

Terrestrial Laser Scan (TLS) datasets were collected for various projects pursued by the University of Arizona Critical Zone Observatory located in the Jemez River Basin within the Valles Caldera National Preserve. Three locations were TLS surveyed a total of four times over the course of two years. The locations are the Debris1 alluvial fan, Debris2 alluvial fan, and the BurnZOB small upland basin. The four surveys were completed after the Las Conchas fire in the summer of 2011. The approximate dates for each scan were 8/19/11, 6/4/12, 9/22/12, and 5/14/13.

All TLS data was collected using a Leica C10 scanner set up in the field by Jon Pelletier and Caitlin Orem. All scans were scanned for both points (on the medium scan setting) and photographs (meaning pictures were taken to then extrapolate RGB data from for each point). GPS data was collected in the field with a Leica Real-Time Kinematic Global Positioning System (RTK-GPS) unit. At each scan station at least three permanently located targets were scanned so all scans at a study site could be registered to one point cloud. At least three targets at each study site were surveyed with Real-Time Kinematic Global Positioning System (RTK-GPS) receivers until a temporary accuracy reading of less than 0.01 m was reached in each of the four cardinal directions.

All scans for each individual survey were uploaded to Leica Cyclone so scans could be registered together into one point cloud. GPS data for the base station was processed in Leica Geo Office and imported into Cyclone to georeference the point cloud. Data was then exported from Cyclone in .pts format (columns of x, y, z, intensity, r, g, b). Cloud Compare software was used to take the .pts file to .las.

Additional data on Debris1, Debris2, BurnZOB locations:

Debris 1

Survey 1: 8/18/11
debris1_Zone13.las
117,038,105 points
Position error in Cyclone: 0.044 m

Survey 2: 6/4/12
debris1_2_Zone13.las
111,180,971 points
Position error in Cyclone: 0.032 m

Survey 3: 9/22/12
debris1_3_Zone13.las
111,603,444 points
Position error in Cyclone: 0.031 m

Survey 4: 5/14/13
debris1_4_Zone13.las
116,949,699 points
Position error in Cyclone: 0.017 m

Debris 2

Survey 1: 8/19/11
debris2_Zone13.las
40,057,533 points
Position error in Cyclone: 0.025 m

Survey 2: 6/3/12
debris2_2_Zone13.las
44,266,098 points
Position error in Cyclone: 0.027 m

Survey 3: 9/21/12
debris2_3_Zone13.las
22,740,595 points
Position error in Cyclone: 0.028 m

Survey 4: 5/12/13
debris2_4_Zone13.las
44,736,478 points
Position error in Cyclone: 0.019 m

BurnZOB

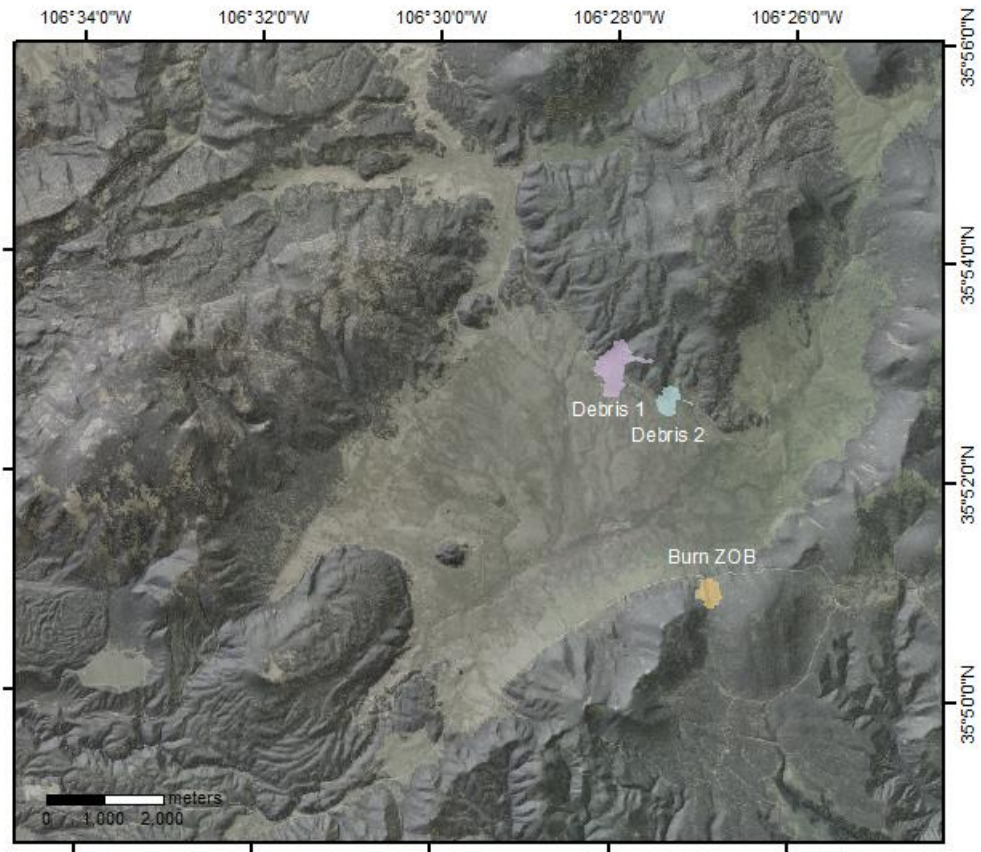
- Survey 1: 9/24/11 – 9/25/11
bz_UTM13_laz.laz
350,363,646 points
Position error in Cyclone: 0.040 m
- Survey 2: 6/6/12 – 6/7/12
2bz_UTM13_laz.laz
338,914,222 points
Position error in Cyclone: 0.040 m
- Survey 3: 9/24/12 – 9/25/12
3bz_UTM13_laz.laz
277,029,782 points
Position error in Cyclone: 0.018 m
- Survey 4: 5/16/13 – 5/17/13
4bz_UTM13_laz.laz
284,660,785 points
Position error in Cyclone: 0.040 m

All collections start early (~7 am) the first day and end mid-afternoon on second day. All collections were done moving from the base of the catchment (near the road) up to the top and then moving along the western slope of the catchment near the road.

All surveys were completed in the field and processed by Caitlin Orem.

Horizontal coordinate system is UTM 13N WGS84 METERS.

Vertical coordinate system is NAVD88.



TLS locations within the Valles Caldera