

Tectonic landforms and late Quaternary slip rates by LiDAR along the middle part of the ISTL active fault zone in Hakushu area

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Our research group has conducted the detailed mapping and estimating slip rate by geomorphic marker about the Itoigawa-Shizuoka tectonic line since 2005. Last year, we reported a tectonic geomorphic survey by aerial photo analysis along the middle part of the Itoigawa -Shizuoka tectonic Line Active fault System (ISTL). However, we cannot trace the detail location of active faults in Hakushu area. Because this area has covered by deep forest all up until now, we cannot find ground surface on the air-photograph. Then last year, we scanned this area by LiDAR survey and make a DEM data. Based on DEM data, we make a detail landform classification topographic map, and then judged tectonic landform. Finally, we measure a topographic profile across the active fault.

Vertical/Horizontal offset rates were estimated based on offset of geomorphic markers (fluvial terraces) correlated by tephrochronology (HH, Nirasaki volcanic debris avalanche; H, older than 120 ka; M1, 90-100 ka covered by On-Pm1 tephra; M2a, 60 ka covered by On-Mt tephra; M2b, ; L1a 20Ka; L1b, 10ka; L2, 4-7 ka; L3, 1-2 ka). As a result, mapped faults in this study are similar to previous work, however we can trace two lines; one is the boundary fault between mountain and basin, another fault is traced on the alluvial fan in Hakushu area. The L3 surface is not deformed, but the L2 surface is deformed by the ISTL. This fact shows that the last event occurred between L3 surface and L2 surface. The long term slip rate is estimated at about 1.0 mm/year.

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