

Hybrid Models and Time-dependent Hazard in New Zealand

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Recent work in earthquake forecasting in New Zealand has been at the interface of earthquake forecasting (or operational earthquake forecasting) and seismic hazard analysis. One of our aims has been to develop models that can transition from short-term forecasting to the time scales that are required by seismic hazard analysis. As part of this we have been developing hybrid forecast models that utilise alternative data sets to the earthquake catalogue. Recent results have shown significant improvements in forecast skill by including geological information and geodetic strain rate information. Another important challenge has been to develop homogeneous catalogues that allow for consistent forecasting from earthquake rates through to ground-motion prediction equations. We have also been endeavoring to understand the impact of uncertainties (e.g., from the catalogue through to model uncertainty) on the final forecasts. Finally, we will discuss some of the challenges we are currently facing in testing of earthquake forecast models.

Keywords: earthquake forecasting, statistics, seismic hazard