

SSS035-32

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## Prograde clay minerals reactions along an ancient frontal thrust

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Fossil imbricate thrusts branching from an ancient decollement in the Miura-Boso accretionary prism are exposed in the southern parts of the Miura and Boso peninsulas in central Japan. A clay mineralogical analysis on the fault rocks of one of the imbricate thrust faults, the Shirako fault (Boso Peninsula), revealed a local progress of transformation reactions over intact surrounding rocks; illitization of mixed-layer illite-smectite (I-S), thickening and/or ordering of discrete illite and chlorite packets, and partial degradation of kaolinite. Shape of I(001)-S(001) reflection in the X-ray diffraction pattern together with mean crystallite thickness suggests that illite content in I-S within the fault gouge increases by ~10 % from the host rock samples. Local temperature anomaly possibly caused by frictional high-velocity slips appears a favorable reason to have promoted these prograde reactions in the clay assemblage, rather than factors such as rock deformation or specific fluid composition. A thermal model coupled with kinetic simulation on illitization in I-S suggests that the reaction is facilitated by several repetitions of high-velocity slips with peak temperature >400 °C. Such slips along the Shirako fault might have been potentially tsunamigenic events.

Keywords: accretionary prism, tsunami, smectite, illite