

GCOE & AOB Seminar

Dr. Stephen Kirby (米国地質調査所)

Date : 2009年10月13日 (火) 14:00 - 15:30

Place : 地震・噴火予知研究観測センター 別館第一会議室

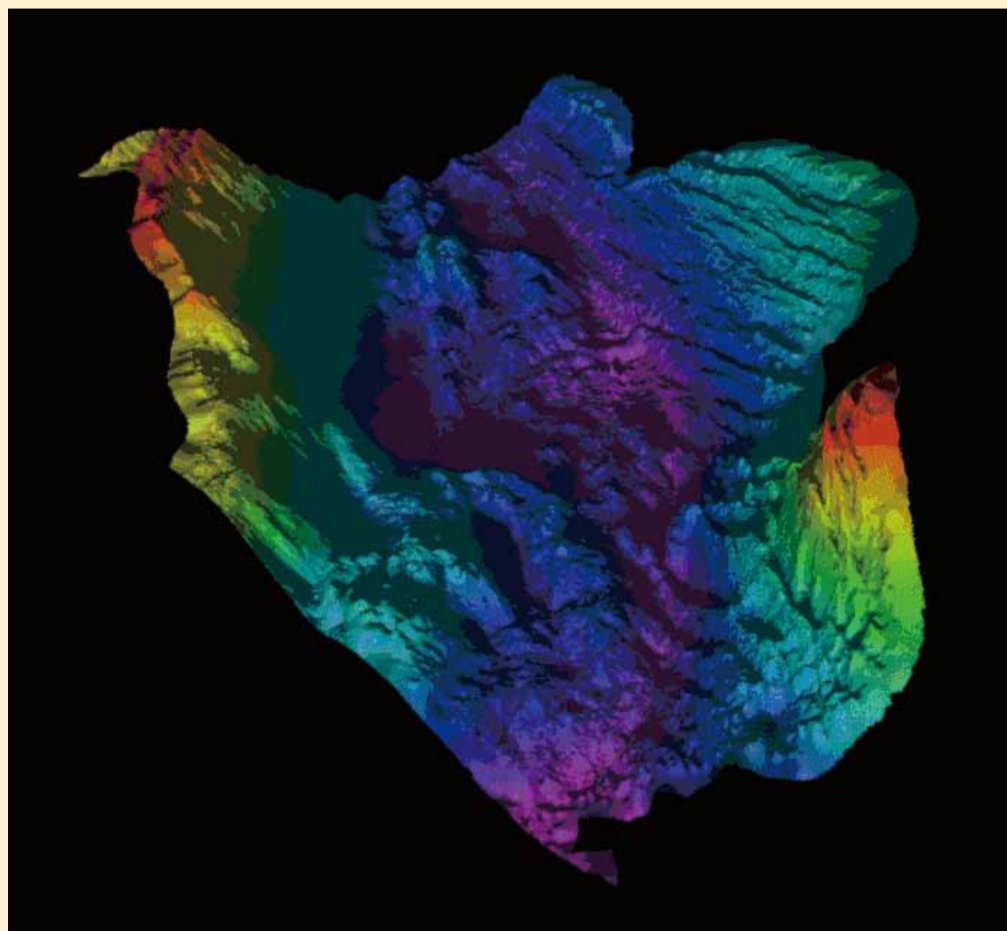
Title : プレートが沈み込みはじめると・・・ : アウターライズ/
海溝外側斜面に発生する地震とリソスフェアの褶曲について*
(Tectonic settings of great off-trench earthquakes
in the instrumental record*)

Abstract :

Great off-trench earthquakes in subduction zones are rare in the instrumental record since 1900; only 6 are presently known or suspected compared to 59 great megathrust earthquakes. All of these great off-trench events are in subduction systems in which the bending incoming oceanic plate is old (Mesozoic) and hence thermally mature and thick. In all of these examples, faulting crosses spreading fabric at angles greater than 30 degrees and, in the two cases for which there are high-resolution swath maps available, fault scarps have large relief and a well developed horst-and-graben structure is present. Large outer-rise gravity anomalies are present in the source regions of those events that are located with confidence. Finally, those events for which depth constraints and focal mechanisms are available are very shallow (< 30 km) normal faulting ruptures.

These common features of great off-trench earthquakes are consistent with shallow seismic deformation by large scale bending at high stresses. That such events occur in deep water and involve steeply dipping ($\geq 45^\circ$) ruptures may give insight into damage and loss of life that occur on a regional scale near the source earthquake.

Potential sites for future great off-trench earthquakes are identified that share these attributes.



*With contributions from Hiroo Kanamori about seismological investigations of the 2 March 1933 Sanriku, the 26 June 1917 Tonga, and the 29 September 2009 Tonga earthquakes

3-D image of the Tonga trench in the vicinity of the M8.1 Tonga Earthquake of 29 September 2009 showing trench-parallel fault scarps on the outer trench slope (on right)

主催 : 東北大学大学院理学研究科 地震・噴火予知研究観測センター Tel: 022-225-1950 (代表)

Center HP: <http://www.aob.geophys.tohoku.ac.jp/education/seminar/aob-seminar/>

お問合せ先: 海野 徳仁 教授

Tel: 795-3915/ e-mail: Umino@aob.geophys.tohoku.ac.jp

