Human perceptions and responses to floods with specific reference to the 1987 flood in the Mdloti River near Durban, South Africa

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Abstract

The aim of this paper is to examine the awareness, attitudes, perception and response of residents to floods in the Mdloti floodplain near Durban. The results indicated that nearly 50% of the respondents lived in a flood-prone area, but were completely unaware of the flood hazard. Nearly 70%, however, indicated their desire to relocate after the 1987 flood. A more sophisticated flood warning system would alleviate the problem.

Introduction

River floods present one of the most common global hazards, encompassing a wide range of events, from largely unpredictable, highly localised, flash floods to anticipated and widespread floods such as those which occur annually on the Nile River (Smith and Tobin, 1979). There is also evidence that the spread of urbanisation, forest clearance, the ploughing up of natural grasslands and the destruction of wetlands have increased flood potential (Begg, 1988).

In any study of floodplain behaviour patterns, perception of the hazard is of utmost importance since it is very likely that an individual will respond according to his beliefs rather than to the real situation as viewed by an objective outsider (Smith and tobin, 1979). Many researchers have analysed the perception of the flood hazard and have concluded that it waxes and wanes (Kates, 1962; White and Haas, 1975; Smith and Tobin, 1979; Smith etal., 1981). Immediately after a flood, the danger is appreciated and even exaggerated. The majority of studies, however, show that in general people have very short memories. This lack of awareness is highlighted in a British survey in 1971 in Shrewsbury, in which more than 50% of the residents questioned were unaware that it was a flood hazard zone (Smith and Tobin, 1979). However, the inhabitants of the Ganga floodplain in India were fully aware of the flood hazard (Ramachandran and Thakur, 1974). The ability to provide sufficient advance warning of flood occurrence is important in reducing the potentially disastrous effects of floods. It may, for example, save lives by giving floodplain residents time to remove themselves and their possessions to safety, and it may save property by allowing them time to effect various structural and other adjustments (Dacy, 1969; White and Haas, 1975).

The aim of this paper is to examine the awareness, attitudes, perception and response of residents to floods in the Mdloti floodplain near Durban with specific reference to the 1987 flood.

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Study area

The Mdloti River, 20 km north of Durban has a catchment area of 497 km^2 and a total length of 74 km. The mean annual runoff (MAR) is 105 x 10^6 m^3. The river flows perennially and the mean annual flow is given as 2 inVs (Begg, 1978). The river gradient decreases from about 30 m/km at the source to less than 5 m/km close to the coast. The Hazelmere Dam is situated in the coastal zone, about 20 km from the river mouth. The Mdloti catchment experiences a subtropical climate with an annual rainfall that varies around 1 000 mm.

Physiographically there is little diversity in the structure and surface of the floodplain. It has a relatively flat landscape which rises steadily from the river with abandoned meanders and a highly eroded escarpment in the west. The channel pattern in the floodplain is bifurcated with an average width of about 40 m. The river mouth is about 5 km from the floodplain which has a total area of just less than a 1 000 ha. The 60 households that were affected by the September 1987 flood formed the study's population, and it comprised middle and lower socio-economic groups in formal residential areas.

The September 1987 flood in Natal

The central and southern parts of Natal were ravaged by floods between 28 and 30 September, that were amongst the most devastating to have occurred in South Africa. The destruction of property was catastrophic, nearly 400 people were killed and about 50 000 were left homeless. Damage to agriculture, communications, infrastructure and property amounted to R400 million (Van Bladeren and Burger, 1989).

Heavy and prolonged rains which fell during the flood period resulted in widespread flood conditions. In the Mdloti catchment between 400 and 600mm of rain fell over the period 25 to 30 September 1987. This was preceded by a wet fortnight in which between 40 and 60 mm had been recorded (Van Bladeren and Burger, 1989). This rainfall resulted in serious flood conditions in the area under study. A peak flow of 1 660 m^3/s was recorded at the Hazelmere Dam on 29 September. According to Begg (1988) overgrazing and poor veld management aggravated the situation.