Alpine Fault Rupture and Landscape Evolution in Westland, NZ.
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The Alpine fault is the plate boundary fault in South Island, New Zealand, and ruptures with magnitude \textless{} 8 earthquakes at c. 100-300 year intervals. Paleoseismic evidence suggests the most recent rupture was on a 400+ km-long segment in 1717AD. Widespread disturbance-initiated forest establishment followed this and earlier events. Empirical modelling of ground motions associated with magnitude 8 earthquakes suggests the Southern Alps east of the fault would have been subjected to ground accelerations greater than 0.4 g (threshold for extensive landsliding) for a fault-normal distance of up to 50 km, and in places would have exceeded 1.0 g. Coupled with extreme rainfall in the mountains of 4-10 m/yr, these factors suggest extremely large volumes of sediment could be released in large earthquake events, and could be rapidly delivered to the coastal lowlands. Our study in the Whataroa catchment of central Westland has tested this hypothesis by combining soil, terrace and fan mapping and stratigraphy, and dating by radiocarbon and forest age tree ring counting to evaluate the nature and timing of recent alluvial infill of the coastal plain. The available data strongly suggest the Whataroa floodplain was aggraded by several metres immediately following the last rupture of the Alpine Fault in 1717AD.

Keywords: Alpine Fault, earthquake, landscape evolution
Non-tectonic fault topographies distributed on ridges nearby strike-slip active faults and earthquake faults

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The landforms called double ridges are seen to occur when ridges came to the pure shear fracture, sank by its own weight. I found the landforms, which were analogous to these in the slope in and around active faults and earthquake faults. Then, I clarified that strike-slip active faults and earthquake faults made them. The relief of the surface affects for discrepancy motion of strike-slip active fault as a shear resistance. Therefore, the reverse-directional differential stress produces discrepancy motion of strike-slip active fault in the slope near the fault line. This differential stress is higher, where the relief is larger. In such stress configuration, the ridge including the slope is transformed in the shear elasticity, and it comes to the simple shear fracture. This phenomenon is a result of basing on the ridge did not follow suit strike-slip motion of the active fault for the inertia stress, and it staying in the field. This is, so to speak, a reversal phenomenon of the landslide.

Key words: strike-slip active fault, double ridges, multiple ridges, linear depression, landslide
Seismotectonics as Inferred from Holocene Former Shorelines

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Several Holocene former shorelines considered to have emerged by coseismic uplifts are observable in the southern part of the Boso peninsula, central Japan, where two kinds of coseismic uplift probably occur. One type, represented by the Kanto earthquake of AD1923, was due to interplate slip along the Sagami Trough. The other is represented by the Kanto earthquake of AD1703, the hypocentral area of which consists of the Sagami Trough and its southeastern extension. It is known that four major Holocene marine terraces (ca.6000yBP and younger) which emerged by 1703-type coseismic uplift so that its mean recurrence interval was ca.2000 years. The multiple regression equation among the elevation of the ca.6000yBP former shoreline, as of the AD1703 former shoreline and the geotically surveyed AD1923 coseismic uplift was calculated based on 33 locality data. Taking the interseismic recovery known by tide data into consideration, the equation shows that the mean recurrence interval of the 1923-type coseismic uplift was 500-600 years. This result is harmonious with the number of former shoreline identified as raised beach ridge, raised nip between wave-cut bench and abrasion platform, etc.

Key words: coseismic uplift, Holocene marine terrace, former shoreline, recurrence interval
Preparation of Detailed Active Fault Distribution Map in Urban Area of Japan

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The Geographical Survey Institute decided to prepare "Active Fault Map in Urban Area" at a scale of 1: 25,000 in cooperation with researchers engaged in active faults. The maps detail the position of active faults in urban areas where population are centered and a big damage would be anticipated when an earthquake occurs. Since 1995 to date, 31,000 km² have been surveyed on three largest urban areas, ordinance-designated cities, prefectural capitals and their suburbs and 78 sheets have been published.

Objectives, contents and survey methods of the Active Fault Maps in Urban Area are introduced.

Key words: active fault, detailed distribution map, urban area
Survey on Tectonic Landform Using Digital Elevation Model

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To grasp the distribution of tectonic landform such as active faults and active foldings, the authors visualized detailed digital terrain data by computer processing into the images of landform, and conducted geomorphologic interpretation of the images. The authors also analyzed quantitatively by applying statistical processing of digital terrain data. As a result, it was clarified that such methods using computer graphics are advantageous for geomorphologic interpretation. Up to now, detailed study on tectonic landform has been carried out based on the aerial photo interpretation by experienced researchers with a good knowledge of geomorphology. The authors propose a new study method for tectonic landform from a different point of view.

Keywords: digital elevation model, tectonic landform, visualization