

PRINCIPAL NEW ZEALAND EARTHQUAKES IN 1979

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New Zealand had only moderate activity throughout 1979, with very little damage. Only one earthquake could be described as large, but even this one was not accompanied by very strong ground motion. It occurred on the evening of October 12 in the area of the Puysegur Bank, to the west of Stewart Island. Initial reports from the U.S. Geological Survey in Colorado put the magnitude at 7.7, but this was calculated from surface waves. The local magnitude from New Zealand seismograph stations was 6.5. This is similar to that of the Milford Sound event in 1976.

The Puysegur Bank earthquake has provided a further clue about the process of earthquake occurrence in the far south of New Zealand. It was known that earthquakes in Fiordland are not accompanied by such strong ground motion as shocks of the same magnitude elsewhere in the country, but the nature of earthquakes to the south of Fiordland was not known. With the response from the Observatory's regular reporters and from the public at large it has now been ascertained that the unusually small ground motion experienced in Fiordland is also characteristic of earthquakes further south. An earthquake of the same magnitude elsewhere in the country could cause severe damage, but in this case the effects were very minimal, even allowing for the fact that the epicentre was at sea. Intensities nowhere exceeded MM V. Much more investigation will be necessary before the geophysical processes in the far south of the country are understood. What is apparent, however, is that the ground motion was of predominantly long period. Reports of damage were all consistent with descriptions of "swaying motion". There was no evidence of short period shaking.

Wairoa, Wanganui and Murchison experienced the strongest ground motions this year. All reported intensities of MM VI. At 7.45 a.m. on April 22 an earthquake of magnitude 5.1 shook northern Hawke's Bay, bringing goods off shelves in Wairoa and causing some alarm. At 2.15 a.m. on June 17 Wanganui was shaken by an earthquake which had a focal depth of 137 km. Deep earthquakes usually cause little damage, because of their distance from the surface, but this was of sufficiently large magnitude (5.7) that the strong rolling motion woke people throughout the Wanganui area and brought goods off shelves in many shops. The felt area extended to Gisborne and Akaroa. An earthquake of magnitude 5.6 on Sunday, March 25 was felt strongly in the Buller area, particularly in Murchison and Ross, and less severely throughout a wide area.

Other earthquakes were less severe, caused little damage, and served only to

remind people that the earthquake problem is a continual one. The Cook Strait area experienced several small sharp jolts but no damage was reported. An earthquake of magnitude 5.5, centred some 104 km beneath Lake Te Anau, was felt throughout Otago, Southland and Stewart Island on May 15, but because of its depth there was no damage.

The permanent microearthquake networks near Wellington and Lake Pukaki have continued to provide information on the process of earthquake occurrence. The Wellington network has recorded some 2,000 small events (magnitudes mostly less than 3) and the Pukaki network, in an area of much lower seismicity, about 350.

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