

PRINCIPAL NEW ZEALAND EARTHQUAKES IN 1985

Warwick D. Smith*

During 1985 the most seismically active part of the New Zealand region was an offshore area to the north and east of East Cape, far enough away from the coast that earthquakes there present no significant hazards. An earthquake of magnitude 7 occurred on September 26 about 400 km north east of East Cape. It was felt at intensity MM V at Cape Runaway and other locations on the East Cape peninsula, and at lower intensities as far south as Christchurch. Three other earthquakes reached magnitude 6 in the same region during the year: magnitude 6.4 on May 7, magnitude 6 on June 29 and magnitude 6.5 on November 8. None of these was felt at intensities higher than MM IV. The only potential hazard from earthquakes in this area is from tsunamis, but none was generated on any of the above occasions.

The highest intensity reported during the year was MM VI at Blenheim on March 7 when an earthquake of magnitude 5.5 occurred in the Marlborough Sounds. It was felt from Opunake (MM V) to Greymouth (MM V) and Christchurch ("strong").

Another shock of magnitude 5.5, which occurred on January 24 in the vicinity of the Motu River in the eastern Bay of Plenty, was felt less strongly. The maximum intensity was only MM V, in Opotiki, although it was felt throughout the Bay of Plenty and in Gisborne. The epicentre of this shock was very close to that of the largest within the land area of New Zealand in recent years, the magnitude 6.4 event which occurred on 1984 March 8 at a depth of 80 km.

A number of other earthquakes deserve mention: the January 31 shock in Fiordland, which was just less than magnitude 6 and was felt in Dunedin and Stewart Island as well as closer locations; the magnitude 5.8 shock to the south of Gisborne on July 20, which was felt in Gisborne and Whakatane and south to Wellington and had an aftershock of magnitude 5.2 the next day, and the September 13 event in Fiordland of magnitude 5.2, which was felt in Dusky Sound, Invercargill, Gore and Te Anau.

The task of analyzing the year's earthquake activity has been focussed to a very significant extent on the Bay of Plenty earthquake of magnitude 6 on 1984 December 31, for this earthquake was followed by a very large sequence of aftershocks. Many hundreds of small events followed the main shock, and lasted throughout the first few weeks of January 1985. It is the largest such sequence to occur in New Zealand since the Inangahua aftershocks of 1968. As such it serves to remind us that large earthquakes are never isolated events: they are normally followed by long sequences of aftershocks, some of which can be significant earthquakes in their own right. A casebook example is the magnitude 7 aftershock of the Hawke's Bay earthquake in 1931.

* Seismological Observatory, Department of Scientific and Industrial Research, Wellington.