

AOP canopy height model 1 pager draft

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NEON Data QuickStart

Data Product: Level 3 (L3) Ecosystem Structure (Canopy Height Model, CHM) DP3.30015.001

Data Source: NEON Airborne Observation Platform (AOP) LiDAR instrument

Data Product Contents: Canopy Height Model raster and Canopy Height Model Error raster in UTM projection and GeoTIFF format.

Collection Methodology

NEON AOP instruments, including LiDAR, are flown at 1000 m above ground level at 100 knots in flight lines that have 60% overlap. This results in a minimum of 4 LiDAR shots per square meter in non-overlap areas, with up to 5 returns per shot. NEON sites are flown once per year with a target of 90% maximum greenness or higher and at a minimum of 3 of every 4 years. Flight coverage is a minimum of 10 km by 10 km and covers both NEON tower and observational sampling sites. Aquatic sites, as well as those in Hawaii and Puerto Rico, are flown in the same fashion, but at reduced frequency.

Include flightline schematic here.

Description

This data product contains two GeoTIFF rasters. The first raster, Canopy Height Model, has 1 m pixels whose value is the height of the top of the vegetation canopy above the ground immediately below it. The second raster's values are the uncertainty associated with the canopy height values in the first raster. The two rasters are identical in both size and extent and their pixels correspond one to one with each other. Missing pixels are assigned a value of -9999. All AOP L3 data, including CHM, are distributed in 1 km by 1 km tiles which include the Easting and Northing coordinates (in that order) of their southwest corner in their file names.

Product Processing and Derivation

Raw discrete LiDAR data are processed to projected and corrected L1 LAZ point clouds in their original flight lines. First (highest elevation) LiDAR returns are gridded to 1 m pixels to create a digital surface model (DSM). Last (lowest elevation) returns are gridded to 1 m pixels to create a bare earth digital elevation model (DEM). Triangulation and interpolation are used to fill any gaps in DEM data if the LiDAR was unable to reach the ground. A raw canopy height model is created by subtracting the DEM from the DSM and preserving the values greater than 2 m in height (minimum detectable tree height). The finished CHM is created by filling any missed canopy-top pixels ("pits").

Data Quality

Related products

Product	Description
DP1.30003.001	L1 discrete return LiDAR point cloud
DP3.30024.001	L3 elevation – LiDAR DEM and DSM
DP3.30025.001	L3 slope and aspect - LiDAR

For more information:

Links to more detailed product description on [page/portal](#)

ATBD

AOP instrument and sampling designs