Abstract Details

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Category: Interdisciplinary Working Groups

Paper ID: 57-IWG-A1680

Title: Large Earthquakes and Volcanoes in the New Britain, PNG region

Abstract:

The area of New Ireland and New Britain Islands in Papua New Guinea is a very active tectonic area that contains a trench-trench-transform triple junction between the Pacific, Solomon Sea and Bismarck Sea plates. There are numerous large earthquakes on the plate boundaries and volcanic eruptions on New Britain. Recent volcanic activity includes the 1994 eruption at Rabaul Caldera that destroyed the town of Rabaul. This eruption was preceded by dramatic seismic and deformation activity in the 27 hours before the eruption. Observations of this activity led to a successful evacuation of the populated areas around the volcano. In November 2000, there was a sequence of strong earthquakes (M8.2, M7.5, M7.4) along the Weitin fault and the nearby New Britain subduction zone. Using teleseismic data, slip distributions were calculated for these events. The inversion results showed large strike-slip displacement in the area of southern New Ireland, where surface displacements of over 5 m were observed. From the slip distribution the amount of static stress change was estimated to investigate triggering mechanisms. The 2nd and 3rd events occurred in regions where there were increases in the static stress. However, the static stress changes were small (0.03 to 0.13 MPa) so there are likely other equally important factors (e.g. dynamic effects, levels of initial stress) for the triggering of these earthquakes.

Presentation Mode: Oral

Keywords: earthquakes, volcanoes, PNG

Status: Pending.

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