
Introduction

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When I opened the Seminar, I drew attention to several themes. One of these, the World Seismic Safety Initiative (WSSI), was covered fully in the last Newsletter for 1992 (92/3). In that context, one Australian problem of global significance is intraplate earthquakes. These are not well known or understood. They do not form part of the classical Californian family of earthquakes which dominates the literature.

I want to bring to your attention that the two worst earthquakes ever in terms of loss of human life were the same kind which occurs in Australia: - intraplate. Both of these were in China. In 1556 in Shansi, 830 000 people died. In Tangshan in 1976 a magnitude 8 event caused 250 000 deaths. This was the official figure - the estimated death toll was as high as 655 000.

Now, our intraplate earthquakes are very much smaller and therefore it is possible that their origins and patterns are less complex. In any case, fundamental studies based in Australia might well yield clues and suggest models which could be applied to complex situations in other regions of the world.

The second theme featured in an earlier AEES newsletter this year. Then I raised some concerns about the constant and rapid change which has become the norm in Australian affairs. Many public sector functions are being privatised or run by so-called commercial principles, while others are being reduced in scale or discarded.

For example, our first speaker Dr David Denham, told us that there was no longer a Bureau of Mineral Resources, but that it has been replaced by the Australian Geological Survey Organisation. The new organisation AGSO still includes the Australian Seismological Centre and its earthquake monitoring function .

We should make sure that this new organisation, and others like it maintain a long-term view and consider the needs of the Australian earthquake community. I suggest there are two activities, particularly important to our discipline of earthquake engineering which we must identify, support and defend. The first is the collection of data. The second is the interpretation and processing of data.

We must ensure that at least one of our three levels of government funds the collection of data and that this is available for community use on a permanent basis. This will probably require our (i.e. AEES) constant and continuing attention.

Some data are seen as having a commercial value and may thus become inaccessible. The most obvious example of this is related to insurance and insurance claims. We need to find a way to gain access to all this data as we have had very little success in the past. Our discussions may have helped to find a way.

The last matters I wish to raise in this Introduction may seem very simple but I believe deserve our fullest attention. These are the questions of magnitudes in Australia, isoseismal mapping, the attenuation of ground shaking, and the resulting damage. These are not trivial problems. A recent European paper in *Earthquake Engineering and Structural Dynamics* (June 1992) on 'The uncertainty and ambiguity of isoseismal maps', concluded that 'the problem of defining objective isoseismal maps is as yet unresolved'.

We must have the correct weak motion and strong motion instruments in the right places to trap Australian earthquakes. We need time and money to study, analyse and interpret the data to make it suitable for engineering use. Detailed study of historical sources (e.g. Newcastle - 1925) would almost certainly provide valuable data for future risk assessment.

The continuing lesson of engineering is that all assumptions, theories, simulations and calculation models must be linked to the real world and to full-scale observations in the field - in our case to actual damage in earthquakes. To that end, we need the international earthquake engineering community, but much more pertinently, we need our earthquake engineering community and our own observations of Australian earthquakes.

That is the fundamental purpose of the Australian Earthquake Engineering Society and of meetings such as this 1992 seminar - to foster and develop our own earthquake engineering community in Australia and to give it a voice which the wider community will heed.