Frictional properties of the Nankai Trough accretionary mud samples collected and cored from 944.6–3030.5 mbsf at IODP Site C0002

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Friction experiments on the Nankai Trough accretionary mud samples collected and cored from 944.6–3030.5 mbsf (meters below seafloor) at IODP Site C0002 at pressures and temperatures equivalent to their *in situ* conditions, and displacement rates changed stepwise among 0.1155, 1.155 and 11.55 μm/s, revealed frictional properties of accretionary mud samples as well as how they change with depth. The results show that the steady-state friction coefficient decreases with depth from ≈0.52 at ≈1000 mbsf to ≈0.28 at ≈3000 mbsf according to increasing content of total clay minerals in samples, and also that ($a-b$) value, i.e., an indicator of the rate dependence of steady-state friction, decreases with depth from ≈0.005 at ≈1000 mbsf to ≈0 at ≈3000 mbsf according to increasing temperature up to ≈100°C. The latter suggests that the transition from stable aseismic faulting above and potentially unstable, seismic faulting below occurs there around 3000 mbsf.
We also report frictional properties of the Shimanto belt accretionary mudstone samples exhumed from seismogenic depths at pressures and temperatures supposed there, and how they change from those of the Nankai Trough accretionary mud samples.

Keywords: friction, mudstone, accretionary prism, Nankai Trough, Shimanto belt

