Making better forecasts

Natural Hazards Management Workshop

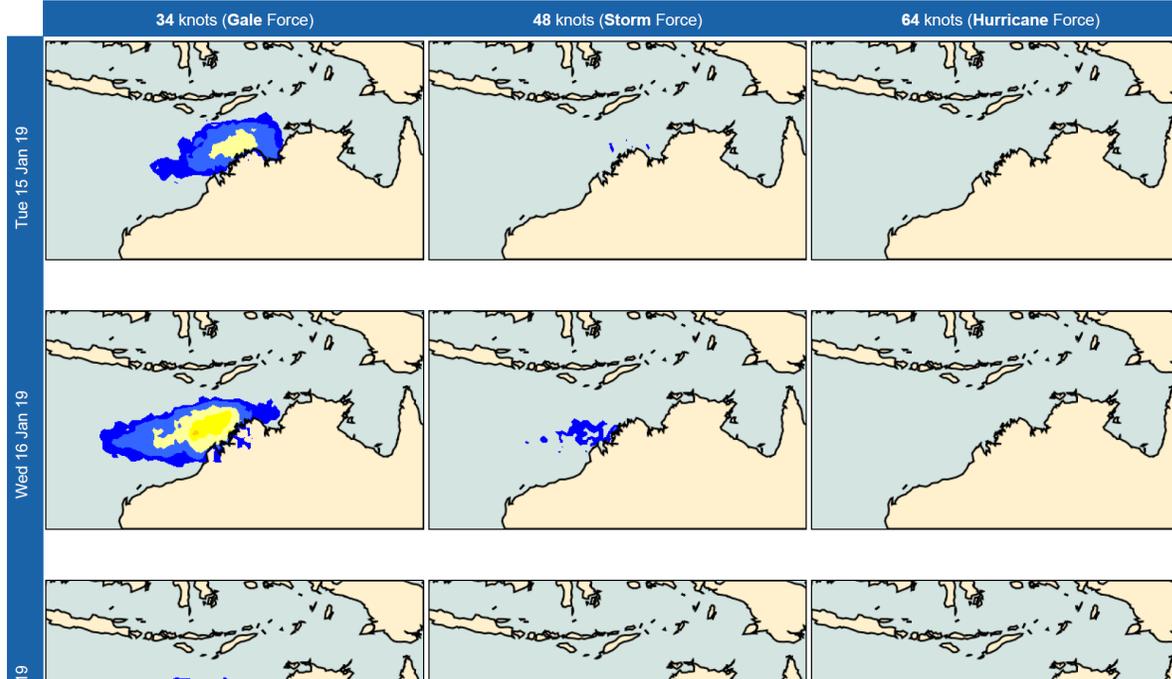**Jeff Kepert, Kevin Tory, Mika Peace and Saima Aijaz**
Bureau of Meteorology

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.
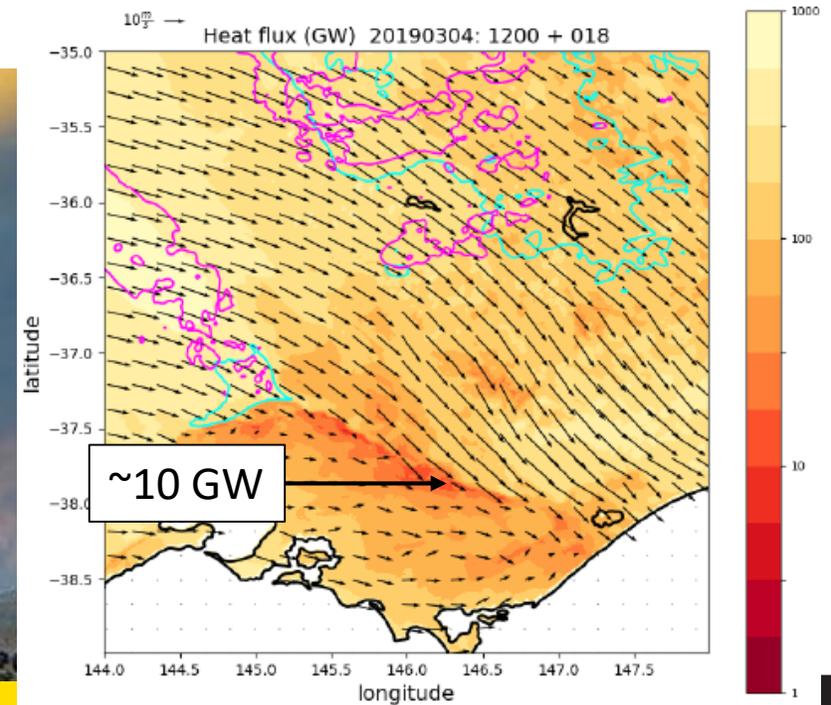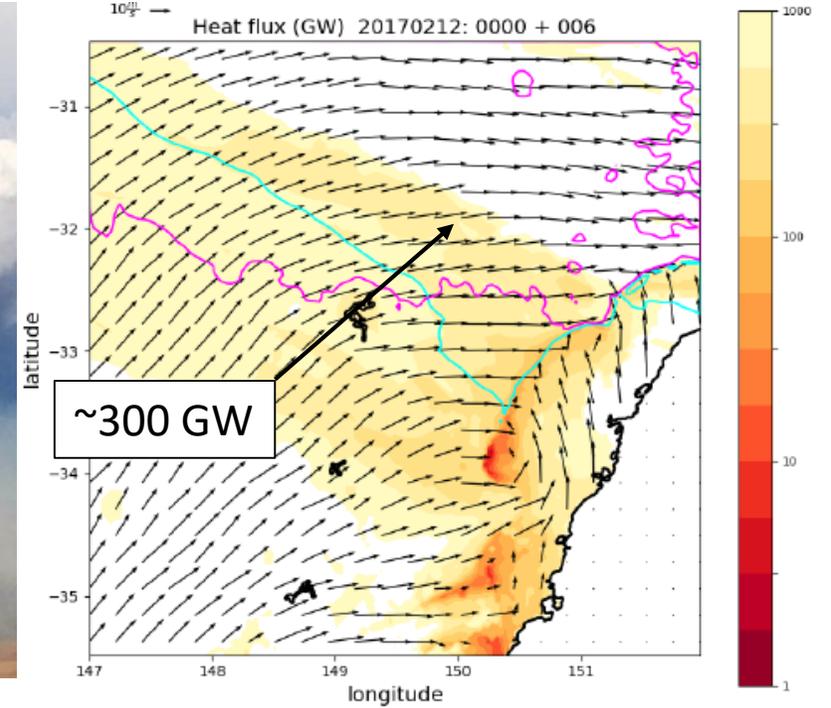
Predicting pyrocumulus

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

Sir Ivan

Licola

Heat flux (GW) 20170212: 0000 + 006

~300 GW

Heat flux (GW) 20190304: 1200 + 018

~10 GW

Coupled fire-atmosphere model

"Waroona" fire in Western Austra

Produced unexpected severe fire

Pyro-cumulus generated on two c

Major ember showers over Waro

169 homes destroyed and 2 fatali
The town of Yarloop was effective

Acceleration of fire front evident