

Continuous observation of the underground water level in Kochi Prefecture

Kenichi Tatsumi[1]; Kunihiro Shigetomi[2]; Teruyuki Asada[3]; Yasuhiro Umeda[4]

[1] DPRI, Kyoto Univ; [2] RCEP, DPRI., Kyoto Univ; [3] Abuyama Obs. DPRI, kyoto Univ; [4] DPRI Kyoto Univ.

There is a report that the water level of well water where distributed within the area of Pacific coast from Kii peninsula to Shikoku was decreased before Showa Nankai earthquake. This phenomenon is reported in five regions (Urado, Komuro, Saga, Shimoda, Nuno) of the Kochi prefecture.

Umeda(2003) proposed a model to make the mechanism of the well water decrease before the earthquake. The Umeda model presupposes the upheaval by a preseismic slip occurred in the deep portion of the asperity. Hashimoto(2003) suggested that the upheaval and distribution of wells of reported anomalous changes could be explained by if the preseismic slip occurred on the deeper extension beneath the Kii peninsula. So, A continuous observation of the underground water level began to use it to foresee Nankai earthquake said that the possibility to be occurred in the first half of this century was high. It decided to aim at the clarification of the mechanism of the water level decrease based on these observation results.

The change corresponding to tide is shown by a continuous observation of the water level in an inshore well. On the other hand, the amplitude of the tide decreases while leaving the coast, and the change by the wave becomes small. Moreover, the water level and the water temperature should show the reverse-correlation, and investigate whether the seawater of the low temperature has been infiltrated to the well or seawater pushes up the layer of the fresh water in detail.

It is thought that 1) tide, 2) pressure change, 3) earthquake wave is a cause in the water level change with the observation well. It is necessary to investigate the influence that the tide and the atmospheric pressure change give to the water level change to examine the change of the underground water level due to the earthquake.

Tide analysis software Baytap-G was used so. First of all, the influence of the tide element has been subtracted from the observational data. Next, the influence by the atmospheric pressure is removed. Therefore, the relation between the tide and the atmospheric pressure and the underground water level change was examined.