



Making better forecasts

Natural Hazards Management Workshop

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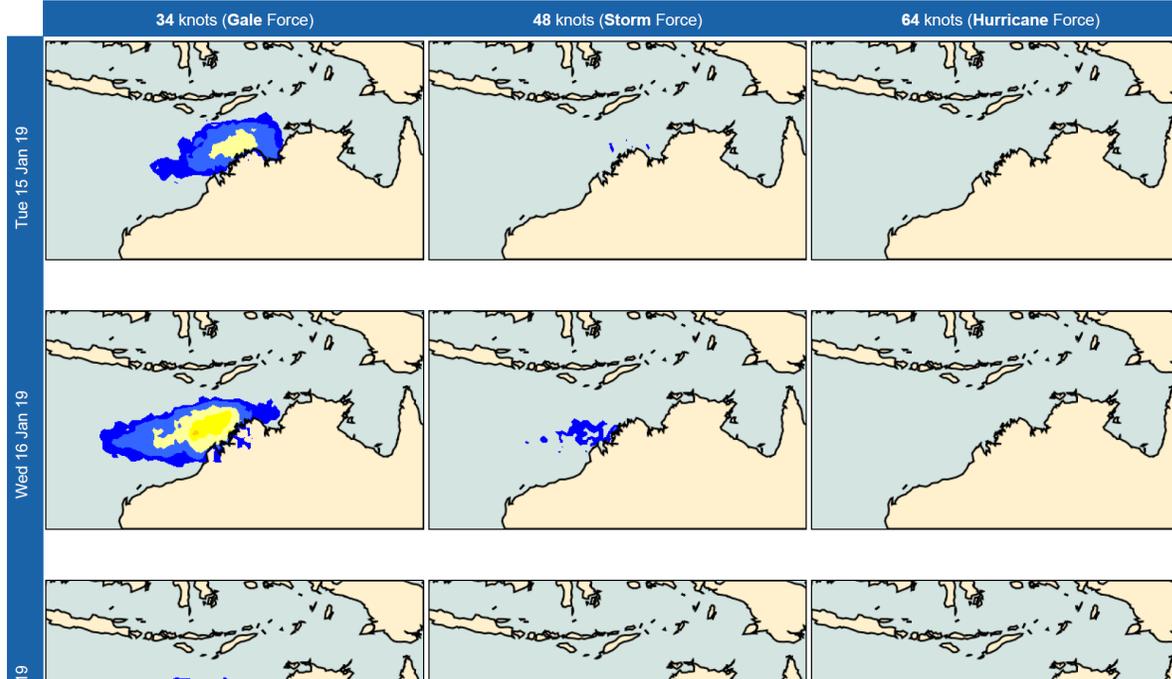


Probabilities

Why not just say what we think is going to happen?

- More accurate
- Communicates the uncertainty
- Better risk management
- More consistent

These wind and wave forecasts are from an operational system developed at the Bureau. Clever post-processing of the raw model output makes it much more useful for specific tasks.



Notes: (1) The maps in this product are based on data from the European Centre for Medium-Range Weather Forecasts and the Australian Bureau of Meteorology. The maps contain raw computer model output that has not been adjusted by forecasters. (2) Wind forecasts are based on 10 minute wind speeds. (4) Daily time step covers the 11pm - 11pm window (in WST)

(WAVE) Percentage of model scenarios exceeding 4.2 m within 100 n mi of GEP KP 248 (13.14S 125.31E)

DATE	08 Tue	09 Wed	10 Thu	11 Fri	12 Sat	13 Sun	14 Mon	15 Tue	16 Wed	
TIME (WST)	00-06 06-12 12-18 18-24	00-06 06-12 12-18 18-24	00-06 06-12 12-18 18-24	00-06 06-12 12-18 18-24	00-06 06-12 12-18 18-24	00-06 06-12 12-18 18-24	00-06 06-12 12-18 18-24	00-06 06-12 12-18 18-24	00-06 06-12 12-18 18-24	
30 Sun	2 2 2 2	2 2								
31 Mon		2								
01 Tue		2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2					
02 Wed			2 2 2 2	2 2 2 2	2 2 2 2					
03 Thu						2 2 2 2				
04 Fri	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2					
05 Sat						2 2 2 2	8 16 20			
06 Sun						2 6 8 10	18 24 27 27	25 29 29 25	20 14	
07 Mon						4 4 8 10	24 29 27 29	33 35 24 16	14 12 10 8	
08 Tue						4 4 4 4	8 16 20 18	16 14 18 14	8 6 6 4	
							2 6 22 25	22 20 25 24	18 14 12 14 8	
								2 4 6 8	29 35 37 29	35 37 31



