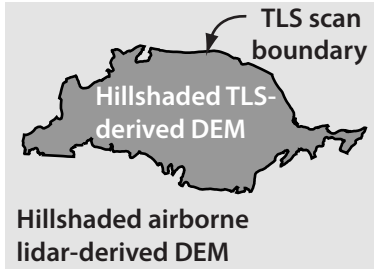## Metadata

Dataset Name:	El Mayor-Cucapah earthquake rupture terrestrial laser scan dataset-Site 1 (EMC_TLS_s1)
Collected by:	Peter Gold, Austin Elliott (UC Davis)
Project PI:	Dr. Mike Oskin (UC Davis)
Funding:	Southern California Earthquake Center (NSF+USGS)
Geographic location:	Northern Baja California, Mexico, 2010 El Mayor-Cucapah earthquake rupture, northern Borrego segment. (lat 32.49001 lon -115.624495)
Acquisition date(s):	16 April 2010-19 April 2010
Instrumentation:	Trimble GX3D DR200+ terrestrial laser scanner; Dell Latitude 6200 ATG laptop;Topcon GS1000 GPS receivers; Leica TCR400 Total Station.
Power source:	1000 W generator
Field software:	Trimble PointScape
Post-processing software:	Trimble RealWorks; LidarViewer (KeckCAVES.org)
Total lidar returns:	49748845
Ground returns:	42827819
Vegetation and other returns:	7076586
Data format:	.las, x,y,z,intenisty (E,N,Z,intensity)
Vegetation classification method:	Performed manually in the UC Davis KeckCAVES 3D immersive virtual reality CAVE environment.
Scan footprint area:	17,534 m^2
Averaged point density:	~2100 pts/m^2
Number of scan stations:	19
Registration Method:	Target-based using square, flat panel reflective targets. Targets were installed over ground control points that were surveyed prior to scanning with a total station (for a more complete description see Gold et al., 2012)
Number of targets:	8
Number of targets measured from each scan station:	between 2 and 5
Assessment of scan registration errors:	Residual target mismatches are around 2-5 cm, in reality, points clouds are mismatched by 2-3 cm throughout the field area except at the NW end, where higher topographic relief prevented scanning an ideal number of targets. Here, registation errors are as high as 7 cm.
Georeferencing method:	Topcon GS1000 GPS receivers set to collect in rapid-static mode for 5-8 hours at 4 target locations. Georeferencing of point clouds performed using Trimble RealWorks.
Field survey methods and workflow:	Following workflow outlined in Gold et al., 2012
References:	Gold, P. O., Cowgill, E., Kreylos, O., and Gold, R. D., 2012, A terrestrial lidar-based workflow for determining three-dimensional slip cectors and associated uncertianties: *Geosphere*, v. 8, no. 2, p. 431-442.

El Mayor-Cucapah TLS Site 1 Survey Details

Key:

Hillshaded TLS-derived DEM

TLS scan boundary

Hillshaded airborne lidar-derived DEM

◆ Registration target

⊙ TLS scan position

— Remotely mapped faults and fractures

X———X′ Schematic topo profile line

⇨ Field photo view

Schematic topo profile

Vegetation

Fault Scarp

TLS scanner

Abrupt topography

X   X′

Scan time: 4 days
19 scan pos; 8 target pos.
0.018 km², ~2100 pts/m²

X′

X

50 m