S107-P028 **Room: Poster Session Hall** **Time: May 15**

Geologic and Logging Data from the NIED Scientific Drilling:Active fault,Seismogenic zone,Hingeline in the Central Part of Japan

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The National Research Institute for Earth Science and Disaster Prevention (NIED) has drilled 12 boreholes in the central part of Japan by 'Active fault zone drilling project'. Ashio Well was drilled to examine a stress state, pore water pressure and heat flow quantity of a seismogenic region. Shingu Well was drilled for monitor temporal changes of in-situ stress and strain, and to reveal their accumulation processes in relation to a great inter-plate earthquake.

In-situ downhole measurements and coring within and around an active fault zone are needed to better understand the structure and material properties of fault rocks as well as the physical state of active faults and intra-plate crust. Particularly, the relationship between the stress concentration state and the heterogeneous strength of an earthquake fault zone is important to estimate earthquake occurrence mechanisms, which correspond to the prediction of an earthquake.

It is necessary to compare some active faults in different conditions of the chrysalis stage and their relation to subsequent earthquake occurrence. Unfortunately, there is little information on the deep structure and the continuity of the fault zones of these active faults. To better understand such conditions, 'Active fault zone drilling project' has been conducted in the central part of Japan by the NIED.

The Nojima fault which appeared on the surface by the 1995 Great Kobe earthquake (M=7.2) and the Neodani fault created by the 1981 Nobi earthquake, the greatest inland earthquake M=8.0 in Japan, have been drilled through the fault fracture zones. A similar experiment and investigations by surface geophysical surveys and in-situ stress measurements in 6 boreholes drilled around the Atera fault. Resistivity and gravity structures inferred from that surface geophysical surveys were compared with the physical properties determined from the boreholes logging data and core samples. These results were also compared with in-situ stress data by the hydraulic stress measurements in the boreholes.

In the vicinity of Ashio, it is the area where seismic activity such as shallow earthquake in Kanto region is the most active. We drilled a well of 2000 m deep to reach at the hypocentral region. We measured a stress state, pore water pressure and heat flow quantity in the borehole. The following important characteristics about a stress state of a hypocentral region were found. Very big differential stress acts around a hypocentral region, but differential stress decreases sharply around a fracture zone.

Crustal stress and strain measurements in a deep borehole are essential for studying plate subduction earthquakes. Especially in the case of the Nankai Trough earthquake, it is expected that crustal movements are detectable even on land, because the focal region caused by the subduction of the Philippine Sea plate is close to land. The basic data of crustal stress and the rock physical properties were acquired by the scientific drilling of a borehole. This borehole was drilled to a depth of 550 m at Shingu City, Wakayama prefecture, on the Kii Peninsula. In-situ experiments such as crustal stress measurements by the hydraulic fracturing method were conducted in the well. Furthermore, we have developed an intelligent strain meter for measuring in-situ rock stress deeper than 500 m using the over-coring method. The final goal of this study is to monitor temporal changes of in-situ stress and strain, and to reveal their accumulation processes in relation to a great inter-plate earthquake.

We collected geologic data and physical logging data of all boreholes. We combined the data in the same figure showing geologic column and distribution of physical properties for each borehole. The data will useful for comparing the geologic and physical properties among the boreholes (in the case of the active fault drilling, among the fault zones).