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Results of 2013 Off-Joetsu survey for the research project on seismic and tsunami hazards around the Sea of Japan

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To estimates Tsunami and seismic hazards along the coastal area of Sea of Japan, more detailed survey to identify source faults are needed. A new research project funded by MEXT named ”the integrated research project on seismic and tsunami hazards around the Sea of Japan” began in FY 2013. To obtain the information of source faults, we performed deep seismic reflection profiling off-Joetsu area in the central part of Honshu, Japan. The seismic lines were located in the offshore extension previous onshore seismic lines forming onshore-offshore integrated seismic lines. We used two vessels; a gun-ship with 3020 cu. inch air-gun and a cable-ship with a 2-km-long, streamer cable with 156 channels and 480 cu. inch air-gun. Common-mid point reflection data were acquired along 3 seismic lines. Two offshore seismic lines are connected to the onshore seismic sections. The survey area consists of stretched continental crust, such as Noto peninsula and Sado island, and failed rift area with large amount of large mafic intrusive rocks, such as Sado strait and Toyama trough. Stretched continental area is marked by densely distributed syn-rift normal faults. On the other hand, in the Sado strait and Toyama trough, fault-related folds were developed, which show small amount of vertical displacement. Along the boundary between continental crust area and oceanic crust, thrusts with rift axis vergent well imaged by seismic reflection profiles. The survey results contributed to construct source faults models of Tsunami and seismic hazards estimation.