

## Detection of small tectonic-geomorphic features beneath vegetation cover in Japanese mountains from high-resolution LiDAR DEMs

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High-resolution LiDAR survey was carried out along two active strike-slip faults in central Japanese mountains, the Neodani and Daguchi faults, to detect small tectonic-geomorphic features beneath dense vegetation cover. These features had never been identified by aerial photographs or preexisting 2-m DEMs derived from 2003-2004 LiDAR surveys. DEMs with 0.5-m horizontal resolution along the two faults were obtained after automatic and manual filtering of structures and vegetation. In addition, the 2003-2004 LiDAR data were carefully refiltered to create new 2-m DEMs for comparison. The 0.5-m DEM revealed rich and diverse records of previously unknown fault features, which could not be detected in other sets of DEMs. We particularly found that a 'red relief image map', a direction-free geomorphic visualization by openness factors and gradient, is an effective tool for capturing all the slightest geomorphic features. Although various kinds of geomorphic images should be examined for detailed fault characterization, our results show that 0.5-m DEMs derived from high-resolution LiDAR surveys are needed for mapping small tectonic-geomorphic features in densely vegetated Japanese mountains.