

Newly detected tremors in Puysegur and Marlborough fault system (New Zealand)

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In New Zealand, tremors have been detected in the North Island in Gisborne, Manawatu, Tairāpiti, and in the South Island on Alpine fault. We report here newly detected tremors in the South Island: in Puysegur where the Australian plate is subducting under the Pacific plate, and also on The Marlborough fault system, north of the Alpine fault.

To detect these tremors, we used seismic traces from broadband and short period seismometers from the GeoNet network. These traces were first bandpass filtered in the 2-8Hz frequency band and then transform into envelope. We then used envelope cross correlation technic to detect tremors. Unfortunately the outcome of this methodology contains a lot of detection of regular earthquakes. To avoid these false detections, we use a cluster algorithm in both time and space that discards individual detections.

We analyze these newly detected tremors, by looking at tidal sensitivity and possible relationship to other slow events or earthquakes. Finally, this analysis is used to better understand the segmentation of New Zealand.

Keywords: Tremors, Detection of tremors, Slow earthquakes