Floods:
Hazard, modelling and risk assessment

Most costly natural disaster

Floods are estimated to be the most costly natural disaster in Australia. The average direct annual cost of flooding between 1967 and 1999 has been estimated at $314 million (BTE 2001). Economic loss due to flooding varies widely from year to year and is dependent on a number of factors for example, flood severity and location. The most costly year for floods was 1974, with a total cost of $2.9 billion (BTE 2001). Some major floods and their estimated cost in 1998 values (Agriculture and Resource Management Council of Australia and New Zealand, ARMCANZ 2000) include:

- Brisbane floods, Summer 1974, $700 million damage
- Victoria floods, Spring 1993, $320 million damage
- Hunter River floods, 1955, $500 million damage

Flooding has a major impact on our communities

There have been ninety-nine recorded deaths from floods between 1967 and 1999 and 1019 recorded injuries (Bureau of Transport Economics, 2001). The impact of flooding can be devastating, with the affects often extending beyond the zone of inundation, as can be seen in Figure 1. The floods in regional Queensland and NSW in 2001, for example, resulted in an increase in the cost of fruit and vegetables in Australia.

Geoscience Australia is committed to flood modelling and risk assessment

Geoscience Australia works closely with the Bureau of Meteorology, State and Local Governments to develop flood hazard and risk assessments for urban centres in Australia. Studies have already been undertaken in Cairns, Mackay and South East Queensland (see Figure 2), with work currently underway in Perth and the South West coastal zone down to Busselton.

Geoscience Australia uses flood modelling and geographical information systems to identify the areas at risk of flooding for a range of probabilities. Estimates of damage are made, based on information such as the depth of overfloor flooding. Local Councils are provided with the data in GIS format, so that they can assess the risk of flooding in their local government area on a building by building basis. The research may be used to improve emergency management response, flood mitigation and public awareness of flood hazard.

Figure 1. Flood damage, Logan, South East Queensland (J. Ebbelinghaus)

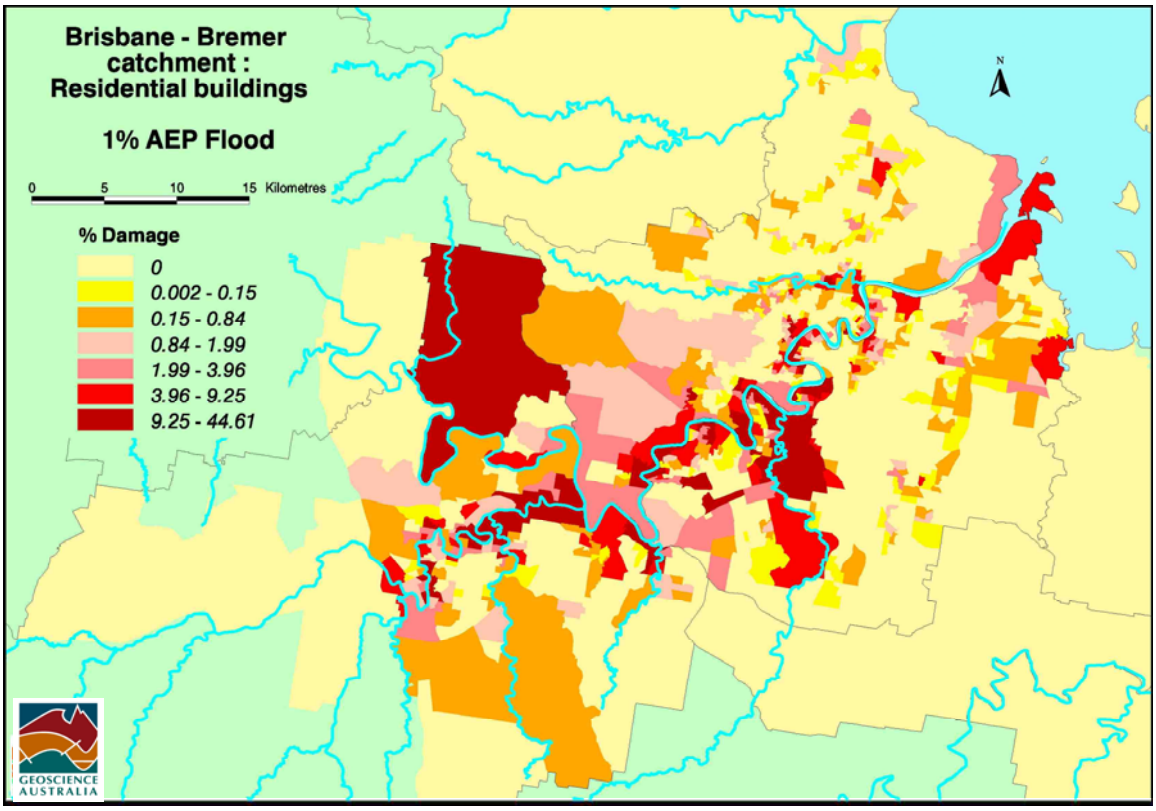

Figure 2. Flood damage by census collectors district, Brisbane-Bremer catchment, South East Queensland, produced in GIS.