
 [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-P02]Geometry of protothrust zone along the Nankai Trough revealed by red relief image mapping and seismic reflection survey

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Great earthquakes with tsunamis with recurrence intervals of 100~200 years have occurred along the Nankai Trough near central Japan. To predict the exact height of the tsunami on the coast region generated by these large ruptures, it is important to estimate the vertical deformation that occurs on the seaward end of the rupture area.

Recent drilling results have also yielded evidence not only of splay faults that generate tsunamigenic rupture, but also new evidence of tsunamigenic rupture along the frontal thrust at the trench axis in the Nankai Trough.

In order to understand the deformation around the frontal thrust at the trench axis, high-resolution seismic reflection surveys were conducted by Japan Agency for Marine-Earth Science and Technology during 2010-2016.

Clear seismic reflection images of frontal and previous thrusts in the accretionary prism, trench-fill deposits and subducting Shikoku Basin, image deformation along the trench axis. We evaluate the seaward structure for understanding the future rupture distribution from the mapping of protothrust zone (PTZ). The PTZ consisting of many incipient thrusts is identifiable in the portion of trough-fill sediments seaward of the frontal thrust. To image the spatial distribution of the PTZ, we merged topographic data using all seismic survey around the trough axis. In order to emphasize the characteristics of frontal thrust and PTZ, we construct the detailed red relief image map for focusing on the lineated slope of the PTZ at the trough axis. We identified the clear bathymetric lineament along the trough axis within the protothrust zone by this map. It is important to understand the distribution of PTZ along the Nankai Trough.

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