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Recent volcanic activity at Akita-koma. and Iwate Volcanoes after large trench-type earthquakes

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The gigantic reverse-faulting of the 2011 earthquake off the Pacific coast of Tohoku brings about large crustal movements in the eastern part of Japan. The crustal movements occur the temporal extensional stress field which activates the volcanic activity and seismicity in the eastern and central parts of Japan.

The volcanic earthquakes began to occur at the north flank of Akita-komagatake Volcano after about 33 hours of the Miyagi-ken Oki earthquake on May 28, 2003 (Ueki at al., 2004). Earthquakes have occurred at the southern area in 2004, and below the summit in 2005. It is important to note that no volcanic earthquake below the summit has been found during the past observations. The geothermal manifestations were found out at the northeastern flank of the Medake cone on April, 2009, which has been the most active cone for about 80 years in Akita-komagatake Volcano. The manifestations are becoming gradually larger now.

The volcanic tremors and earthquakes began to occur at Iwate Volcano after the Sanriku-haruka Oki earthquake (M7.6) on December 28, 1994. The volcanic tremor which continued for 45 minutes occurred at a depth of about 8km at the eastern flank of the volcano on September 15, 1995. Many volcanic earthquakes continiued to occur from December, 1997 (Hamaguchi, 2005). The crustal movements also suggested the intrusion of magma in the direction of EW. On March, 1999, the geothermal manifestations were discovered at the Nishi (West)-Iwate Volcano and became large rapidly to the peak of activity in eary 2001.

The volcanic eruptions and/or geothermal activities of Akita-komagatake and Iwate Volcanoes have often occurred five years before or after the large trench-type earthquakes since 1896 (Doi, 2000).

It is clear that Akita-komagatake and Iwate Volcanoes have erupted and/or activated the geothermal activities in relation to the large trench-type earthquakes. So, it is necessary to predict their long-term activities by the eruption-model which is combined with the crustal movement and temporal extensional stress field caused by the large trench-type earthquakes.

Keywords: trench-type earthquake, Akita-komagatake Volcano, Iwate Volcano, extensional stress field