Natural Hazards Research Australia

Tropical Cyclone Alfred: Insights and implications for future policy and practice

CYCLONE TESTING STATION

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We acknowledge the original custodians of the land – the Yugambeh, Turrbal and Yuggera people

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Tropical Cyclone Tracy: implications for future policy and practice

- Birth of Cyclone Testing Station
- Engineering approach
- Changes to codes and standards
- Testing and research underpinning change
- Value of investigating damage

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Tropical Cyclone Seroja: implications for future policy and practice

- Significant problems because buildings weren't designed for internal pressure
- WA state variation to NCC
- Changes to codes and standards
- Value of investigating damage

~ 80% design wind speed

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www.jcu.edu.au/cts

TC Alfred

Max gusts approx. 32 m/s (100 km/h)
Days of driving wind and rain

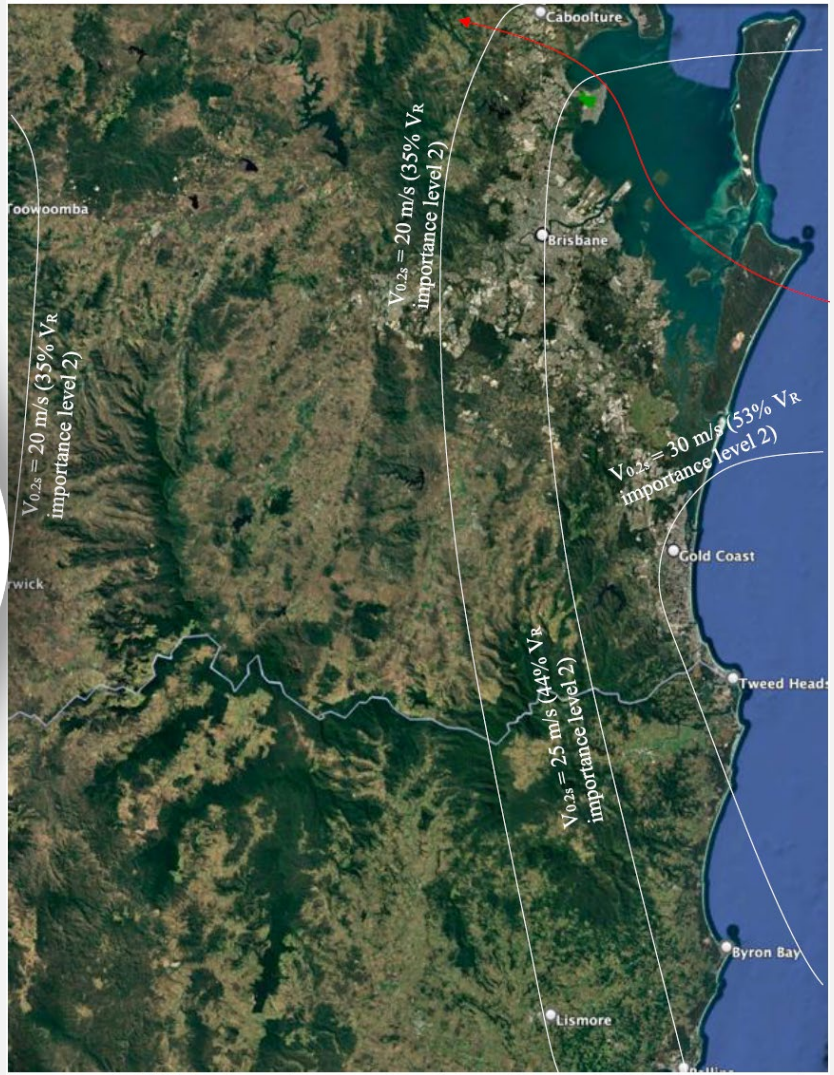

Figure 2-3 Wind field showing maximum 0.2 s gust wind speeds from reanalysis of anemometer data

