EarthLab LiDAR Data v1 README

David Shean
January 13, 2022

Each subdirectory contains clipped lidar products for each of the Earthlab sites.

USGS_WA_KingCo_1_2021
- Most areas in Seattle acquired April 13-14, 2021 (before leafout)
- Original CRS is WA State Plane North and NAD83(2011) horizontal coordinate system, with horizontal and vertical units of US Survey Feet, and elevations about the NAVD88 datum (geoid18)
  - For initial analysis and outreach/partner distribution, these units were preserved
  - Possible to convert to meters and reproject to different compound CRS
- 1.5 foot raster products

LiDAR reports:
- https://prd-tnm.s3.amazonaws.com/StagedProducts/Elevation/metadata/WA_KingCounty_2021_B21/WA_KingCo_1_2021/reports/WA_KingCounty_2021_B21_Lidar_Delivery_1_Technical_Data_Report.pdf
- http://prd-tnm.s3.amazonaws.com/index.html?prefix=StagedProducts/Elevation/metadata/WA_KingCounty_2021_B21/WA_KingCo_1_2021/reports/

Data were processed with Jupyter notebook and PDAL
Bounding box around each site for 500 ft radius
Clipped mosaics were prepared from original vendor DSM/DTM products
Custom DSM and DTM products were generated directly from the point cloud products using PDAL

Example subdirectory structure for Magnuson Park:

Lidar Point Cloud:
- lpc_pdal.laz - clipped, unfiltered lidar point cloud in standard compressed LAS (.laz) file format. Viewable with CloudCompare or other LiDAR software.

Digital Surface Model (filtered to first returns):
- dsm_pdal.tif - single-band digital surface model GeoTiff with inverse distance weighting
- dsm_pdal_all.tif - 6-band digital surface model GeoTiff with 6 per-pixel metrics (min, max, mean, idw, count, stdev), one per band, see https://pdal.io/stages/writers.gdal.html
- dsm_3DEP.vrt - "virtual" file pointing to source DSM GeoTiff provided by lidar vendor on AWS, can be loaded in GIS
- dsm_pdal_hs.tif - shaded relief map (8-bit) for the dsm_pdal.tif DSM
- dsm_3DEP_hs.tif - shaded relief map (8-bit) for the dsm_3DEP.tif DSM

Digital Terrain Model (filtered to ground points using classification in las, secondary interpolation across gaps):

- dtm_pdal.tif - single-band digital terrain model GeoTiff with inverse distance weighting
- dtm_pdal_all.tif - 6-band digital terrain model GeoTiff (see above)
- dtm_3DEP.vrt - same as above but for digital terrain model products
- dtm_pdal_hs.tif
- dtm_3DEP_hs.tif

Intensity Raster:

- irg_pdal.tif - single-band lidar intensity values (1064 nm)
- irg_pdal_all.tif

Figures (300 dpi, units are US survey feet for consistency with original data):

- Magnuson Park_LiDAR_context.png - 5 panel figures showing 3DEP DSM, 3DEP DTM, 3DEP Canopy height model (CHM), Intensity map and RGB ESRI Satellite basemap
- Magnuson Park_LiDAR_bins.png - 2 panel figure showing CHM and corresponding 50 ft and 10° bins used to compute for radial and azimuthal stats
- Magnuson Park_LiDAR_stats.png - 2 panel figure showing mean (line) and std (shaded) for each bin, with fixed y axes limits for site intercomparison

