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# Progress in the understanding of the structure of the central Japan prompted by recent deep seismic profilings

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Deep seismic profilings were made in the central Japan with 2 phases in collaboration with several universities and NIED from 2008 to 2009. Their purpose is to reveal the structure of the central Japan down to the upper surface of the Philippine Sea plate subducting beneath there. The seismic line of Phase 1 is set up with about 70-km length across two major mountain ranges; Southern and Central Japan Alpes in the southeastern border of the central Japan, whereas that of Phase 2 with about 70 km length across the rugged mountainous area in the northwestern border of the central Japan. The core method of the profiling are based on the low-fold reflection, because shot points of both dynamites and vibrators are obliged to be restricted within narrow areas because seismic lines run through the Southern Alps National Park in Phase 1, and often through narrow forestry roads in Phase 2. Although processing of the profilings is still in progress, their tentative results are prompting our essential understanding of the structure of the central Japan as follows.
1.Outer zone in the southeastern border
(1) The outer zone shows E-dipping overturned attitudes widely due to the bending associated with the collision of the Izu arc. The bottom of the Outer zone was eroded and removed by the subduction of the Izu arc materials in the middle Miocene.
(2) The original MTL (Median Tectonic Line) was cut by two major left-lateral faults, the Akaishi Tectonic Line and the Komyo fault. The present NNE-trending MTL corresponds to the northern extension of the Komyo fault.
(3) The active faults east of the ISTL have been reactivating as spray faults branching from the initial subduction zone in the middle Miocene.
(4) The Izu arc materials accreted to the Outer zone reach 40 km thick since the initiation of the collision.
2. Inner zone
(1) Subhorizontal reflective zones occur at 3~4 sec., 6 sec., and deeper than 8 sec. These zones are warped several km downward in the Biwa lake area in the western margin of the Central Japan.
(2) Widely occurs a gently E-dipping distinct lower boundary of the lowest reflective zone, which may correspond to the Moho. Another reflective zone is recognized in places at about 2 sec deeper than the distinct lower boundary. It is possible that the zone is related to the subducting PHS plate.
(3) A detachment which formed the mega kink structure in the Inner zone probably corresponds to 3-to-4-sec reflective zone.

Keywords: Central Japan, crustal structure, seismic profiling, Philippine Sea Plate, Opening of the Japan Sea, Collision of the Izu arc