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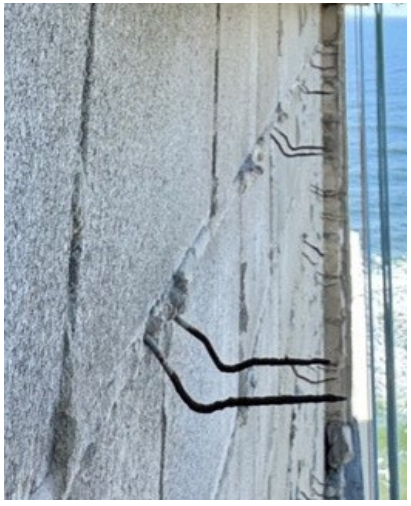
100 km/h too low for:

- Lifting tiles
- Lifting wind-borne debris
- Blowing in garage doors

But found weak links

- Corrosion in steel
- Rot in timber
- Poor design
- Water ingress



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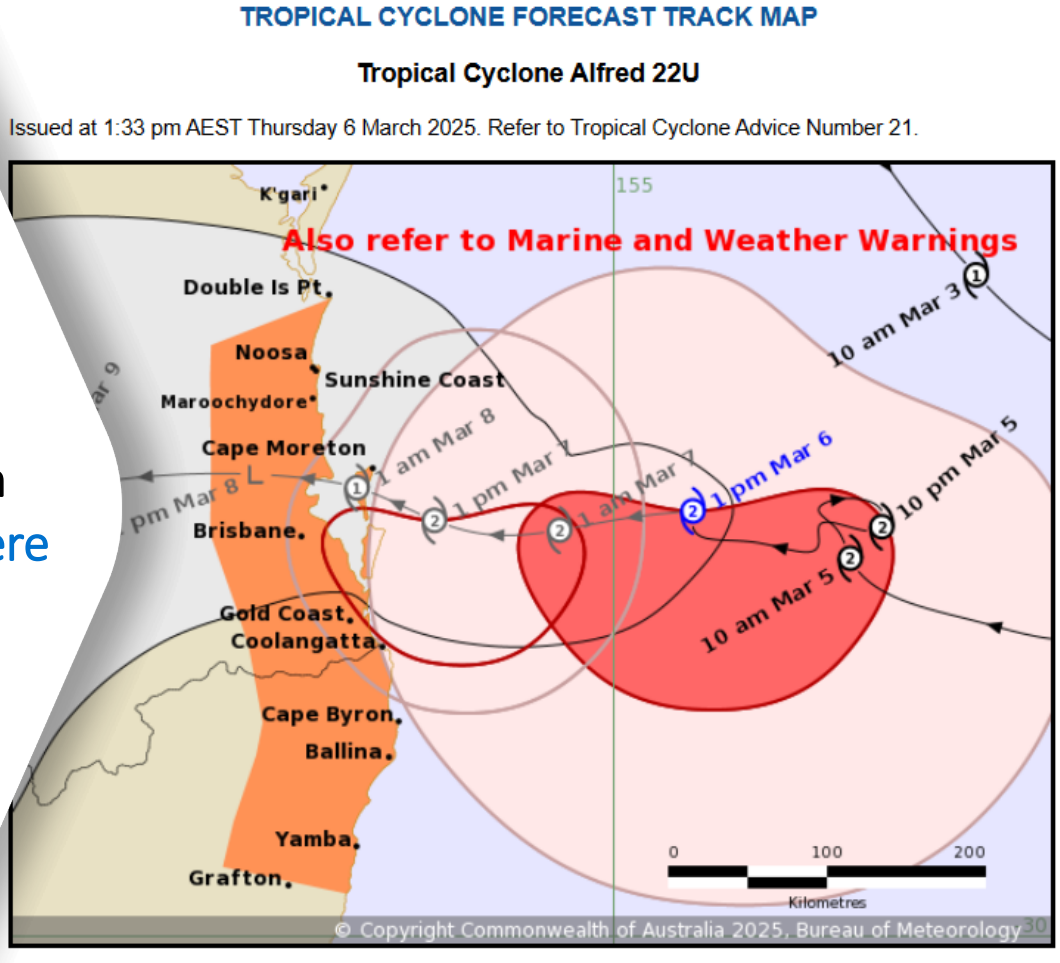
TC Alfred

During its journey West
Winds forecast: 140 to 150 km/h
Similar to those in TC Seroja where 30% of new buildings had significant roof damage.



