Recent efforts in empirical ground motion prediction in New Zealand

B. A. Bradley¹, G. H. McVery², M. C. Gerstenberger³

¹ Senior Lecturer, Dept. of Civil and Natural Resources Engineering, University of Canterbury, New Zealand. E-mail: brendon.bradley@canterbury.ac.nz
² Principal Scientist, GNS Science, New Zealand. E-mail: g.mcverry@gns.cri.nz
³ Risk and Engineering Team Leader, GNS Science, New Zealand. E-mail: g.mcverry@gns.cri.nz

ABSTRACT

This presentation discusses recent empirical ground motion modelling efforts in New Zealand. Firstly, the active shallow crustal and subduction interface and slab ground motion prediction equations (GMPEs) which are employed in the 2010 update of the national seismic hazard model (NSHM) are discussed. Other NZ-specific GMPEs developed, but not incorporated in the 2010 update are then discussed, in particular, the active shallow crustal model of Bradley (2010). A brief comparison of the NZ-specific GMPEs with the near-source ground motions recorded in the Canterbury earthquakes is then presented, given that these recordings collectively provide a significant increase in observed strong motions in the NZ catalogue. The ground motion prediction expert elicitation process that was undertaken following the Canterbury earthquakes for active shallow crustal earthquakes is then discussed. Finally, ongoing GMPE-related activities are discussed including: ground motion and metadata database refinement, improved site characterization of strong motion station, and predictions for subduction zone earthquakes.

KEYWORDS: New Zealand ground motion prediction, 2010-2011 Canterbury earthquakes; Ground motion expert elicitation.