

## Sonoma County Vegetation Mapping and LiDAR Program – List of Products

(data available at [sonomavegmap.org/data-downloads](http://sonomavegmap.org/data-downloads))

Deliverable	Description	Status
<i>LiDAR Derived Products (delivered for Sonoma County plus a 250-meter buffer)</i>		
Forest Metrics	1-meter spatial resolution canopy height raster; 1-meter spatial resolution canopy density raster.	Completed 2014
Intensity Images (3 rasters)	1 m. resolution raster – interpolation based on average of first returns; 1 m. resolution raster – interpolation based on average of vegetation returns; 1 m. resolution raster – interpolation based on average of all returns.	Completed 2014
First Return (Highest Hit) Digital Surface Model (DSM)	Delivered as 1-meter spatial resolution raster.	Completed 2014
Enhanced Classified Point Cloud	Enhanced .las classification to the following classes: Ground, Default, Vegetation, Water, Building	Completed 2014
2-D Building Footprints	Building polygons for all buildings in Sonoma County, including structures under canopy. 2 polygon feature classes – one of “building point extents” and one of “cartographic buildings”.	Completed 2014
1-Foot Contours	Contours (line vectors) with 1 ft. contour intervals, delivered as a geodatabases feature class.	Completed 2014
Hydroflattened Bare Earth Digital Elevation Model (DEM)	Hydroflattened GSM as per USGS NED LiDAR Base Specifications Version 1.0 (USGS, 2012), delivered as 1-meter spatial resolution raster. Breaklines delivered as a geodatabase feature class.	Completed 2014
LiDAR Vertical Accuracy Assessment	Vertical accuracy assessment, in accordance with National Digital Elevation Program guidelines.	Completed 2014
LiDAR Data Quality Assessment	Quality assessment of LiDAR point cloud and associated deliverables.	Completed 2014
LiDAR Quality Assurance and Documentation	Quality assurance and reporting.	Completed 2014

<i>LiDAR Derived Products (outside of Sonoma County)</i>		
Lake Sonoma Watershed Add-On	Products 1-10 (above) for the Lake Sonoma Watershed inside of Mendocino County.	Completed 2014
Lake Mendocino Add-On	The following products will be produced for Lake Mendocino: 6-inch resolution 4-band orthophotos, hydroflattened bare earth DEMs as per USGS standards, an enhanced classified point cloud, a first return (highest hit) DEM, intensity images, one foot contours, and 2-D building footprints.	Completed 2014
<i>Hydrologic Data Products (delivered for all of Sonoma County, plus a 250-meter buffer)</i>		
LiDAR Derived Stream Centerlines	Stream centerlines for all of Sonoma County.	Completed 2016
LiDAR Derived Watersheds (HUC 2 to HUC 14)	Nested watersheds countywide, following NHD conventions.	Completed 2016
LiDAR Derived Hydrologic Rasters	Includes a hydroenforced DEM, flow accumulation, and flow direction.	Completed 2016
LiDAR Derived Hydrologic Vectors	Includes hydroenforcement burn locations, and stream confluence points.	Completed 2016

<i>Vegetation Map Products (delivered for all of Sonoma County, plus a 250-meter buffer)</i>		
“Lifeform” Map	Generalized vegetation map to broad life form classes, such as “forest,” “shrub,” and “herbaceous.”	Completed 2015
Full Lifeform Map - Lake Sonoma Watershed	Addition of the Lake Sonoma Watershed in Mendocino County to the lifeform map.	Completed 2016
Pervious/Impervious Map	Fine scale delineations of impervious features. Impervious features include information about whether they are roads or other types of impervious surfaces.	Completed 2015
Vegetation Plot Data Collection	Field data collection to support classification development; field work and subsequent classification development conducted by CNPS and CA DFW. Deliverables include plot data, a vegetation classification for Sonoma County, and a dichotomous key.	Completed 2015
Croplands Dataset	Fine scale “agriculture” data with classes including annual croplands, perennial croplands, orchards, vineyards, nurseries, intensively managed hayfields, and irrigated pasture.	Completed 2015
Vegetation Map	Fine scale vegetation and habitat map of Sonoma County using the National Vegetation Classification Standard.	Completed 2017
Aboveground Carbon and Biomass Map	Above ground biomass and carbon storage. 30-meter raster deliverable; goal is 10% accuracy @ 95% confidence @ 1 ha scale. Work by U. Maryland under NASA ROSES grant.	Completed 2017
Forest Habitat Structure	Vegetation map will include canopy height and canopy cover for all forested polygons.	Completed 2017
Added Vegetation Map Detail – Serpentine Areas	Vegetation map will include added classification detail and finer scale delineations for serpentine areas.	Completed 2017
Added Vegetation Map Detail – Vernal Pools	Vernal pools will be mapped to aggregations of alliances; vernal pools will have finer scale delineations than other areas of the vegetation map.	Completed 2017
Added Vegetation Map Detail – Riparian Areas	Vegetation map will include added classification detail in riparian areas; riparian areas will have finer scale delineations than other areas of the vegetation map.	Completed 2017
Vegetation Map Accuracy Assessment	Accuracy assessment of the vegetation and habitat map.	Q4 2017
Change Detection Method	Provides a protocol for mapping vegetation and habitat change across the county every three years using publicly available datasets.	Q4 2017

<i>Applications and Outreach</i>		
'Soil-Veg' Map Viewer	Viewer to explore scanned, georeferenced historic vegetation maps of northern Sonoma County: <a href="http://sonomavegmap.org/SoilVegMaps">http://sonomavegmap.org/SoilVegMaps</a> .	Completed 2016
Clip and Email Tool – Contours	Quick and easy access to clipped contour data via JavaScript viewer: <a href="http://sonomavegmap.org/contours">http://sonomavegmap.org/contours</a> .	Completed 2015
Clip and Email Tool – Imagery	Quick and easy access to high resolution orthophotos and LiDAR derivatives via JavaScript viewer: <a href="http://sonomavegmap.org/imagery">http://sonomavegmap.org/imagery</a> .	Completed 2015
1942 Imagery Story Map	Viewer/Story Map that allows the user to compare the landscape in 1942 to today's landscape using historic air photographs: <a href="http://sonomavegmap.org/1942">http://sonomavegmap.org/1942</a> .	Completed 2014
Web site, blog, and newsletters	SonomaVegMap.org Web site, blog, and newsletters.	Ongoing
<i>Public and Group Meetings, Surveys, and Reports</i>		
Kick off Meeting	Program kick off meeting. Held in December, 2012.	Completed 2012
Technical Advisory Committee Meeting #1	First meeting of the Vegetation Mapping and Remote Sensing Technical Advisory Committee. Held in December, 2012.	Completed 2012
LiDAR and Environmental Data Forum	Environmental data forum with numerous speakers on various aspects of LiDAR. Held in May, 2013	Completed 2013
Technical Advisory Committee Meeting #2	Second meeting of the Vegetation Mapping and Remote Sensing Technical Advisory Committee. Held in December, 2013.	Completed 2013
Local Ecology and Botany Group Meeting #1	Meeting of the Local Ecology and Botany Group. Held in Heron Hall in February, 2014.	Completed 2014
Survey of Data Users	Survey of LiDAR and imagery data users.	Completed 2016
Local Ecology and Botany Group Meeting #2	Meeting of the Local Ecology and Botany Group. Held at District in November, 2016.	Completed 2016
Value of Veg. Mapping and LiDAR Program Report	Report title <i>Use and Value of Sonoma County's Vegetation Mapping and Lidar Program Products</i>	Completed 2017