Predicting pyrocumulus

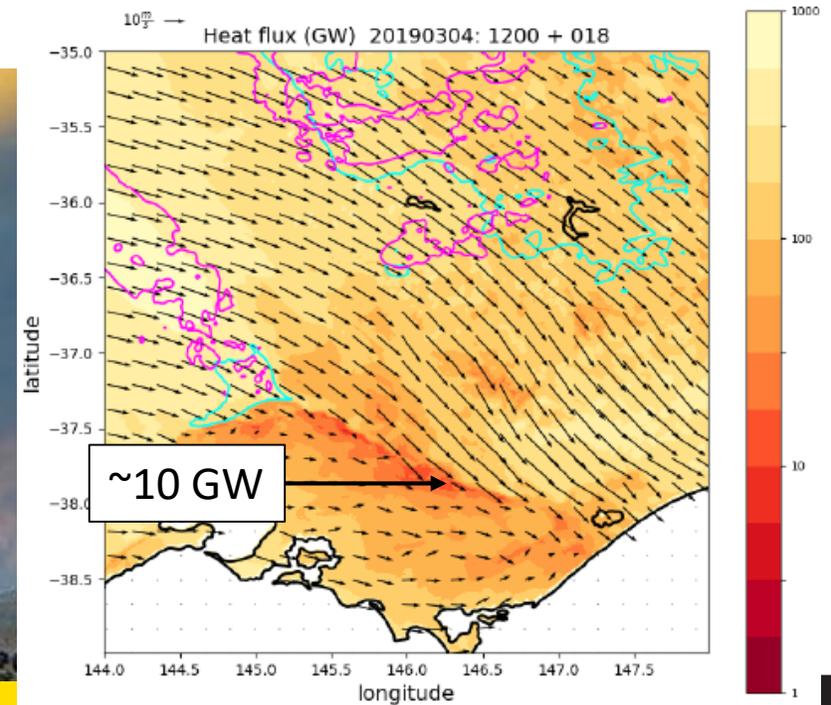
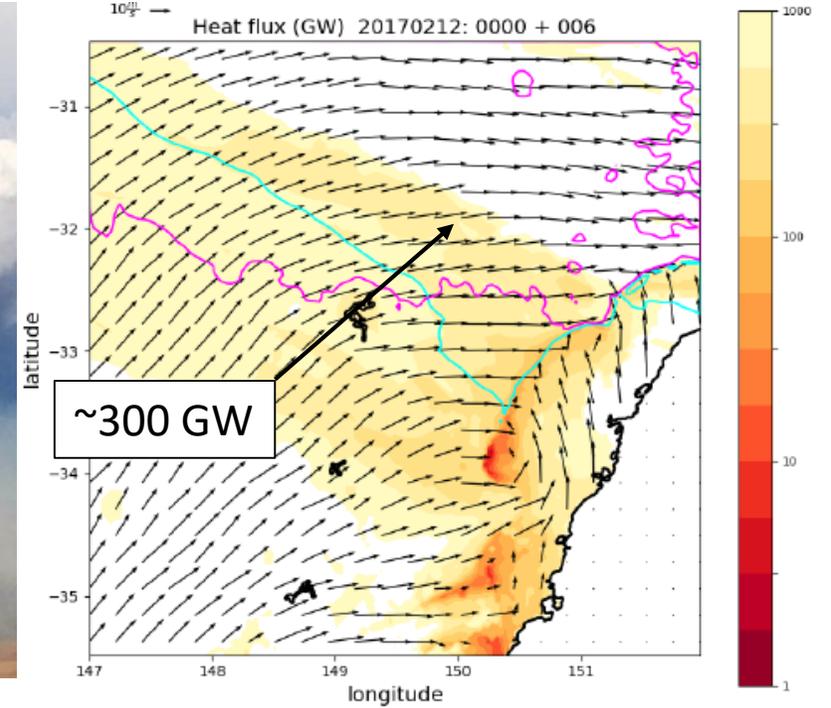
Pyrocumulus form when a bushfire creates a thunderstorm.

They're dangerous: lightning ignitions, major wind fluctuations, ember transport.

They depend on fire size and intensity, and atmospheric conditions

We've developed a diagnostic of how "bad" a fire has to be to make a pyrocumulus

New value and better information from existing forecasts



Coupled fire - atmosphere model

"Waroona" fire in Western Australia

Produced unexpected severe fire

Pyro-cumulus generated on two occasions

Major ember showers over Waroona

169 homes destroyed and 2 fatalities

The town of Yarloop was effectively destroyed

Acceleration of fire front evident

