

# IMPACT FORECASTING: WHAT DOES THE FORECAST MEAN?



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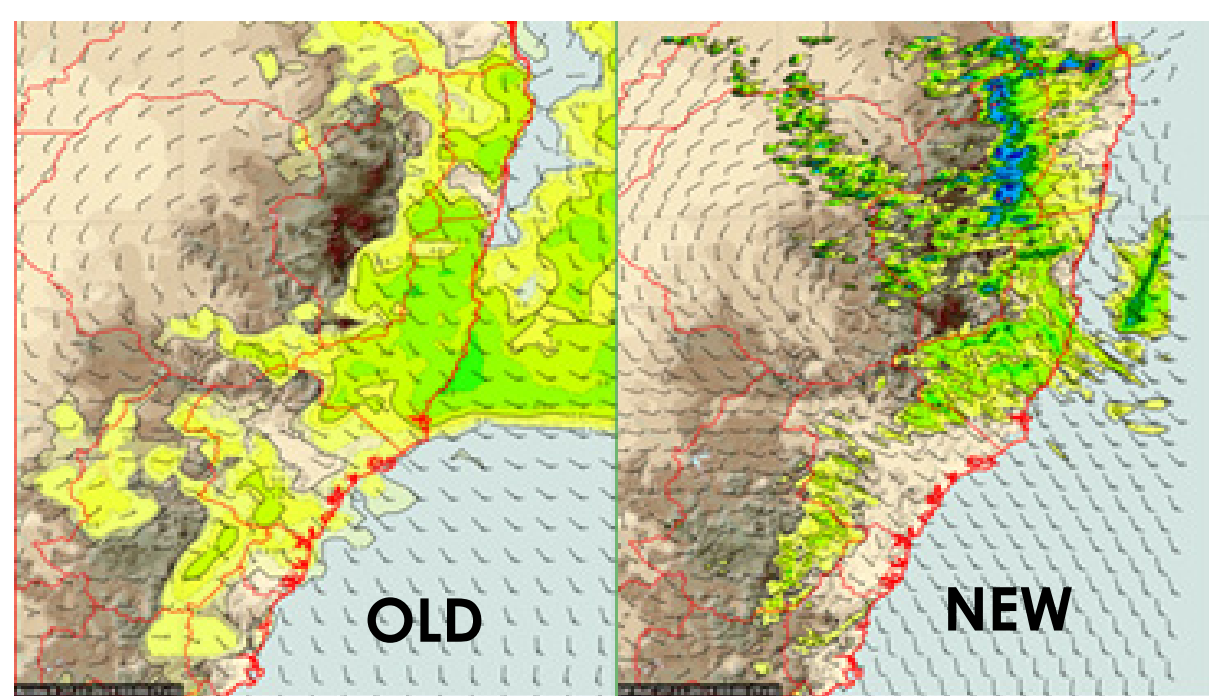
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**THIS PROJECT WILL DEVELOP A PILOT CAPABILITY TO PREDICT IMPACTS OF EXTREME WIND AND RAINFALL ON THE BUILT ENVIRONMENT WITH THE GOAL OF IMPROVING TIMELY MITIGATING ACTIONS BY A WIDE RANGE OF STAKEHOLDERS. THIS PILOT PROJECT WILL INITIALLY FOCUS ON EAST COAST LOW EVENTS THAT OFTEN SEVERELY IMPACT THE SUBTROPICAL EAST COAST OF AUSTRALIA VIA A RANGE OF HAZARDS INCLUDING HIGH WIND AND RAIN.**

Current hazard forecasts issued by the Bureau of Meteorology are based on meteorological analyses of many data sources, combined with local knowledge, and informed by conceptual models and years of experience in the issuing and verification of forecasts.

