Characteristics of the fault zones terminated by the Late Quaternary - an example of the Median Tectonic Line in Nara Prefecture -

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The activity assessment of the active faults basically needs younger sediments. To understand the fault activity in the area with no youner sediments, it is desired that the new method is developed to study the fault activity from the fault rocks in the basement rocks. A comparison of the fault zone characteristics between active faults and inactive faults. To understand the characteristics of inactive fault zone, we have studied the Median Tctonic Line (MTL) in Ohyodo, Nara Prefecture. The MTL is the active fault in the western part of the Kii peninsula to Shikoku Island. , which it is not active fault in the central to eastern part of the Kii peninsula. Okada and Togo (2000) showed that the fault activity of the MTL has terminated by the Late Quaternary in Ohyodo Nara Prefecture. Matsumoto (2001) studied the fault exposure in this area and reported that the MTL cut the upper Shobudani Formation. The MTL had been active in the Middle Quaternary, but it is not active in the Late Quaternary. In this exposure, the fault gouge with a thickness of 10cm extends to east-west and distributes between the Izumi Group in the northern side and the Shobudani Formation in the southern side. The Shobudani Formation is divided into the lower Shobudani Formation and the upper Shobudani Formation.
We collected the samples from this exposure , and performed the powder X-ray diffraction (XRD) and X-ray fluorescence (XRF) analyses. The samples collected 0.5 m, 1.5 m, 6 m below the uppermost of the exposure. The results of XRD show the formation of smectite in the fault gouge in 6 m below the uppermsot of the exposure. Albite is detected from the and the upper Shobudani Formation near the fault gouge and the intact rock of the Izumi Group in 0.5m below the uppermost. The results of XRF exhibit that the increases of Al_2O_3, Fe_2O_3, LOI, MgO, CaO and the decrease of SiO_2 in the fault gouge in 6m below the uppermost. In 1.5m below, the increases of LOI, MgO is recognized. In 0.5m below, no clear change of the chemical composition is detected in the fault gouge.
Compared among the same lithofacies in the intact rocks, the Izumi Group in 0.5m below shows the decreases of Na_2O and CaO, which no significant change is detected in 1.5m and 6m below. The Shobudani Formation and the fault gouge do not show clear change of the chemical composition.
This exposure had been in the underground before this site has been developed as a quarry. Near the uppermost of the exposure, the leaching of the elements in the fault gouge would be occurred due to the weathering.
Compared the fault zone characteristics studied in this study with that of active faults, the active fault zones are characterized by the formation of smectite and increase of manganese. To understand the differences of the fault zones between active and inactive faults, the characteristics of active fault zones would be detected.

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