2021 King County LiDAR Products: Rainier Beach Playfield
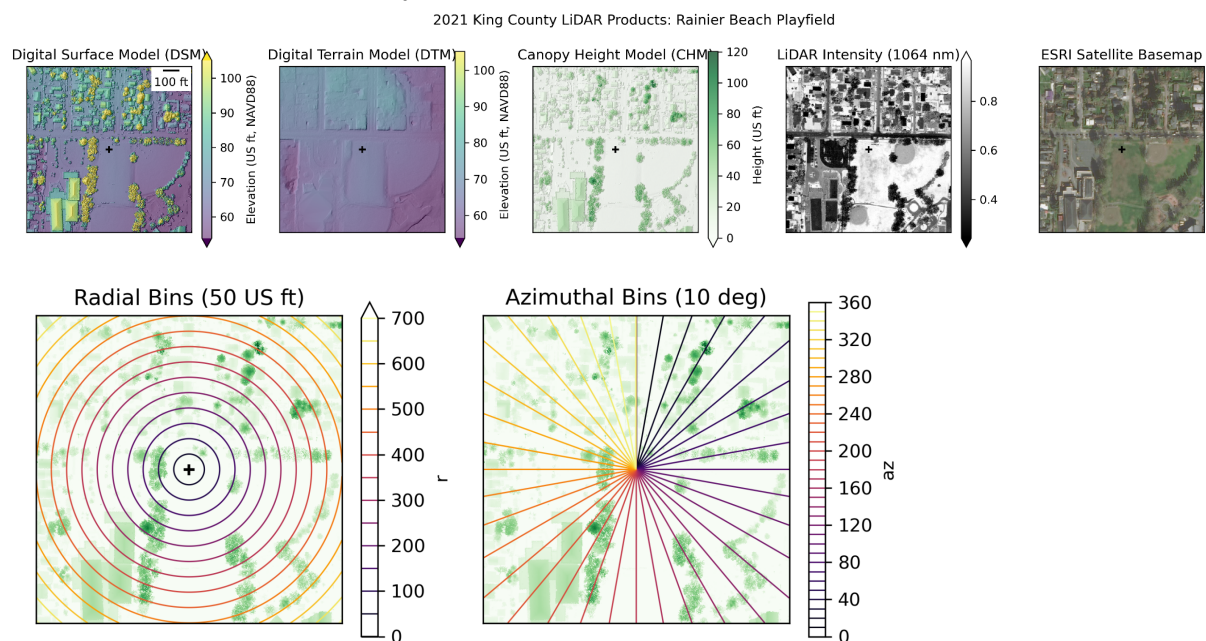
LiDAR Terrain and Vegetation metrics: Rainier Beach Playfield
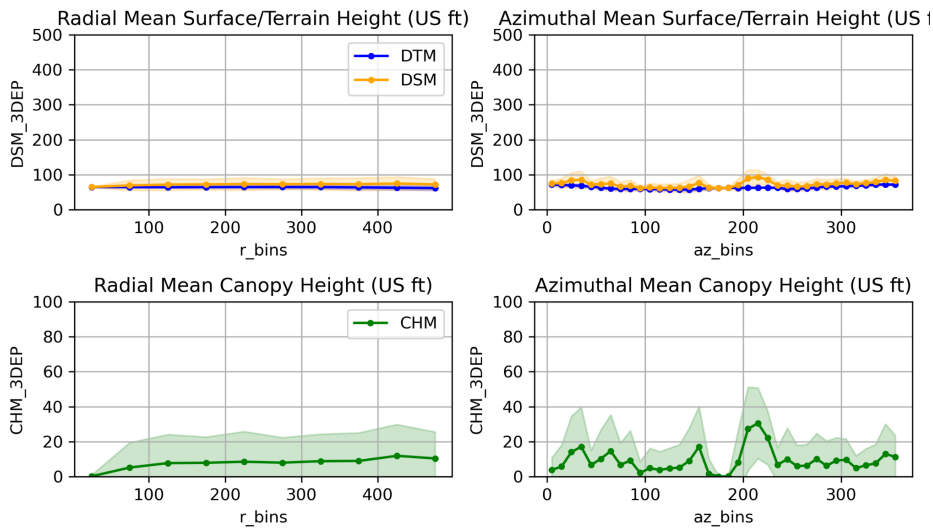
Reduced data:

- Magnuson Park_LiDAR_r_bins.csv - mean DSM, DTM, CHM and IRG values for each 50 ft radial bin (first column is bin center)
- Magnuson Park_LiDAR_az_bins.csv - mean DSM, DTM, CHM and IRG values for each 10° azimuth bin (first column is bin center)