

Continuous observation of strain and tilt in Sagara station

Shigeru Nakao[1]

[1] ERI, Univ of Tokyo

Earthquake Research Institute, the University of Tokyo started the continuous observation of strain and tilt in the borehole of 248m by using the multi-component borehole instrument at Sagara where it is away from Omaezaki by 10 km. The multi-component borehole instrument is composed of three components strain meter, two components tilt meter, three components seismograph and thermometer (Ishii et. al, 1997). Atmospheric change and precipitation are also observed. There are many volumetric strain meters operated by JMA in Tokai district. However, there is no three components strain meter in Omaezaki area of Tokai district except Omaezaki station operated by GSI. In this paper the results of the strain and tilt observation are presented.

There are two data loggers in Sagara station, one is for the borehole instruments, that is, strain meter and tiltmeter. The other is for atmospheric pressure change and precipitation. Sampling rate of all data is 1 minute. All of data are collected through public telephone line once a day automatically. The reason why there are two data loggers is that the borehole instruments are prevented from lightning damage. Power supply system consists of two batteries and battery chargers. So, we do not use the AC power for the borehole instrument directly.

Strain of one component (N21E direction) changes from contraction to extension and the other two are contraction slowly. According to the fitting of the linear line to the strain change data between 1999 and 2001, strain rates of -10.7 (N141E), -2.78 (N81E), 4.75 (N21E) microstrain/year are estimated. Contraction of NW-SE direction and extension of NE-SW is observed. This pattern is same as that of strain at Omaezaki operated by GSI, where it is away to the south by about 10km. Initial drift of N291E component of tilt ended in July 1996 and that of N21E component of tilt ended in November 1997. Since then the ground is tilting toward to southeast direction by 3.5 micro radian/year. This tilt change is consistent with the results of the leveling between Omaezaki and Kakegawa operated by GSI. However, the result of tilt change observed at Omaezaki is not consistent with our tilt change.