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Erosion in Tibet

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High topography and hardly accessible terrains make field studies in the Tibetan Plateau on a large-scale cumbersome. An integrative approach, employing several remote sensing techniques combined with field studies, and experimental and numeric simulations, provides tools for the understanding of coupled processes. New remote sensing technologies have the capability of measuring physical parameters, such as precipitation, land use, vegetation coverage, soil moisture, and uplift with an
area-wide coverage and high spatial resolution. Our work indicates that existing remote sensing methods, allowing an estimation of erosion, largely underestimate erosion in tectonically active areas. In very active areas, a non-negligible part of erosion is directly tectonically linked and occurs by landsliding and base flow. We are working on remote sensing methods allowing a better constraint on overall erosion in
active areas. An estimation of erosion rates will help us to localize zone of tectonic uplift but also allow the quantification of uplift rates as shown previously (stream power law). We are currently calibrating parameters such as precipitation intensities based on remote sensing measurement such a TRMM. We also developed new methods for the remote sensing estimation of soil type using support vector machines.