[EJ] Evening Poster | S (Solid Earth Sciences) | S-SS Seismology

[S-SS08]Active faults and paleoseismology

convener:Mamoru Koarai(Earth Science course, College of Science, Ibaraki University), Hisao Kondo(Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology), Ryosuke Doke(神奈川県温泉地学研究所, 共同), Nobuhisa Matsuta(Okayama University Graduate School of Education)

Tue. May 22, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe) Geologic and historic information on seismic cycles and on the magnitude and source faults of past earthquakes is essential information to understand future large earthquakes. The study of past faulting and seismicity is an important issue for an interdisciplinary community of seismologists, geologists, geomorphologists, archaeologists, and historians.

[SSS08-P30]Finite element analysis of surface rupture: parametric study with several types of fault shape and tectonic stress directions

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Fault shape and tectonic stress direction play an important role in the prediction of the surface rupture during an earthquake. Since it is often difficult to obtain these information clearly, the parametric study using numerical simulation is still needed to discuss the possibilities of surface rupture as much as possible.

We here implemented a 3-D deformation simulator into the finite element package (COMSOL Multiphysics) and then performed a series of parametric study of surface rupture by changing both the fault shape and the maximum stress direction.

The outcomes from the parametric study are summarized as follows:

(1) The slip is inhibited by the kink-line on the fault plane.

(2) The slip on the flat fault plane in the flat-ramp structure is not sensitive to the ground deformation.

(3) We confirmed that the oblique stress compression for the fault plane derives the anti-symmetric deformation pattern on the ground surface.