Terrestrial laser scanning in California

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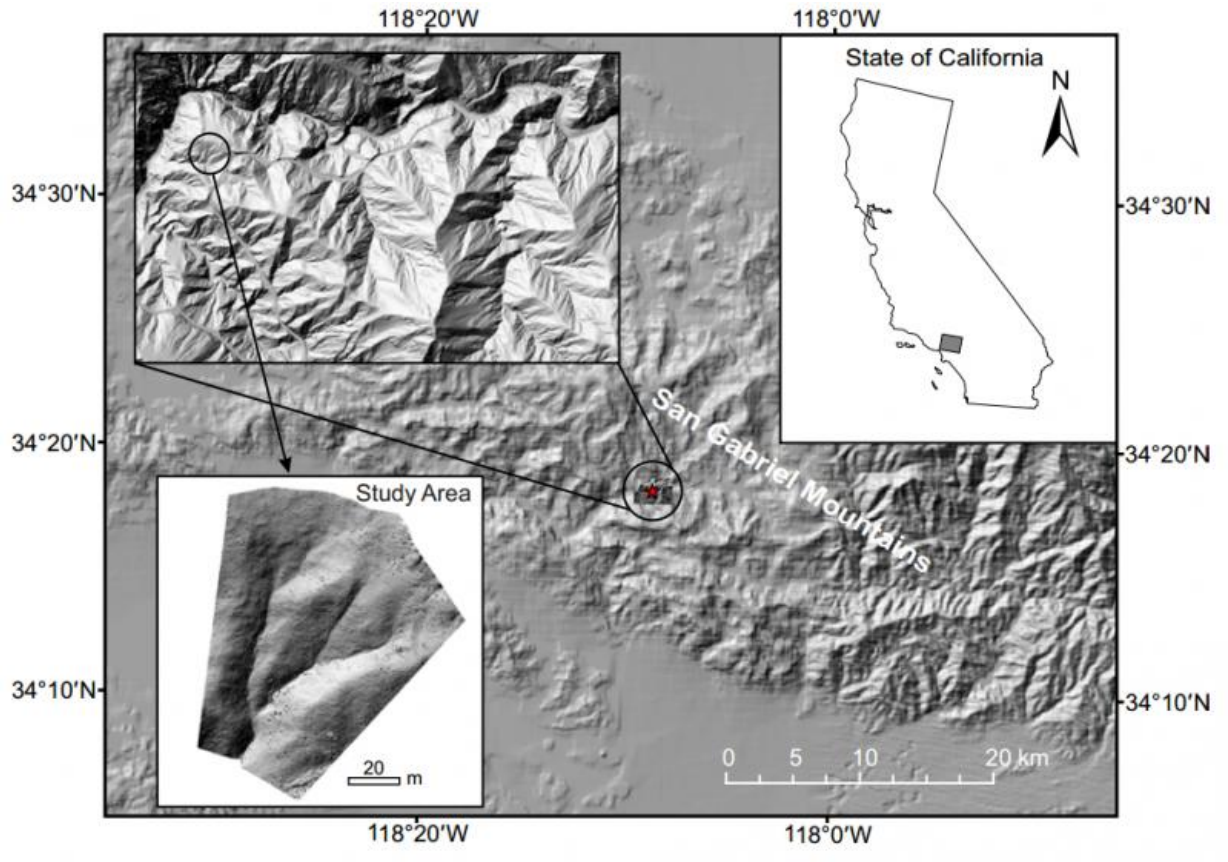

Second experiment location, a slope in San Gabriel Mountains, southwestern California, USA. Credit: Shilpakar et al.

Terrestrial Laser Scanner (TLS) is a powerful mapping tool that helps us to image natural surfaces at centimeter scale, which is established in this research study by evaluating the performance of long-range TLS, Riegl

Z620i and Riegl LPM-800HA, on characterizing natural surfaces. Prabin Shilpakar and colleagues have developed a procedure to test componential uncertainty budgets of the TLS system, such as instrumental error, georeferencing error, and surface modeling error.

Shilpakar and colleagues also have established the relationship between reference network uncertainty and the repeatability and resolution of imaged natural surfaces. To achieve their goals, they used a combination of the two instruments to image fault scarps and erosional ravines in Panamint Valley and the San Gabriel Mountains of California, respectively.

In both experiments, a Total Station (TS) was used to establish a control network geometry of reflectors and georeferenced with the Global Navigation Satellite System (GNSS) in Real Time Kinematic (RTK) and Static (S) modes in the first and second experiment, respectively. Shilpakar and colleagues document that the combined uncertainty for the reference network and surface interpolation represents the repeatability of an imaged natural surface.

More information: Assessment of the uncertainty budget and image resolution of terrestrial laser scans of geomorphic surfaces, Prabin Shilpakar *et al*., http://geosphere.gsapubs.org/content/12/1/281.abstract.

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