

Unusual periodic deformation observed at the Ikuha borehole observatory in Awaji island, Japan

Yasuto Kuwahara[1], Hisao Ito[2]

[1] AIST, [2] Geological Survey of Japan

<http://www.aist.go.jp>

Crustal deformation around the earthquake faults of 1995 Hyogoken-nanbu earthquake have been monitored at several observatories with borehole 3-component strainmeters, ground water level meters and seismometers. The observations have been being successfully continued for more than 5 years up to the present. In the present study, we observed unusual periodic deformation at the Ikuha station located in the southern end of the aftershock region of the Hyogoken-Nanbu earthquake. We describe the characteristic features of the deformations below:

- 1) The recent deformation started from December 4, 2002, continuing for about a week. The strain and water level meters show about $1E-6$ contraction and 50cm rise, respectively.
- 2) Areal strain change is dominant. Areal and shear strain changes are about $1.5E-6$ contraction and $0.5E-6$, respectively.
- 3) Clear deformations with the similar characteristics had occurred 4 times from May, 1999 up to the present. Intervals for the 4 events are almost constant, being 309 days, 307 days, 301 days.
- 4) The amounts of change of the strain and water level for the past records are about $1E-6$ contraction and a few tens of cm, respectively. For the past record, a change with a reverse polarity occurred on 10 days to 100 days after the deformation of contraction.
- 5) These unusual periodic deformations can not be observed at other observatories of AIST around the Ikuha station.