

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

[S-SS08]Active faults and paleoseismology

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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-P33]Recognition of active folding caused by reverse faulting, by using detailed topographic anaglyph images

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The tectonic landform caused by reverse active fault often appears as a flexure scarp. The latest displacement sometimes is located in the front of the flexure scarp as a broad surface upwarping on an alluvial plain. In conventional aerial photo interpretation, it was difficult to recognize such active folds, but recently it has become possible by analyzing detailed topographic anaglyph images which be made from 5 m mesh DEM by GSI.

We reconsidered the continuity and distribution of active fault trace. By using DEM, it is easy to emphasize in the vertical direction in actual view, making it easier to extract a gentle and broad surface upwarping on an alluvial plain. And, it is advantageous that a wide range of large-scale real-body visual images can be continuously used, and the whole wave-shaped deformation can be overviewed as compared with conventional aerial photograph interpretation. Furthermore, it is an advantage of DEM to be able to conveniently prepare a sectional view of extension length of about several kilometers and to easily estimate the displacement amount.

In this study, I investigate the eastern margin of the Shonai Plain fault zone, the Kushigata Range fault zone, and the eastern margin of the Yokote Basin fault zone where the reverse fault displacement is remarkable, Northern Japan.

In the eastern margin of the Shonai Plain fault zone, an anticlinal deformation, strike: north-south, about 8 km in length was recognized on alluvial lowland (about several thousand years ago) about 2 to 3 km west of the fault zone. The width of the anticlinal deformation in the east-west direction is about 2 km, and a upwarping of 3 to 4 m can be confirmed. A similar deformation has already been pointed out in the Amarume Anticline in the southern part of the Shonai plain (Togo, 2007; Togo et al., 2007; Imaizumi, Togo, 2007).

In the Kushigata Range fault zone, on the alluvial plain constituting the Echigo Plain, about 3 km northwest of the “fault near Sakamachi” (Headquarters for Earthquake Research Promotion, 2006), flattening of fan surface by declination and reverse tilting.

In the eastern margin of the Yokote basin fault zone, the north extension of the Akasaka fault (Sawa et al., 2013) and on the alluvial plain in the west side of the fault zone, anticlinal deformations were recognized on alluvial lowland about 2 to 3 km west of the fault zone.