[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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Tue. May 22, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
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-P03]Comparison of volcanic glasses from tephra deposits frontal prism and incoming sediments

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International Ocean Discovery Program (IODP) Nankai Trough Seismogenic Zone Experiment (NanTroSEIZE), started from 2007, has explored evolutionary processes of deformation and accretion in shallower portion of the Nankai accretionary prism (e.g. Strasser et al; 2009) with understanding the tectonic and sedimentary backgrounds (e.g. Clift et al; 2013; Pickering et al., 2013). The first workshop entitled Core-Log-Seismic Integration at Sea (CLSI@Sea) held in January-February 2018, together with IODP expedition 380 as a part of NanTroSEIZE. The expedition 380 aimed to install a new Long-Term Borehole Monitoring System (LTBMS) in the toe of the Nankai accretionary prism, while the CLSI@Sea reanalyzed the legacy data from the same site acquired during previous expeditions. Lithology group of CLSI@Sea reviewed the previous lithological descriptions and ages including the sites C0006, C0007, C0011, and C0012, of incoming sediments and toe of prism sites to understand the depositional process of slope sediments and development of decollement and the branching thrusts forming the frontal prism. At Site C0007 of NanTroSEIZE transect in off-Kumano region, present decollement lies in between Pliocene Shikoku Basin facies composed of mudstone and volcanic ash (Unit III) and Pleistocene Trench wedge/Axial channel facies (Unit IV). The sedimentary age of the bottom of Unit III (~5.32 Ma) is equivalent to that of the boundary of Unit IA and IB at C0011, Upper Shikoku Basin sediments. The Upper

Shikoku Basin sediments include many tephra layers (e.g. Azuki (0.85 Ma), Pink (1.05 Ma), Habutaki (2.85 Ma), and Ohta (4.0 Ma) ashes). For better age constraint of Site C0007, we determine major and trace element compositions of volcanic glasses included in the tephra layers using LA-ICPMS. In this presentation, we report preliminary results of tephrachlonology and compare the results to that of the input sediments (Site C0011). The results will also be integrated to biostratigraphy, paleomagnetism, and detrital zircon U-Pb dating results (Clift et al., 2013). Updated high-resolution stratigraphic comparison has a potential to reconstruct the faulting/sedimentational history of the prism toe, where very-low-frequency earthquakes and slow-slip events occurs.