



IMPACT-BASED FORECASTING IN THE COASTAL ZONE: EAST COAST LOWS

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Project Goal: To develop a pilot capability for making useful predictions of community impacts of extreme wind & rain to improve timely mitigating actions by a range of stakeholders.

VERIFICATION

Difficult to verify (SES call-out data shown in Fig. 2):

- Vulnerability/exposure data quality is variable.
- Event damage data is incomplete or incompatible with model impact forecasts → need improved damage assessment data.

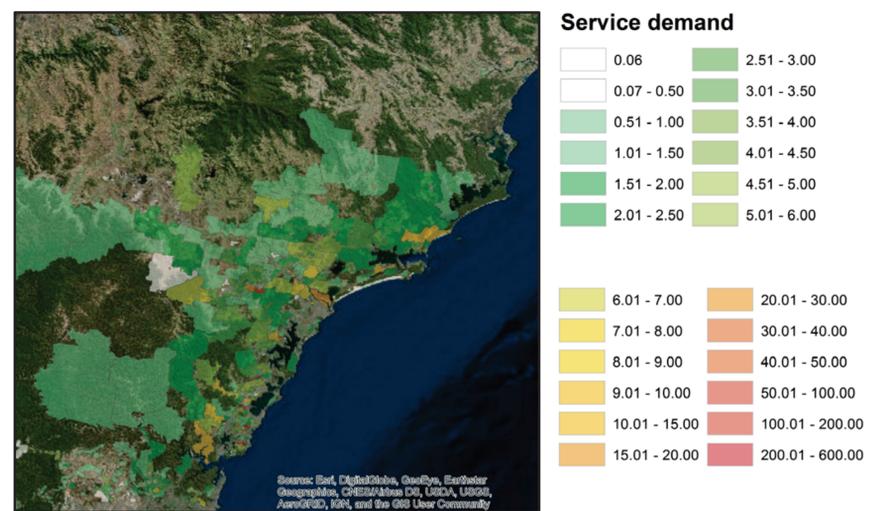


Figure 2: SES service demand for the 2015 Dungog ECL. Requests for assistance were due to a combination of rain, wind and flood.

Important lesson: "Impact" is almost always due to multiple hazards...

COMBINED WIND/RAIN PREDICTOR

- Statistical relations between observed damage state, building stock data and 2 hazards (Fig. 3).
- Can be used to determine event vulnerability; needs repeating for multiple events across multiple hazards

