



SPEAKERS CLUB

WEBB 1100 • THURSDAY FEB 9th. • 2:00 PM

Lessons in the Landscape:

Earth surface processes reveal dynamics of deformation
in the northwest Himalaya and northern Cascadia

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This talk will provide two examples of how earth surface processes can elucidate the dynamics of crustal deformation in active tectonic settings, despite dense vegetation, poor exposure, slow slip rates and/or blind faults. In the first example from the northwest Himalaya, I will show how topography, river morphology and erosion rate data together constrain the behavior of the fault system that ruptured during the April 2015 Gorkha earthquake, at a study area ~400 km to the northwest. In the second example, I will describe how high-resolution lidar topography, detailed field work and paleoseismic trenching data expose a previously unidentified active shallow fault network within the forearc of the northern Cascadia subduction zone. The geometry, kinematics and extent of this fault network, together with analysis of GNSS data, provide a fundamentally new perspective on how strain is accumulating in southern British Columbia. In both of these active tectonic settings, the landscape encodes important information about the distribution, longevity and character of active tectonic processes that can be difficult to assess using traditional methodologies.