

Occurrence of large landslides in past 40 years and sediment supply in the southern Japanese Alps

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Many large landslides are distributed in the southern Japanese Alps which consists of high relief and steep slopes. A lot of sediments deposited in dams suggest that sediments are produced actively in upper streams. To evaluate the sediment supply from landslides, this study addressed the mapping of landslides ($>10000 \text{ m}^2$) in Ooi River and Hayakawa River (total area is 862 km^2) using aerial photographs and orthophotographs in 1970s and 2000s (partly including 2010s). In addition, we computed the volume of sediment supply in several large landslides based on the difference between DEMs from LiDAR data in multiple shooting periods. One hundred eighty landslides were extracted from photographs in 2000s to 2010s. The comparison between the distribution maps of landslides in 1970s and 2000s indicated that an initial large landslide ($>100000 \text{ m}^2$) had not occurred since 1970s. In contrast, some landslides had enlarged gradually. Erosion rate computed from LiDAR data indicated the order of 10^{-1} to $10^{-2} \text{ m yr}^{-1}$. Such erosion rate suggests that the bare grounds after landslides are important as sediment supply area.

Keywords: large landslide, sediment supply, aerial photograph, GIS, the Southern Japanese Alps