

U002-02

会場:国際会議室

時間:5月25日 08:54-09:18

超深度掘削が拓く海溝型巨大地震の新しい描像

A innovative new project "KANAME": New perspective of great subduction-zone earthquakes from the super deep drilling

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In the past, giant subduction-zone earthquakes and their accompanying tsunamis have caused significant damage, and it is our earnest desire to scientifically elucidate how they occur. We are the first to directly study seismogenic faults along a subduction zone at the Nankai Trough. Great earthquakes and tsunamis have repeatedly occurred at the Nankai Trough, and more are predicted at this site in the near future. Super-deep drilling by the drilling vessel "Chikyu" will enable us to directly sample seismogenic faults as well as conduct analyses, experiments, and in situ borehole measurements. These efforts should significantly improve our understanding of pre- and co-seismic processes of great subduction-zone earthquakes.

Our scientific objective is to significantly improve the understanding of pre- and co-seismic processes of great subduction-zone earthquakes by directly sampling seismogenic faults and conducting analyses, experiments, and in situ bore-hole measurements at the Nankai Trough region, which is a site where great subduction-zone earthquakes have repeatedly occurred and are expected to occur in the near future. To realize our goal, our strategy consists of the following three schemes: (1) understanding overall framework of the Nankai Trough seismogenic zone, (2) revealing materials, and mechanical and hydrologic properties of seismogenic faults, and (3) construction and verification of a comprehensive model for pre- and co-seismic processes. We have organized three research groups dedicated to these three schemes, each of which further consists of two sub-groups tackling two complementary tasks.



Keywords: earthquake, subduction, Nankai Trough, tsunami, trench, accretionary prism