Geophysical Research Abstracts
Vol. 20, EGU2018-11348, 2018
EGU General Assembly 2018

Accuracy and quality of remotely sensed data for landslide studies – some challenges in response to the 2016 Kaikoura Earthquake, New Zealand.

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With increasing accuracy, spatial coverage and time intervals between surveys, remotely sensed data are fundamental to advances in landslide research. In response to the 14th of November 2016 Kaikoura Earthquake, a wealth of remotely sensed data was collected, including, terrestrial LiDAR, aerial LiDAR, stereoscopic photography from satellites and fixed wing aircraft, and high definition imagery from UAVs. These data were compiled as part of a multi-agency, multi-disciplinary effort to better understand the surface rupture and landslides caused by the Mw 7.8 multi-rupture earthquake.

One area of research that has benefited from this data collection is our understanding of the distribution and characteristics of landslides generated by the earthquake. For example, comparison between digital terrain models pre- and post-earthquake allowed volume calculations of material mobilised during the earthquake, its travel through the fluvial system and the deposition within the terrain. This information can be used to better understand the current linkages and fluxes and will ultimately facilitate modelling of the future impacts of this increased sediment flux on the geomorphic system. Hereby, the interest is not just on the initiation sources, but comprises also the travel path and distance as well as its deposition locations. For these applications, accuracy and quality of the remotely sensed data are important to understand so that final results and consequent interpretations are robust.

The wide range of platforms and sensors as well as the different aerial extent of coverage of each dataset provide a unique opportunity to compare the accuracy, quality, and ease of deployment of each sensor. This presentation will provide preliminary results of the accuracy and quality of the collected data and discuss areas where future data acquisition could be improved.