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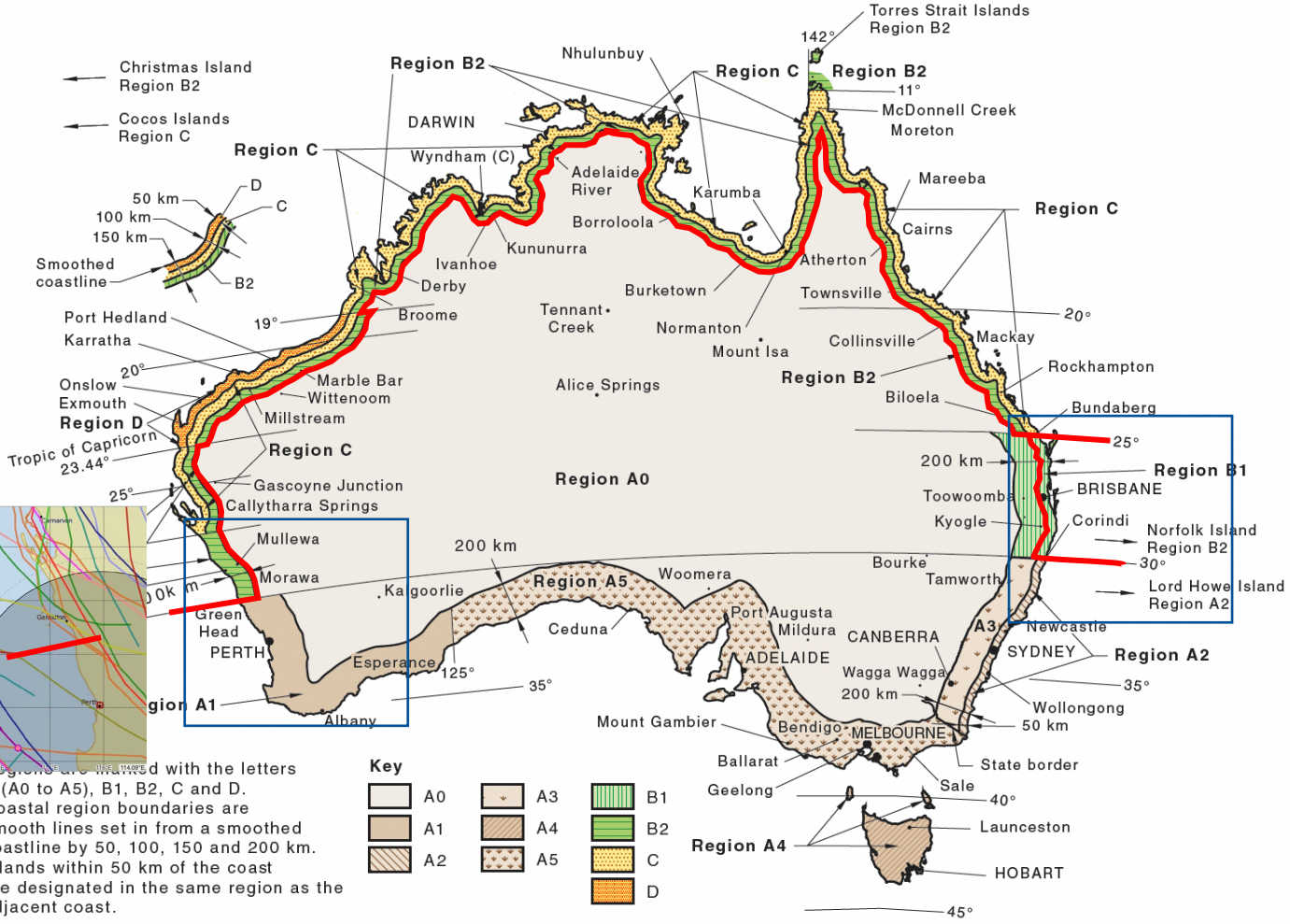
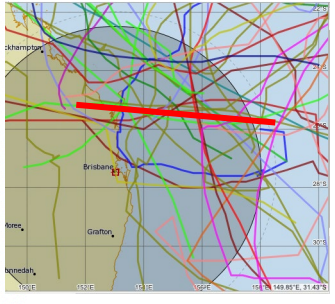
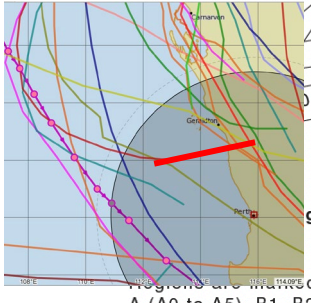
The problem

