Single Point LiDAR for Cross-Sectional Feature Measurement

Abstract: Light detection and ranging (LiDAR) is a powerful tool for recreating three dimensional features in computer imagery. Most often the LiDAR units are terrestrial, or set at a fixed location on the earth in which the location (north east down (NED))In the ecological world, these datasets can then be used to qualitatively monitor terrain and feature changes, quantitatively measure changes in feature volume wrt time, or develop models to predict future terrain behavior. This work will focus on the latter of these uses, development of hydrological models

This paper will provide a brief overview of real-time-kinematic (RTK) differential GPS (dGPS), LiDAR, and photogrammetry approaches to collecting elevation data for the purpose of cross-sectional stream analysis.

Metric: Accuracy in meters compared to RTK; Time for data collection; Time to X-sec extraction.

Limitations: Sensor Calibration? Repeatability? Folliage? Water?

Repeatability: what's the stdev of the sensor? What is the error stack-up? GPS, Baro, etc.

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ES 207 paper - Comparative first between RTK, LiDAR and Ortho @ Oneto

What's out there: RTK cross section, Photogrammetry, LiDAR

Two LiDAR units? can we place one at the front and one at the back and add the difference to the height?

Inexpensive, rapid deployment,

One page perspectus on paper, journal outlet, takehome points - Next Tuesday