

Project Abstract

Light detection and ranging (LiDaR) has emerged as one of the most promising new tools for the geosciences, with applications ranging from the environmental sciences to planetary geology. The "B4" LiDaR data set, used in this study was recorded last year by aircraft mounted laser scanner. The LiDaR point cloud covers three hundred square kilometers of the southern San Andreas and consists of over ten billion X, Y and Z coordinate sets. Data sets of this size are not easily processed. We have been working in cooperation with the San Diego Supercomputing Center (SDSC) and geongrid.org to establish and test access protocol and processing methods with the existing infrastructure we are able to select and process LiDaR data sets as large as 800,000 points covering up to 250,000 m². Our study serves as a test of the accessibility and versatility of this new technology, specifically its applications in tectonic geomorphology and paleoseismology. We focus on a well documented section of the San Andreas Fault which last ruptured in 1857. We began by measuring and photographing geomorphic offsets, first documented by Dr. Kerry Sieh in 1978, from Wallace creek to the SE end of the Carrizo plain. These offsets were then identified and measured within the gridded LiDaR data using Arcmap. The offset measurements taken from the LiDaR data were similar to those taken in the field; however they were more easily made and numerous other features were identified to further characterize the 1857 offset in the Carrizo plain.