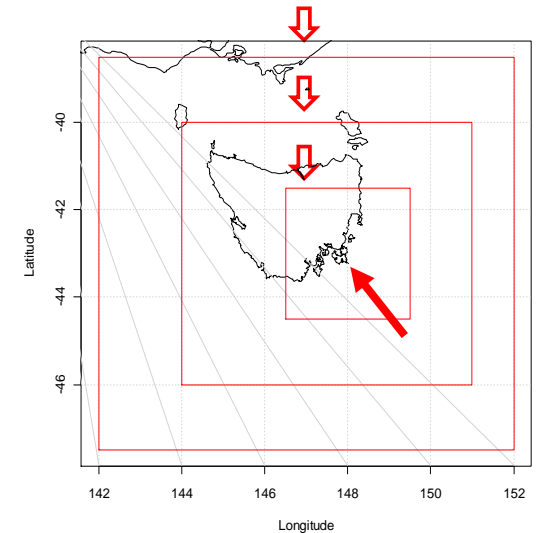
Australian Government
Bureau of Meteorology

The Centre for Australian Weather and Climate Research (CAWCR) High Impact Weather Group

Investigate the capability of ACCESS to model severe weather situations at high resolution (Gr Sp ~ 1 km) and very high resolution (Gr Sp < 1 km)

Modelling Dunalley 4 January 2013

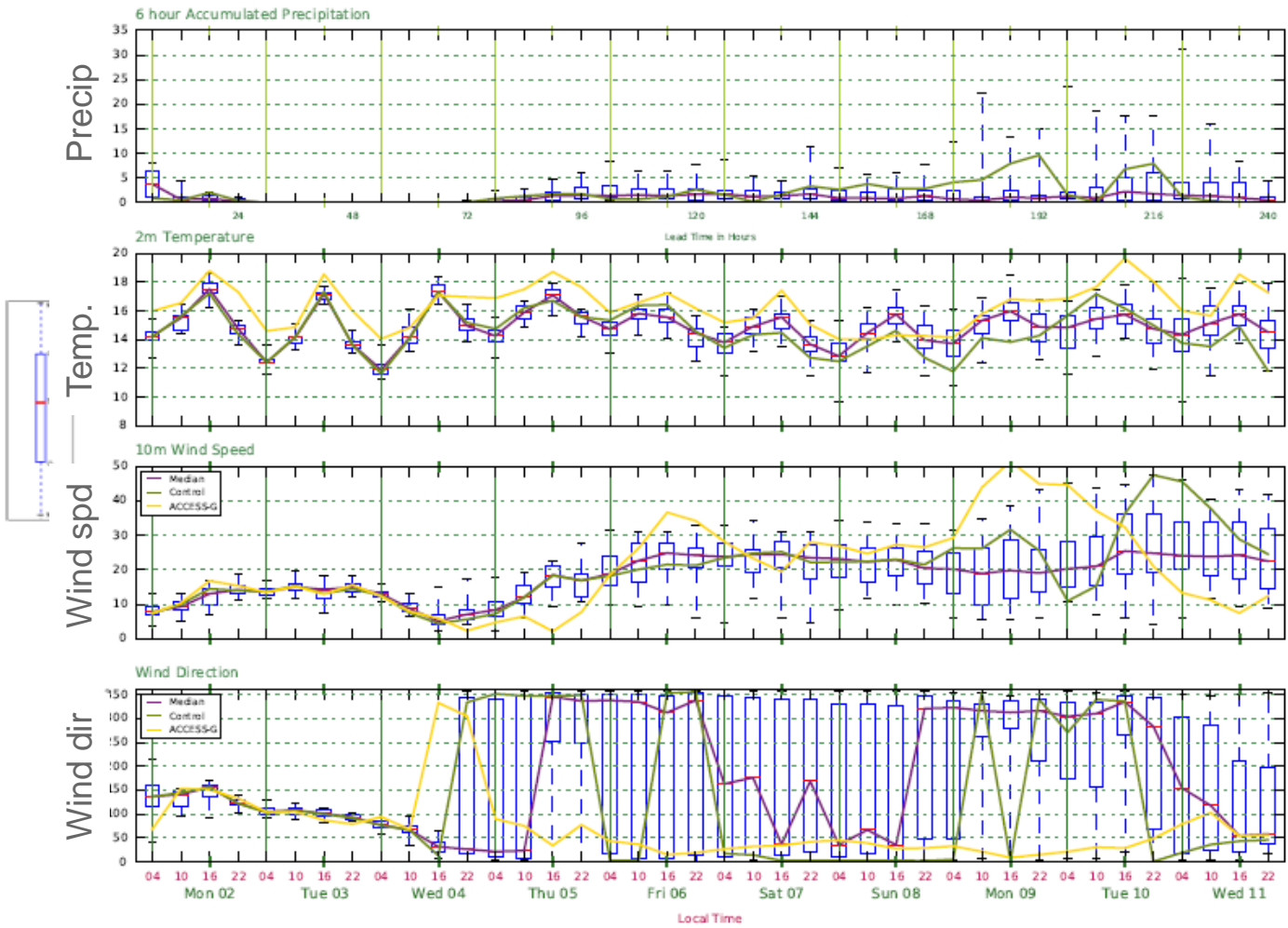
Global model
↓
large regional model (0.11°)