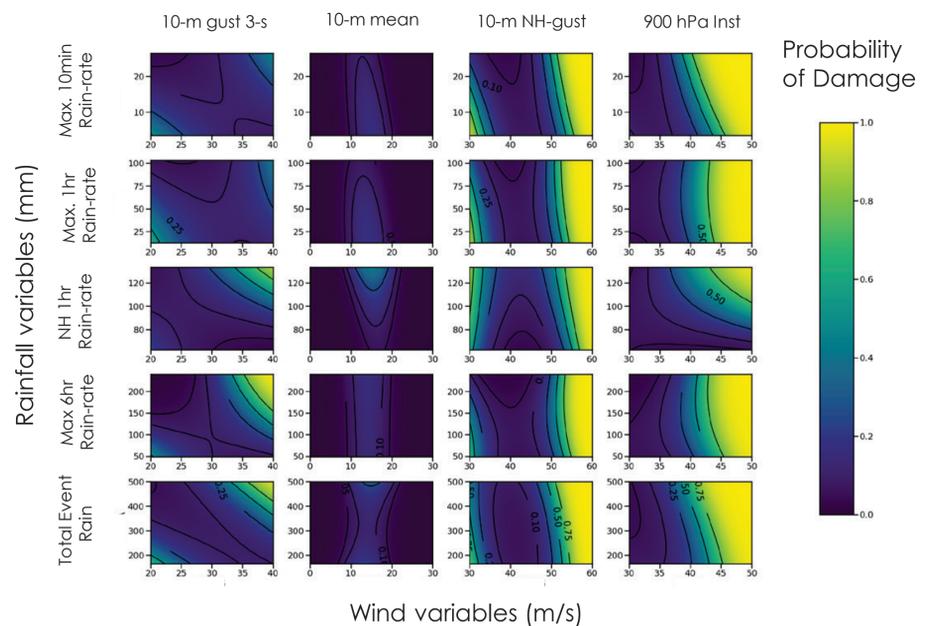
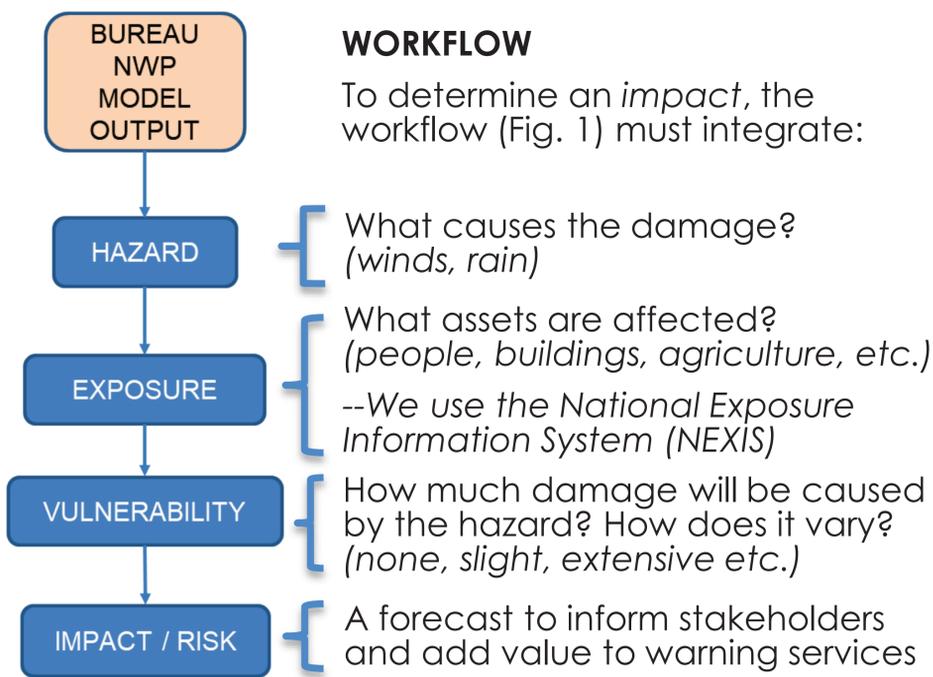


Figure 3: Probability of damage as a function of 5 rain and 4 wind predictors for the Dungog ECL using Quadratic Discriminant Analysis.



This project forecasts the **wind & rain impact on residential buildings** using idealised vulnerability functions for the 2015 Dungog East Coast Low (ECL).

HAZARD SPECIFICATION

- What wind variable is characteristic of the hazard?

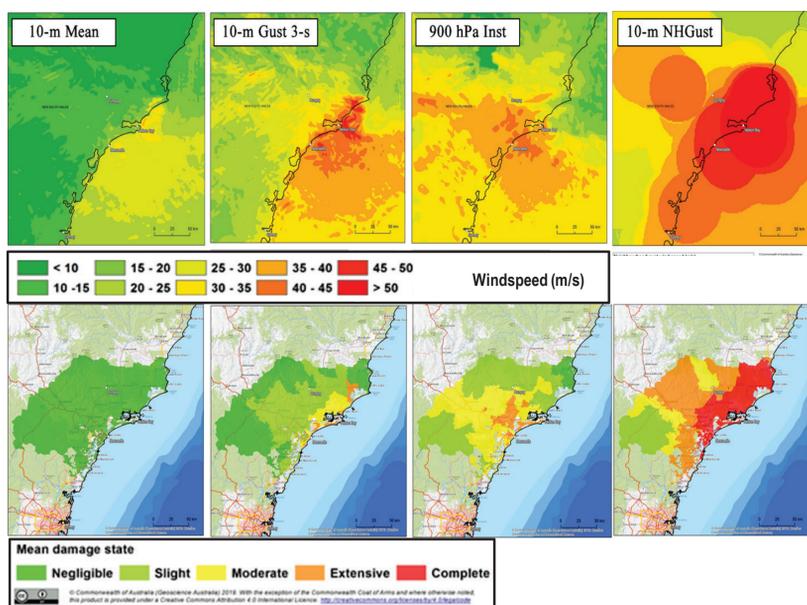


Figure 1: Wind variables (top) and damage forecast (bottom) for the 2015 Dungog ECL. Note the large variation in the forecasts.