

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

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An obvious convergent plate boundary cannot be recognized in the Sea of Japan, and convergence accommodates in defused wide area of the back arc. To estimate 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 and Hokuriku area in the central part of Honshu, Japan. 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 9 seismic lines with total 715 km in length. The seismic profiles portray the structure of failed rift basins, such as Toyama trough and Sado strait, bounded by rift axis reverse faults with rift axis vergence, which represents reactivation of boundary faults between mafic intrusion and pre-rift basement. Noto Peninsula is marked by syn-rift normal faults and their reactivation by shortening deformation. The back arc side of the SW-Japan arc experienced NS trending shortening deformation in the latest Miocene. From the Noto peninsula, undeformed Pliocene sediments covers folded Miocene. Some normal faults reactivated as active strike-slip and reverse faults. The survey results contributed to construct source faults models of Tsunami and seismic hazards estimation.

Keywords: Sea of Japan, source fault, crustal structure, seismic reflection profiling, Off-Joetsu, off-Hokuriku