Ensemble predictions at medium range

AGREPS-G Start Sun Jun 1 2014 12Z (+10): Sydney Airport (151.1° E,34.0° S)



43 locations
To be added:
meteograms of
FFDI and GFDI

(will replace with
wind roses)

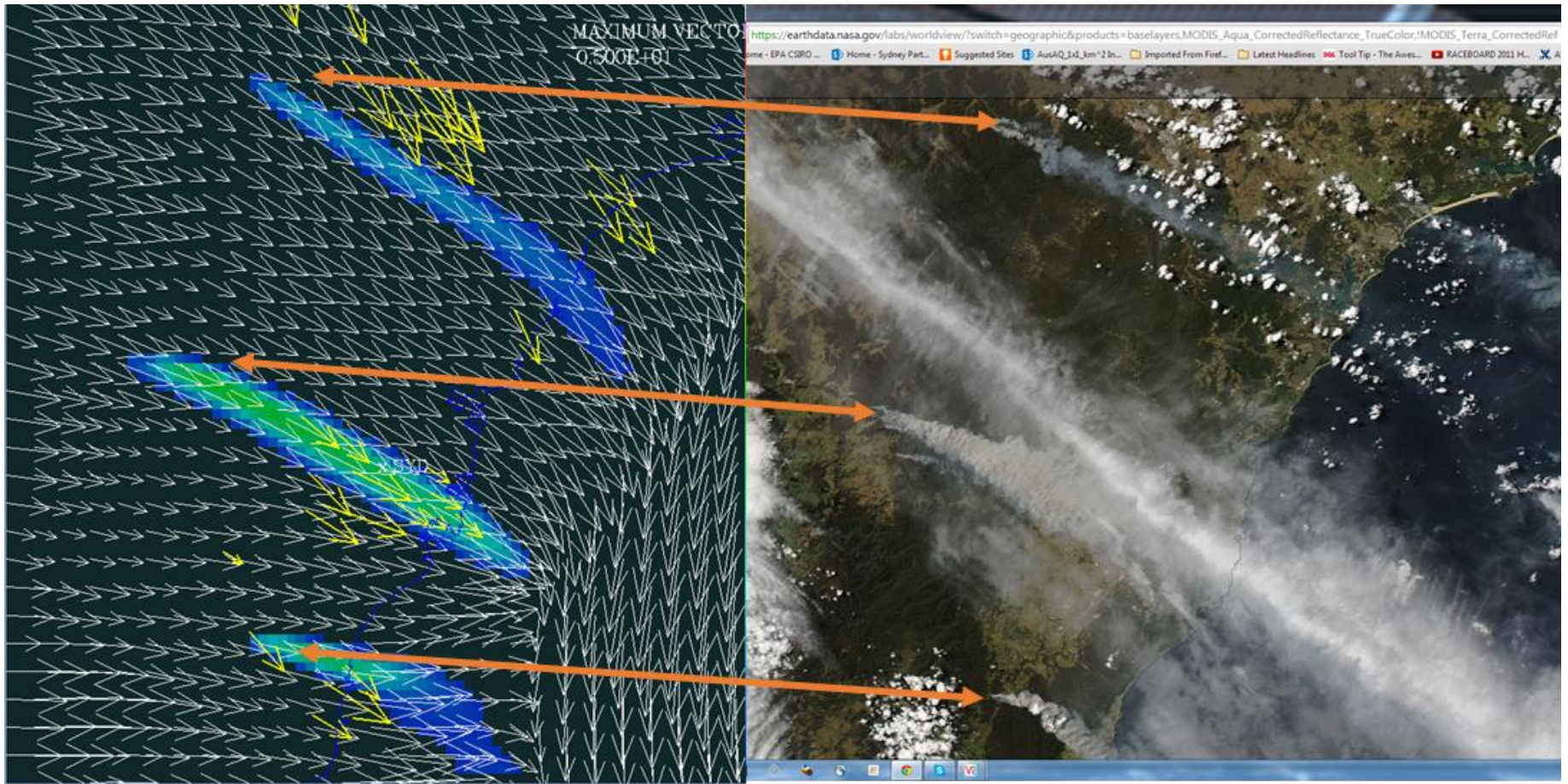


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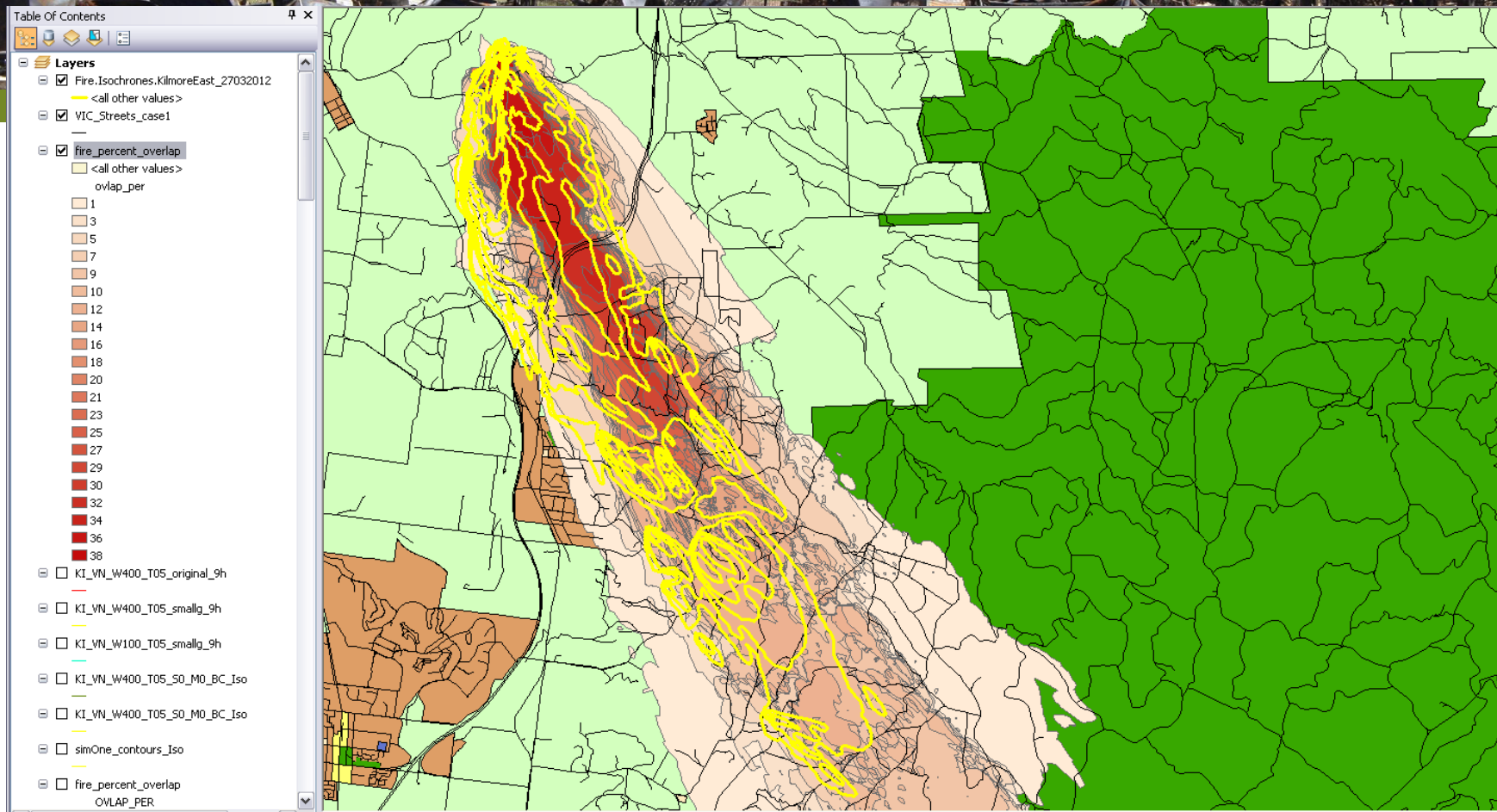
Smoke plumes - ECMWF fire emissions

Modelled vs. observed smoke plumes 18th Mar '13



FireDST

Comparison of ensemble at 240 minutes with reconstruction fire isochrones



THE UNIVERSITY OF
MELBOURNE



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Start typing, then select from list (town, city, postcode or lat/lon) [Locate](#) [Find me](#) Time zone: AEST

LATEST WEATHER

Current Temp, Rain, Wind ...

