[EE] Evening Poster | S (Solid Earth Sciences) | S-SS Seismology

[S-SS04]Nankai Trough Seismogenic Zone Experiment toward the final challenge

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The Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE) is a multidisciplinary investigation of fault mechanics and seismogenesis along the megathrust at the Nankai Trough subduction zone, and includes reflection and refraction seismic imaging, direct sampling by drilling, in situ measurements, and long-term monitoring in conjunction with laboratory and numerical modeling studies. During the past 11 IODP expeditions off Kii Peninsula since 2007, 15 sites have been drilled by D/V "Chikyu" down to depths from 100s of meters to more than 3000 meters below seafloor, where the inner and outer wedge of the Nankai margin has been sampled extensively, and two state-of-the-art real-time downhole observatories are now in operation. NanTroSEIZE is now at the final stage with only two more expeditions planned for another downhole observatory installation at the toe site in early 2018, and for resuming riser drilling toward the megathrust at ~5200 meters below seafloor starting from late 2018.
In this session jointly held with AOGS, we expect presentations on scientific outcomes from the NanTroSEIZE project and discussions toward the final challenge. We welcome presentations on, but are not limited to, seismic imaging, borehole logging and monitoring, chemical analyses of pore water and mud gas, lithology, structures, physical properties and laboratory experiments of cuttings and core samples, and theoretical and numerical modeling.

[SSS04-P07]Relation of maturity of carbonaceous materials to friction coefficient

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Keywords:Friction experiments, Carbonaceous material, Thermal maturation

Frictional strength of fault rocks is one of the most important parameters in understanding rupture nucleation and propagation process during an earthquake. At low slip rate, friction coefficients of various types of rocks show almost constant values to be 0.65–0.80. In contrast, friction coefficients of various rocks could decrease to 0.1–0.4 at seismic slip rate (above 0.1 m/s) owing to the occurrence of various dynamic fault-weakening processes. Furthermore, even at low slip rate, frictionally weak minerals in fault rocks could significantly lower bulk strength of fault rocks. Graphite is one of the representative weak minerals that has extremely low friction coefficient of approximately 0.1–0.2, which could affect on slip behaviors of inland active faults and plate-boundary faults. Carbonaceous material (CM) is known as a precursor of graphite and could transform into graphite by diagenetic and metamorphic reactions during plate subduction. However, changes in frictional strength accompanied by maturation of CM still remain unknown. In this study, we experimentally examine the relation of maturity of CM to frictional properties, and investigate its effects on the slip behaviors of CM-bearing faults. In this presentation, we will report preliminary results of our friction experiments.