Geoslicer Survey of Liquifaction due to Earthquakes

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Liquefaction is a phenomenon in which loosely and water saturated sediments such as sand layer become liquefied by strong ground motion due to earthquake. Liquefaction gives rise to the loss of the earth's capacity to support and differential land subsidence or landslide occurs, which causes the damage to basic infrastructure and buildings. Active Fault Research Center makes effort not only to reveal the mechanism of liquefaction by collecting the liquefied sediments and observing them in detail, but to utilize the common feature in them as index of the past great earthquakes. We introduce our study in the area along the Columbia river in Washington State of USA which was carried out as cooperative work with USGS in fall of 2000, and reconnaissance study of liquefaction associated with the 2000.10.6 Tottoriken-seibu earthquake.

Sand blows on Oshamanbe, Hokkaido, after the 1993 Earthquake off the Southwest Coast of Hokkaido. The maximum diameter of the sand blows is about 2m

Seismogenic Zone of Great Subduction Earthquake

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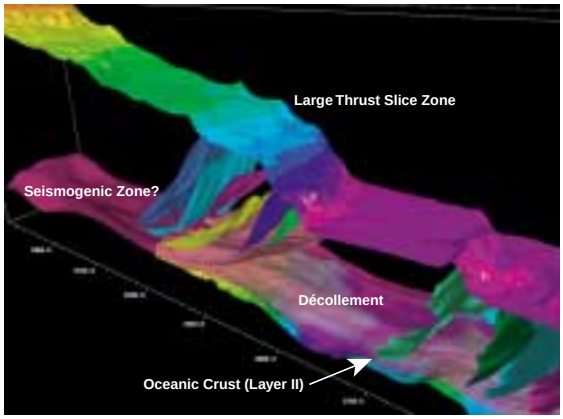
A three-dimensional seismic survey was carried out at the western Nankai trough accretionary wedge in 1999. This experiment was a Japan-U.S. collaborative investigation on seismogenic zones. The cruise imaged an 8×80 km area with 81, 80-km-long, high quality, seismic reflection lines, all of which have nearly continuous coverage. The main objective of our experiment was to image the plate boundary fault at which major earthquakes and tsunamis are generated. A preliminary interpretation was conducted based on a primary data processing and we proposed a well imaged structure of up-dip limit of seismogenic zone, where a décollement plane touches the oceanic plate (layer II) down in first. We identified that the boundary between the stable sliding zone (ocean-ward) and the unstable stick slip zone (landward) is located there.



A perspective view of 3-D interpretation at the proposed inter-plate seismogenic zone (up-dip limit) in the Nankai subduction margin