

International Conference on Storms

Brisbane, Australia, 5-9 July 2004.

Poster

Damage assessments for varying flood depths: analysis from the 2002 ‘weather bomb’ event, Coromandel, New Zealand

Graham Leonard¹, David Johnston¹, Mark Walton², Ilan Kelman^{1,4}, Warren Gray³, Rob Bell³.

1 Institute of Geological & Nuclear Sciences, Lower Hutt, New Zealand

2 NZ Institute of Economic Research, Wellington, New Zealand

3 National Institute of Water and Atmospheric Research

4 Visiting scientist

The depth to which a house is flooded affects the number and types of items that are damaged. For example, flooding as little as 1 centimetre deep would be expected to damage flooring, but have little effect on anything that is not within a centimetre of the floor. Conversely flooding greater than 1 metre deep would be expected to damage all tables and bench tops and anything below or on top of these. Flooding above two metres deep would likely damage virtually everything in that room.

For this pilot study of depth-loss relationships a survey of residents of the Thames-Coromandel District sampled estimates of flooding depth and loss (insured and uninsured) caused by the 2002 ‘weather bomb’ event (refer to Johnston et al., this volume, for details of the event and survey). Approximately 35 % of affected properties (from a sample of about 300 within the ‘high impact’ settlements) had flooded land, 37 % had flooding of the basement and/or outbuildings, and 28 % suffered house flooding above the floors of the living areas.

Household mean losses were disproportionately low where mean flooding in that house was 5 cm or less deep (cleanup of silt/debris may have been possible in many cases, reducing permanent loss of contents). Mean losses rose roughly proportionately to mean flooding depth for depths from 5 to 50 cm (through the ranges of height of beds, lounge furniture, TVs etc.). Household mean losses are disproportionately high when mean flooding in that house is more than 50 cm deep (reaching the heights for table and bench tops and anything stored on top of or above them).

Vehicle mean losses jump upward on properties where the mean household flooding was above 5 cm deep, and then remain relatively constant, even if the vehicle sits on a property with mean flooding over the height of the vehicle roof (the control is probably the height of the base of the vehicle floor).

The largest combined overall losses in the Weather Bomb event were overwhelmingly for flooding in the 10-50 cm depth bracket, but this is partly because this was the most common mean depth of flooding for a flooded house. If mean household flooding depths > 50 cm had been more common, the losses could have been an order of magnitude greater (other than for vehicle losses, which should have remained at similar levels). Conversely, if mean flooding had rarely exceeded 5 cm depth, losses would have been an order of magnitude less (including vehicle losses).