FORECASTS

Rainfall Forecasts

Temperature Forecasts

Storms, Snow, Fog, Frost ...

Humidity Forecasts

- Relative humidity
- Dew point temperature
- Forest fuel dryness factor

Updated 4 Aug 2014, 6:59 PM AEST

[Clear](#) [Info](#)

Overlay

Latest rain radar

Light Mod Heavy Offline

Updated 4 Aug 2014, 9:01 PM AEST

Mean Sea Level Pressure (hPa)

Wind Forecasts

Waves Forecasts

Forecast for Coles Bay [See text views for location](#)

[Save location](#)

| | Mon. 4 Aug | Tue. 5 Aug | Wed. 6 Aug | Thu. 7 Aug | Fri. 8 Aug | Sat. 9 Aug | Sun. 10 Aug |
|---------------------|------------------------|------------------------|----------------------|------------------------|------------------------|------------------------|------------------------|
| Max (°C) | - | 15 | 15 | 12 | 14 | 15 | 13 |
| Min (°C) | - | 11 | 9 | 7 | 7 | 9 | 9 |
| Chance of rain (%) | - | 10 | 30 | 5 | 5 | 10 | 40 |
| Rainfall range (mm) | - | 0 | 0 to 0.2 | 0 | 0 | 0 | 0 to 1 |
| Issued 04 Aug 2014 | Detail | Detail | Hide | Detail | Detail | Detail | Detail |

Wednesday: Late shower or two.

| | 1:00 AM | 4:00 AM | 7:00 AM | 10:00 AM | 1:00 PM | 4:00 PM | 7:00 PM | 10:00 PM |
|------------------|---------|---------|---------|----------|---------|---------|---------|----------|
| Temperature (°C) | 9 | 9 | 9 | 12 | 15 | 14 | 13 | 10 |
| Wind direction | NNW | NNW | NNW | NNW | WNW | W | WSW | SW |
| Wind speed | 22 | 20 | 19 | 28 | 39 | 39 | 44 | 39 |

km/h knots

42.72°S, 148.06°E

Place names Search marker Saved locations Forecast locations

Forecast districts Marine zones Roads & railways Rivers & lakes Catchments



Weather Radar

Hobart, TAS

Possible shower.

12.3°

At 9:05 pm
Mon 4 August

Feels like 4.8°C

Wind NW 33 km/h
NW 18 knots

Humidity 59%

Station: Hobart
Approx. 1.7 km away.

10° Tonight

15° Tomorrow

Chance of any rain

| | |
|-----|------------|
| 5% | 7pm - 10pm |
| 10% | 10pm - 1am |
| 10% | 1am - 4am |

< Past 24 hours

Next 24 hours >

Back to Weather

Hobart, TAS

Forecast for the Next 24 Hours

| | Temp °C | Humidity % | Wind dir km/h | Chance of any rain % |
|----------|---------|------------|---------------|----------------------|
| 7:00 pm | 11 | 72 | NW 24 | 5 |
| 10:00 pm | 10 | 77 | WNW 26 | 10 |
| 1:00 am | 11 | 76 | NW 30 | 10 |
| 4:00 am | 10 | 75 | WNW 28 | 5 |
| 7:00 am | 10 | 78 | NW 28 | 20 |
| 10:00 am | 10 | 80 | NW 24 | 10 |
| 1:00 pm | 12 | 71 | WNW 24 | 5 |
| 4:00 pm | 15 | 61 | NW 20 | 5 |

Launch Full Site Terms Feedback

Weather Radar

Hobart, TAS

Rain Radar

4/8/2014 41 minutes ago

Copyright: Image by Bureau of Meteorology. For related Warnings, see www.bom.gov.au

MtKoonua 04/08/14 10:30UTC 000.5e1 128km -1

Light Moderate Heavy