

Structural characters of active faults, crustal architecture, and permanent deformation of the Hokuriku region

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We discuss in this study about characters of crustal architectures around the Toyama trough revealed by new seismic reflection and refraction profiles and seismic tomography, and active structures based on Neogene geology and tectonic geomorphology. As revealed by onshore offshore deep seismic reflection profiling across the Toyama trough funded by MEXT named as The Integrated Research Project on Seismic and Tsunami Hazards around the Sea of Japan since 2013, crustal architectures across the Toyama trough is characterized by three domains: (1) crustal thrust wedge comprising the northwestern flanks of the Hida Mountains, (2) Neogene sedimentary basin near the axis of the Toyama trough, and (3) reactivated normal faults as thrust (or obliquely slipping) faults beneath the Noto peninsula, comprising structural higher domain west of the Toyama trough. These structural patterns and permanent, late Quaternary crustal deformation recorded by tectonic geomorphology are quite similar to adjacent Neogene sedimentary basins in the backarc failed rifts in the Sea of Japan, including northern Fossa Magna, Niigata, and Akita.