

Quaternary contraction zones along the eastern margin of Japan Sea

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A reverse fault zone more than 150 km wide continues from Hokkaido to the Niigata Prefecture along the eastern margin of Japan Sea. The reverse faults were normal faults during the early Miocene and reactivated as reverse faults since late Pliocene to Quaternary. The faults accompany asymmetric anticlines 15 to 20 km wide, which can be interpreted to be a hanging wall anticline of listric faults cutting the upper crust about 15 km thick. The faults are densely distributed in contraction zones along the Sado and Okushiri ridges. Major earthquakes occurred along these major reverse faults.

High-resolution seismic profiling survey showed that some major reverse faults are not active in the source area of the 2007 Chuetsu-oki earthquake. Parts of reverse faults have been migrating during the Quaternary. Reverse faults are not always active, but all active faults are probably included in the Quaternary contraction zones.