

Preceding seismicity in the source area of large inland Earthquake and in its peripheral areas

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After building up high-sensitivity seismograph nationwide network (Hi-net), the earthquake detectability has advanced remarkably, thereafter the seismicity of micro-earthquakes come to be discussed at inland regions. In the case of Fukuokaken-seihooki earthquake M7.0 in 2005, the quiescence or activation of seismicity has been observed in the source area and its peripheral areas before the main shock. In the source area, the M0.5 and over earthquakes had not occurred for 9-month-long period before the main shock, otherwise in the south-east of the source area, which contains inland Kego fault, the number of earthquakes increased previously 2 weeks before the main shock. In other peripheral areas, both seismic quiescence and activation have been observed presumably corresponding to the variation of stress field around the source area previous to the main shock. To confirm this thought, following cases are investigated, 1995 Hyogoken-nanbu earthquake and M6.0 and over inland earthquakes since 2000. Our discussion focuses the seismicity in the source area and its peripheral areas in the period preceding the main shock. In the case of 1995 Hyogokenn-nanbu earthquake, it is well known that the earthquake swarm was shown since November 1994 at Inagawa town, 50km away from the main shock. Similar seismic activation in the peripheral area is shown in other cases of the large inland earthquake previous to the main shock. It is remarkable for the 2008 Iwate-Miyagi nairiku earthquake M7.2. Seismic activation occurred in Southern Akita prefecture adjacent to the source area since August 2007. The pattern of earthquake increase resembles the pattern of rock collapse occurred in 1997 at Shiraito tunnel on the route 229, Hokkaido. Considering the same mechanism supposed in both phenomena such as rock collapse and seismicity, the preparation process for the large inland earthquakes would be proceeding at the source area and its peripheral areas.