Northern California Airborne LiDAR Imagery Acquisition for GeoEarthScope

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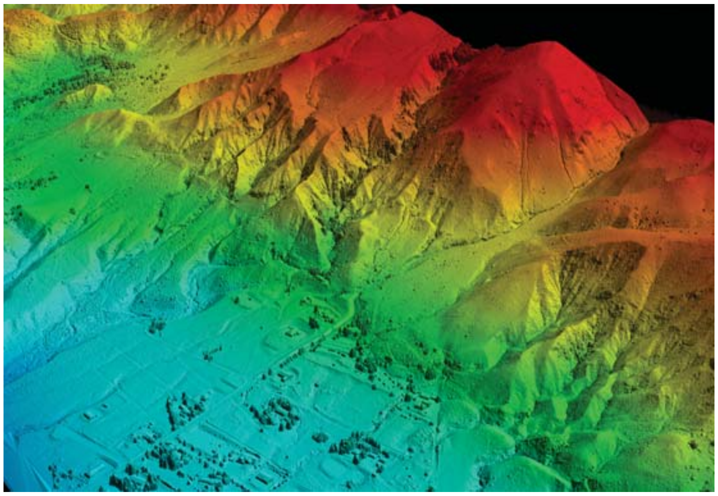

Figure 1. This airborne LiDAR image of the southern San Andreas fault was produced using data collected by the B4 project (image courtesy Ken Hudnut, USGS). Similar imagery of the northern San Andreas fault will be acquired as part of the GeoEarthScope northern California LiDAR project.

UNAVCO is coordinating a high resolution Airborne LiDAR survey of the San Andreas fault and other fault systems in northern California. This survey is the first of several major community-guided LiDAR imagery acquisition projects being conducted as part of GeoEarthScope. Approximately 70% of the total plate boundary motion is accommodated across a less-than-100-km-wide region in northern California. The nine counties that comprise the greater San Francisco Bay area, population approximately seven million, lie within this region, making this system of faults among the most important in the U.S. in terms of seismic hazard. Near the southern end of the region, at least half of the plate-boundary motion (25-30 mm/yr out of approximately 50 mm/yr) is concentrated along a single fault, the creeping section of the San Andreas Fault north of Parkfield. However, this situation changes dramatically north of the latitude of Hollister, where this single fault becomes a complex system of strike-slip and reverse faults that traverses the San Francisco Bay region, and continues northward to the latitude of the Mendocino Triple Junction. From the San Francisco Bay area northward to the subduction zone transition, most of the San Andreas motion is taken up by eight principle strike-slip faults: the San Andreas, San Gregorio, Hayward, Rodgers Creek, Maacama, Calaveras, Concord-Green Valley, and Bartlett Springs fault zones. In addition, a number of blind thrusts and reverse faults accommodate contractional motion in the region. The intense forest cover that blankets much of this region has hampered detailed study of these faults, making LiDAR data an especially useful tool. Imagery from this project will also connect with LiDAR imagery collected on the southern San Andreas fault as part of the "B4" project. Through this project and the B4 project, both supported by UNAVCO, the entire length of the San Andreas and other major fault systems in California will have been imaged with high resolution airborne LiDAR.

Figure 2. Map of northern California showing major targets for airborne LiDAR imagery acquisition for GeoEarthScope.