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In Australia, floods are the most costly of all natural disaster types. While much effort has gone into emergency management in Australia, flood damage assessment is still crude and affected by large uncertainties. Flood damage assessment is an important component of flood risk management, which deals with the probability and magnitude of expected damages.

The research in this project is focusing on quantifying the direct flood risks and performing a flood damage assessment for a case study area within Australia. This research aims to develop a validated flood damage model for the geographical conditions of Australia using data collected from recent extreme events. The results will provide decision-makers with an essential tool for planning better risk mitigation strategies and actively responding to flood disasters.

A main focus for this study is an improved methodology for describing the magnitude of flood damage. This has recently been completed. It suggests some simple and flexible curves, taking into account the different uses and characteristics of buildings. The general function has been parameterized and discussed based on the most common types of buildings in Australia. Parameters include foundation height, ground elevation, percent of damage below ground, number of stories, height of stories, percent of maximum damage, and the beginning elevation for damage. The advantages of this approach include the ability to utilize empirical data, and the ability to change parameters based on building practices across Australia. The newly derived model has been calibrated and validated for Australian conditions by using some empirical datasets. Two journal papers have been prepared and submitted for peer-review. The first paper describes and evaluates the newly derived model used for residential building structures, while the second one focuses on Australian commercial building structures.