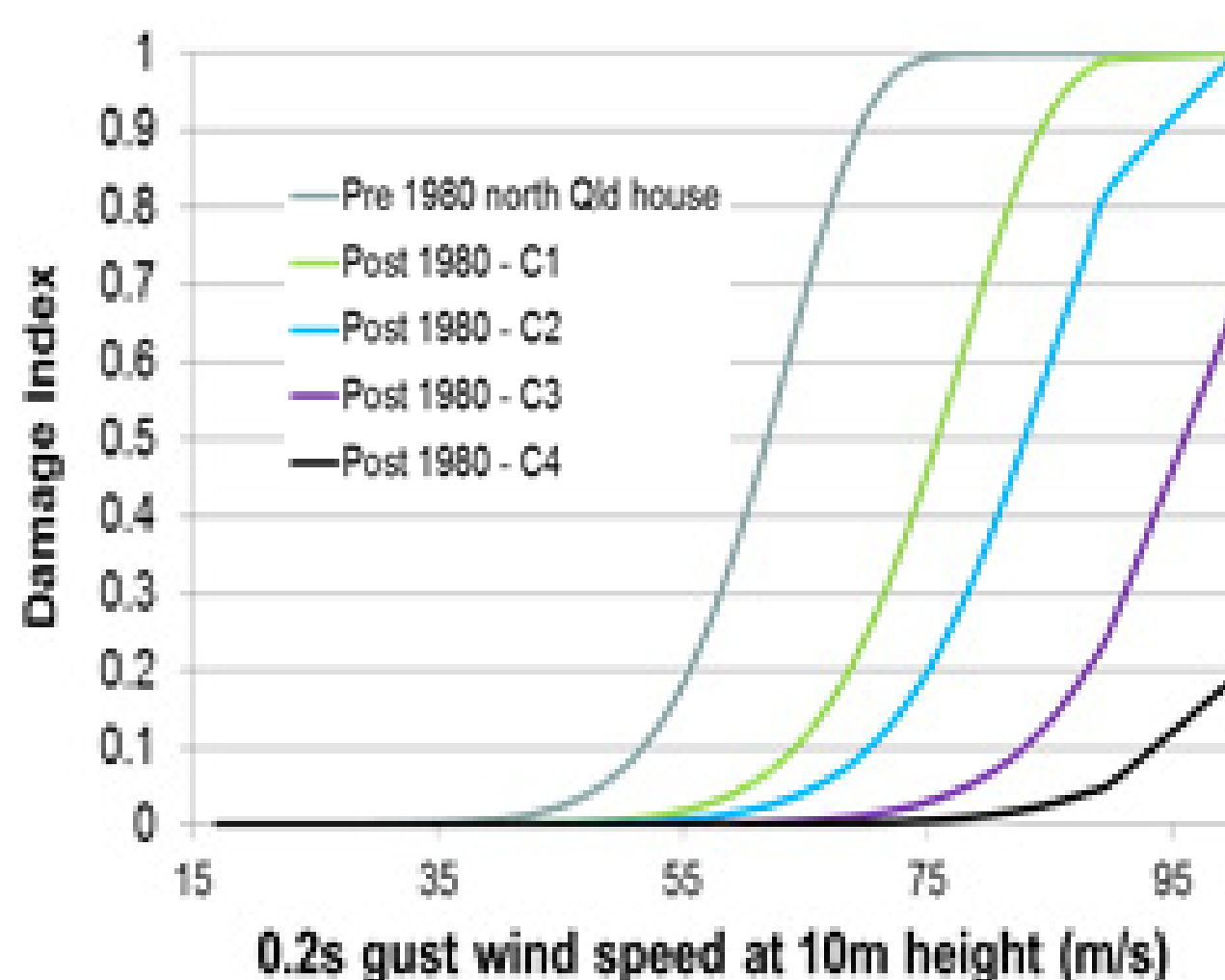
Until recently, forecasts were somewhat general in nature, due in part to uncertainty in forecast accuracy, and the need for brevity in worded forecasts and warnings.

Forecast accuracy has substantially improved over the last couple of decades, with higher resolution models and model ensembles now increasingly available, allowing the forecaster to specify the associated uncertainty.

