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Using Cosmogenic Nuclides to Evaluate the Role of Coseismic Landsliding on Measured Erosion Rates Following the Mw 7.8 Gorkha Earthquake, Nepal.

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The Mw 7.8 2015 Gorkha earthquake presents a unique opportunity to study the effects of coseismic landsliding on sediment transport and landscape response in the years immediately following a large earthquake. The effects of these infrequent mass wasting events on longer-term erosion rates is still not fully understood and recent studies question whether these large earthquakes build or destroy topography at the orogen-scale. In this study, we repeatedly sample river sediments in earthquake affected valleys of central Nepal for terrestrial cosmogenic nuclides (TCN). Assuming landslides mobilize deeper material with lower TCN concentrations, we expect an "earthquake signal" in the export of these lower concentration sediments. However, preliminary data do not show such a clear response after the Gorkha earthquake in our measurements of 10Be concentrations in sands and pebbles. To better understand the absence of an obvious earthquake signal, we model how concentrations of cosmogenic nuclides respond to coseismic landsliding and longer-term erosion rates. On-going measurements and modeling will better resolve this data set and help us further investigate the effects of seismicity on both long- and short-term erosion in an active orogen.