Coastal impact of a tropical cyclone in an area not designed for full internal pressure







Regions are marked with the letters A (A0 to A5), B1, B2, C and D. Coastal region boundaries are smooth lines set in from a smoothed coastline by 50, 100, 150 and 200 km. Islands within 50 km of the coast are designated in the same region as the adjacent coast.

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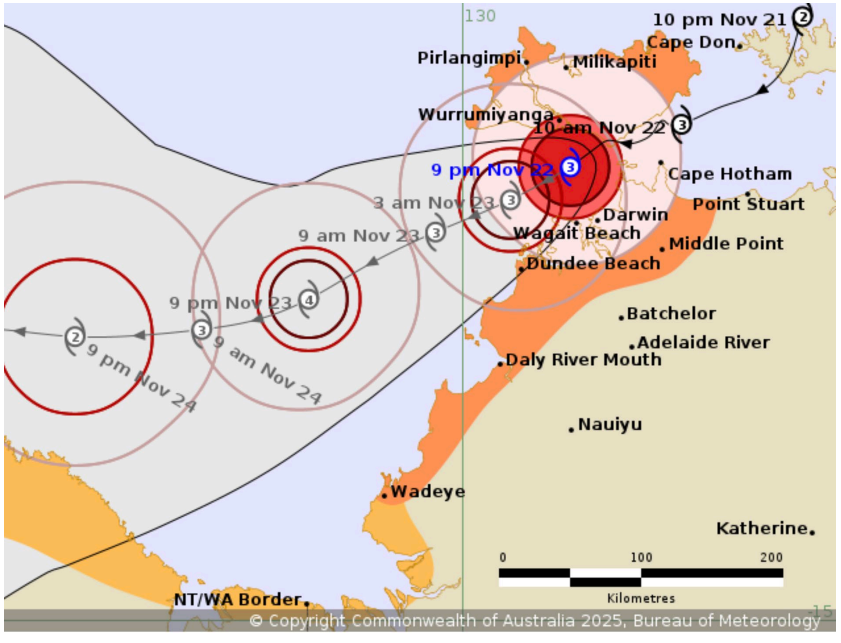
This storm season

- TC Fina
  - Early in the season
  - Tight, threaded the needle
- Supercell thunderstorms in SE Queensland
  - 30/10/2025
  - 24/11/2025
  - 25/11/2025
  - 26/11/2025
  - Reported to be “stronger than Alfred”