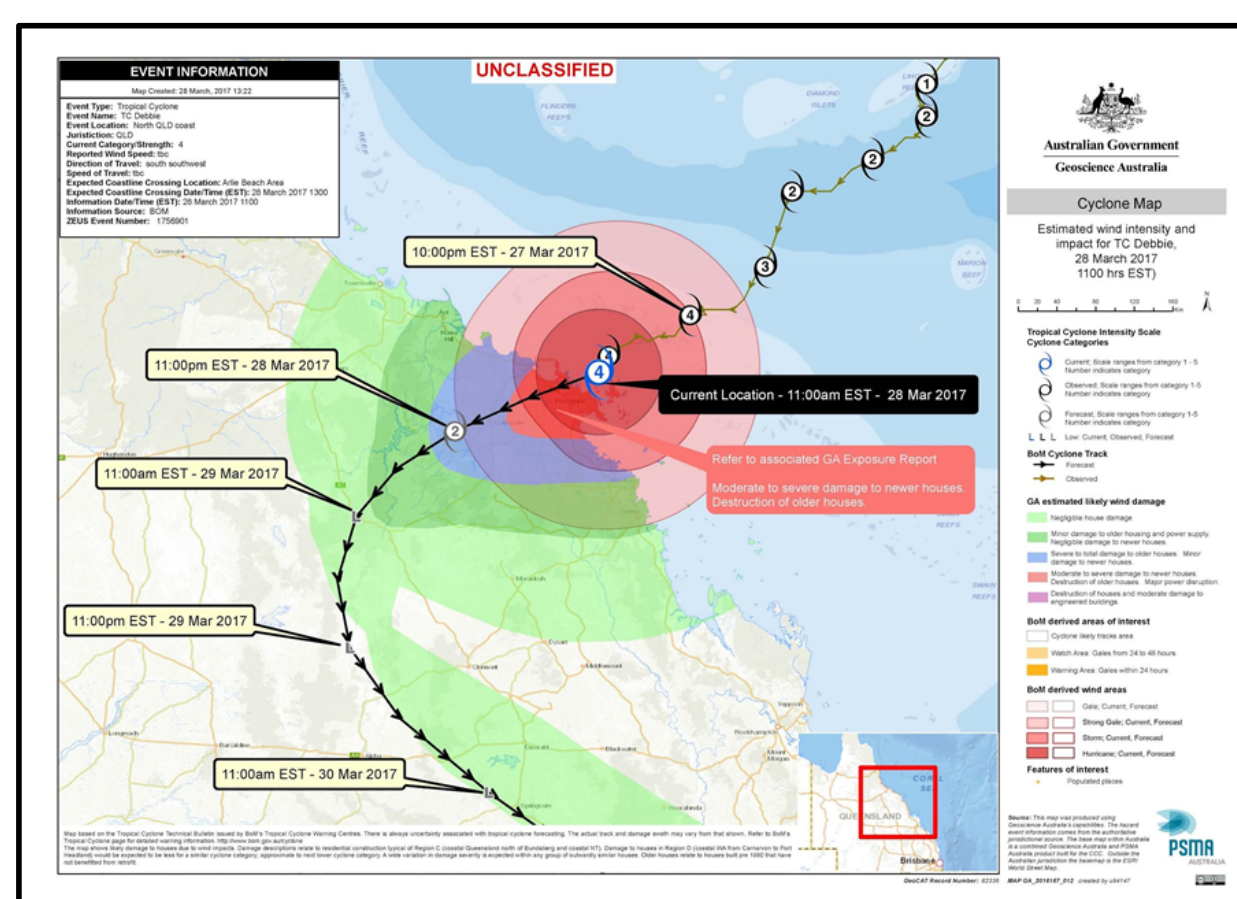


The Bureau now provides operational forecasts as national gridded data, available and viewable online <http://www.bom.gov.au/australia/meteye/>

Geoscience Australia and others have made advances in vulnerability modelling (Wehner, et al 2010) and in the compilation of detailed national databases of assets at risk (the National Exposure Information System) <http://www.ga.gov.au/scientific-topics/hazards/risk-impact/nexis>.



Geoscience Australia has also been trialling impact products with the Attorney-General's Department to understand what is exposed before, during and after events. These trial products will be a starting point for the development of impact forecasts during this project.



Increasingly, national meteorological services are encouraged to progress from weather forecasts and warnings to multi-hazard impact-based forecast and warning services (World Meteorological Organization, WMO 2015).

This project brings together the collective strengths of the Bureau and Geoscience Australia that will make steps to realise this WMO vision.

## PROJECT METHODOLOGY

The project aims to provide more tailored information in hazard forecasts so that emergency managers can address questions such as:

1. What does a wind speed of 90 km/hr mean for my area of responsibility?, or
2. What can I do ahead of the event to minimise impact?

To do this, the project will undertake the following components:

- ▶ Planning (including identification of use-cases, user requirements, available regional and national scale data, review of international approaches)
- ▶ Develop workflows to integrate high resolution meteorological forecast models with impact models and test the results against historic data
- ▶ Assess data issues relating to scale, and uncertainty
- ▶ Develop impact statements that relate thresholds of hazard to impact
- ▶ Trial workflow implementation and test outputs with a range of users

## REFERENCES

Wehner, M., Ginger, J., Holmes, J., Sandland, C. and Edwards, M., 2010. Development of methods for assessing the vulnerability of Australian residential building stock to severe wind. Australian Meteorological & Oceanographic Society Conference, 2010, Canberra, Australia.

World Meteorological Organization 2015. WMO Guidelines on Multi-hazard Impact-based Forecast and Warning Services. WMO-No. 1150.



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