

Probability of successive occurrences of large earthquakes and triggering of volcanic eruptions: in response to 2016 Kumamoto earthquake activity

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The 2016 Kumamoto earthquake activity consists of a main shock of M7.5 earthquake on April 16 that followed a large foreshock of M6.5 on April 14. Such successive occurrences of large earthquakes have not often occurred. Since the Kumamoto earthquakes with high aftershock activity are occurring in the Beppu-Shimabara graben, activations of the earthquakes in the central fault lines of Japan and nearby volcanoes such as Aso are worried about. To understand the possibility of these activities, I examine worldwide database of earthquakes and volcanic eruptions.

We analyze the CMT solutions provided by Columbia university, and search successive occurrences of large earthquakes with magnitudes of > 7 . The results show that after an occurrence of large earthquake, occurrence rate of large earthquakes increases in the region within about 1000 km distance from the first eq. The seismic activity approaches to the common level for more than 2 years. We also find that the number of volcanic eruptions increase after the occurrence of large earthquakes within a distance of about 200 km.

Keywords: large earthquake, volcanic eruptions, successive occurrence