

SSS026-01

Room:302

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## Clustering of intraplate earthquakes and foreshock activity

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Spatial and temporal clustering activity of earthquakes has the possibility of foreshocks or the initiation of future large events. We examine earthquake clusters for shallow intraplate earthquakes beneath the Japanese islands.

Pairs of earthquakes were linked through conditions based on origin time difference  $t$  and hypocentral distance  $d$ . We assume reasonably that the range of the time and distance of link-conditions depend on magnitude  $M$ , i.e.,  $t(M)$  and  $d(M)$ .

The result show that foreshock type clusters, which constitute with events occurring before the largest event, are larger in numbers than the mainshock-aftershock type clusters for clusters with many cluster members.

The 2004 Niigata-Chuetsu earthquake M6.8, the activity initiated from September 6, 2004, with the largest event M4.3, at the northern margin of the future rupture area was extracted as foreshocks. Also the 2008 Iwate-Miyagi Nairiku earthquake, the activity initiated from May 29, 2008, with the largest M4.8 in the Akita-ken was extracted as foreshocks. Because these foreshock activity occurred about half to 1.5 months before the mainshock around the future rupture area and the activity were not in continuous, it is difficult to identify clearly these activity as foreshocks. We show that the algorithm of linking method in this study has the possibility to detect objectively foreshock activity of large earthquake.

Keywords: earthquake cluster, single event, linking method, seismogenic layer, Omori-Utsu's formula