

Crustal structure and its deformational process of the Outer zone in the southeastern border of the central Japan

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The Southern and Central Alps Seismic Profiling was made in the southeastern border of the central Japan in collaboration with several universities in 2008. Its seismic line is set up with about 90-km length across two major mountain ranges; Southern and Central Japan Alps in the southeastern border of the central Japan. The core method of the profiling is based on the low-fold reflection technique, not by the conventional one, because shot points of both dynamites and vibrators are obliged to be restricted within narrow areas because its seismic line runs through the Southern Alps National Park. Although the low-fold reflection technique was applied, the excellent profile prompting our essential understanding of the crustal structure has been obtained. This makes it possible to discuss the deformational process of the Outer zone as follows:

1. The Chichibu and the Shimanto groups in the Outer zone shows E-dipping overturned attitudes widely. This overturned structure is reasonably explained by the combination of the bending and the huge left-lateral motion along both the Akaishi Tectonic Line and the Komyo fault in association with the collision of the Izu arc.
2. The original MTL (Median Tectonic Line) was cut by the left-lateral motion along the Akaishi Tectonic Line and the Komyo fault mentioned above. Thus the present NNE-trending MTL is not the original one, but corresponds to the northern extension of the Komyo fault.
3. The bottom of the Outer zone was eroded and removed by the initial subduction of the Izu arc in the middle Miocene.
4. The active faults east of the ISTL, the Simotsuburai, the Ichinose faults etc. have been reactivating as spray faults branching from the initial subduction zone in the middle Miocene. A dense microseismicity occurs along the initial subduction zone at about 15 km deep beneath the Southern Alps (Takeda, 2007). Focal mechanisms of the microseismicity suggest that a thrust motion occurs still along the initial subduction zone (Imanishi et al., 2006).
5. The Izu arc materials accreted to the Outer zone reach 40 km thick since the initiation of the collision.

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