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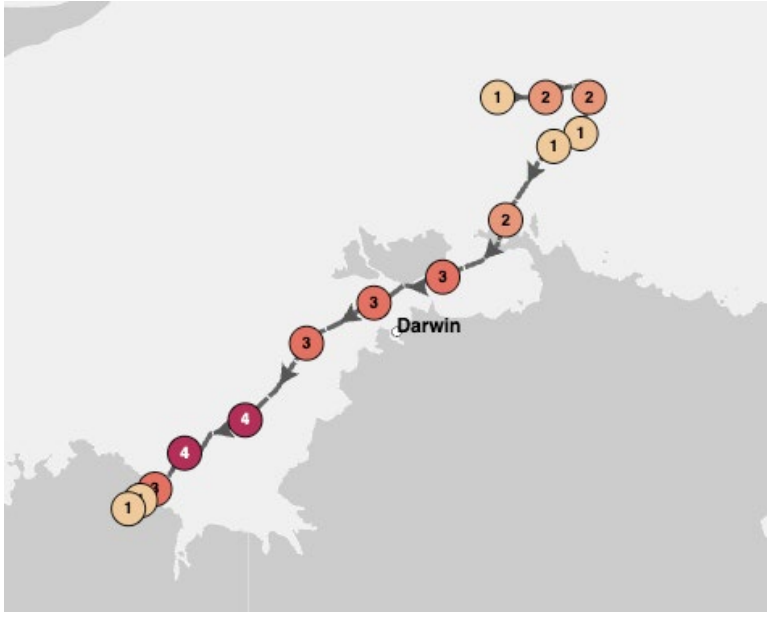
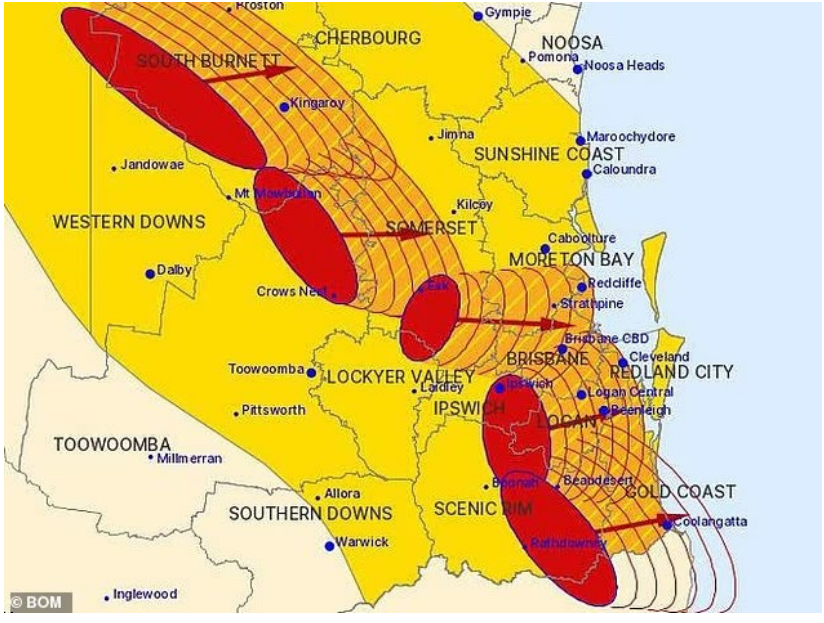
TC Fina

- Category 3 event off Darwin
- Darwin saw Cat 1 winds
  - Trees down, power cuts
  - Comparisons with TC Tracy unhelpful
- Mild damage in Tiwis
- More extensive damage Berkley River (East Kimberley)



Supercells SE Queensland

- Many events over 3 days
  - Giant hail
  - Trees down, power cuts
  - Roofs off, Loganlea and Bribie Island



Wind events & complacency

- Ex-TC Alfred
  - Water ingress, trees down, minor damage
  - Big lessons on what might have been
  - Large extent, damaging potential, decayed, but maintained a path with significant risk
- TC Fina
  - Near miss on Darwin, trees down,
  - Small extent, damaging potential, threaded the needle, path avoided significant risk
- SEQ supercells
  - Hail damage, some roof damage
  - High intensity localized events
  - Damage potential, could be offset by resilient design

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CTS benefactors

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https://www.jcu.edu.au/cyclone-testing-station