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Characterization of deformation and frictional sliding in the shallow part of accretionary prism

TETSURO HIRONO[1], WONN SOH[1], MASATAKA KINOSHITA[1]
and TOSHIHIKO SHIMAMOTO[2]

[1]*Institute for Research on Earth Evolution (IFREE), Japan Agency for Marine-Earth Science and Technology (JAMSTEC)*
[2]*Department of Earth and Planetary Sciences, Kyoto University*

Geological investigation of the deformation structures and sedimentary setting of the Emi Group, a Miocene sand-rich accretionary complex, central Japan, revealed the shallow-level accretion with six deformation stages. By the vitrinite analysis and consolidation testing, the maximum temperature and confining pressure were 50-75 degree celsius and 40-50 MPa, respectively. This history means that the maximum burial depth of the Emi Group was 1.5-4.0 km below sea floor.

In the last deformation stage, strongly sheared fault zone was observed. It has composite planner structure such as Riedel plane. The tectonic history and feature of this fault zone imply that this can be analogue to the Splay Fault in Nankai Trough, which plays a great role in tsunami generation. We collected powder samples from the fault zone and conducted the biaxial frictional testing in order to elucidate the frictional behavior. As the results, the "a-b" is always plus quantity, meaning the stable sliding, under the dry, 15 and 30 MPa conditions. This is consistent with the stable condition, "aseismic" at the shallow part of the Splay Fault.