

## Comparison of fault rock between seismic and aseismic domains along the Atotsugawa fault system

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The Atotsugawa fault, 60 km long and right-lateral sense, running in an ENE-WSW trend, is located around the northern part of the Gifu Prefecture, central Japan. Two different areas of the low microseismicity suggesting a possible creep movement and the high microseismicity were detected along the active fault trace of the Atotsugawa fault. By comparing the structure and the composition of fault rock between two drilled cores obtained from each area, this study aims to interpret the fault activity in the high/low microseismicity area.

One drilled core was obtained from 45 to 213 meters depth in the Miyagawa region where the microseismicity was high (the Miyagawa Core), and another drilled core was obtained from 20 to 350 meters depth in the Atotsugawa region where the microseismicity was low (the Atotsugawa Core). Fracturing structures of fault rocks in two regions were classified by mesoscopic and microscopic observations of the polished core surface and the thin sections including fracture particles of the slip zone. Because the particle size was crushed to 1  $\mu\text{m}$  or less, the mineral substrates were identified with XRD method instead of the microscope observation in the slip zone.

As a result, the differences of the amount of clay minerals, the thickness of gouge zone and the kind of carbonate minerals were found between two fault rocks in the high/low microseismicity area. Because clay mineral has the characteristic, which allows friction strength to decrease on a fault surface, the observed clay minerals in the Atotsugawa fault decreased lower friction strength on the fault plane, the stability slipping was caused, and then the microseismicity was low in the Atotsugawa region.