

Changes in groundwater level and seismic activity before and after the earthquake off the western part of Fukuoka Prefecture, March 20, 2005

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A big earthquake off the western part of Fukuoka Prefecture (M=7.0) occurred on March 20, 2005. After the event, many aftershocks have been observed including the maximum fore-shock of M5.4. The aftershock activities near the mainshock in the submarine part are becoming lower and lower but the seismic activities near Umino-nakamichi region on land are becoming higher and higher.

About 50 days before the mainshock, we have started the observation of water level at Island City which is about 30km distant from the location of the mainshock. The data collected just after the mainshock showed very interesting changes, that is, until early March, the water level showed a simple sinusoidal trend. But from March 2, the water level began to change, that is, maintained high water level. After that, the water level began to decrease from March 12 and on the contrary, began to increase from March 16 or 17. The water level quickly decreased just after the mainshock. After that, the water level began to increase. Such a change in water level also occurred at Hakozaki campus of Kyushu University which is about 5km distant from Island City. Furthermore we observed a similar change in water level for the maximum aftershock (M=5.4). These facts show that monitoring of water level may be very effective technique for earthquake prediction. Then we started the online monitoring of the water level at Island City. We are now trying to investigate the detailed water level changes. We hope that the monitoring of water level will be an effective technique for earthquake prediction.

The stress level is still high as shown in diurnal change of aftershock activity. Furthermore, the ground deformation obtained from GPS data at Shikanoshima to Umino-nakamichi region on land shows the northward displacement (about 0.5mm/day). Therefore it will be very important to continue the seismic and geodetic observations(April 9, 2005).