



The objective mapping of channel initiation and landsliding on lidar DTMs in Japan and their interaction with vegetation

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The advent of meter-resolution swath mapping lidar data is revolutionizing the study of geomorphic processes. Objective feature mapping algorithms allow the identification of channel heads from topographic data alone. As a result, curvature-slope-area properties can now be measured at channel heads rather than having to be assumed a priori in order to delineate channels on the DTM, thus providing an opportunity to study in greater depth the processes governing channel head initiation. We apply GeoNet, a recently developed automatic channel extraction methodology, to lidar DTMs of several upland catchments in Japan. We find a strong dependence of channel head density on the spatio-temporal pattern of landsliding and we discuss observations of slope-area relations in this context.