Characteristics of Pohang earthquake(Mw 5.4) occurred near developing geothermal well and relative relocations of aftershocks using Hierarchical Clustering

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Moderate strong earthquake of moment magnitude 5.4 hit Pohang city in November 15, 2017 after one year since Gyeongju earthquake(Mw 5.5) had happened, September 12, 2016. This earthquake damaged partially many buildings and facilities because depth of earthquake was shallow even though moment magnitude was relatively small. Espcially many piloti-type buildings were damaged. 5 temporary stations were deployed with Q330HRS and CMG-40T around the epicenters. Over 1000 aftershocks were detected during 50 days. The numbers of occurrences of aftershock versus time follows omori's law well. The distribution of relative locations of about 800 events using clustering aftershocks by cross-correlation between P and S waveform of the events showed the strike SSW 211∼230° and dip 60∼70° of fault plane to cause the earthquake matched with the fault plane solution of moment tensor inversion well. The depth of range of the events is from 2km to 7km. The width of distribution of event locations is about 6km length. This grouping is related with main fault. Second grouping event is related with another strike slip fault with over dip 80°. The direction of maximum horizontal stress by inversion of stress for the moment solutions of main event and large aftershocks shows N63°W that is different from the known maximum horizontal stress direction(N73°E) of the korea peninsula. This result shows that stress regime is different in this region.