

PRODUCT DESCRIPTION

Laser data Download, forest

DOCUMENT VERSION: 1.4

Figure 1. Example laser data.

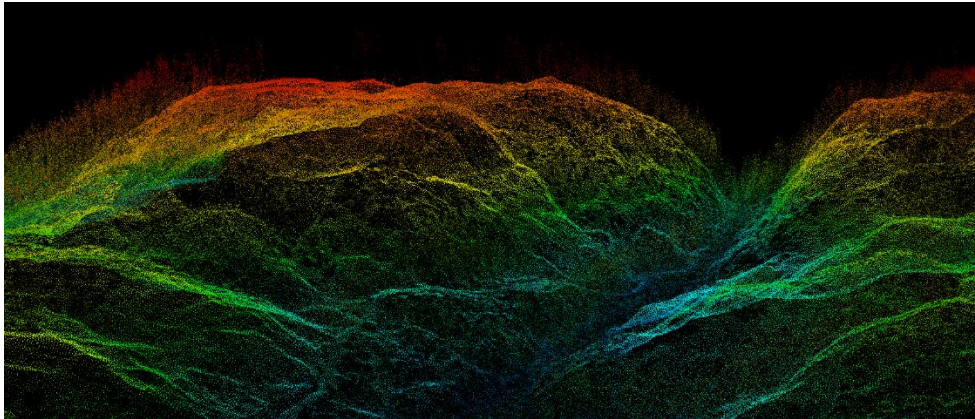


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I General description

Laser data Download, forest gives you access to a point cloud with classified points collected through airborne laser scanning.

Laser data Download, forest is provided as open data.

I.1 Contents

The product contains a point cloud with a point density of 1-2 points/m². Each point is classified as ground, water, low point (noise), high noise (for example cloud), point on bridges (only classification level 3) or unclassified.

If required by the user there are files with overlapping data which surrounds the scanning area and contains laser data in a zone that overlaps adjacent scanning area by at least 200 metres. The border files can for instance support classification and mapping right out to the border of the scanning area. Without these overlapping data undesirable effects may occur along the border. The border files also allows comparison of laser data from adjacent scanning area which may be needed in calibration of some analyses if laser data is capture under different conditions.

The product contains metadata and trajectory data.

I.2 Geographic coverage

Geographic coverage will be about 75% of the Swedish area.

Detailed presentation of geographic coverage is presented under [Planer och utfall](#) on the website.

I.3 Geographic cut-out

Laser data Download, forest is provided in files corresponding 2,5 x 2,5 km index tiles.

I.4 Reference systems

In plane: SWEREF 99 TM.

In height: RH 2000.

2 Quality description

More detailed description of quality see the pdf-file *Quality description of laser data*, which can be found alongside this product description at [Laser data Download, forest](#).

2.1 Purpose and utility

Laser data Download, forest can for example be used for

- calculation of forest parameters

- update of the National Elevation Model

2.2 Data capture

2.2.1 LINEAGE

Data capture for Laser data Download, forest began 2018. Laser data is captured through airborne laser scanning of the terrain.

Each laser point is classified in any of the following classes:

- 1 Unclassified, also includes any incorrect points
- 2 Point on ground
- 7 Low point (noise) - point under ground level
- 9 Point on water
- 17 Point on bridges (only classification level 3)
- 18 High noise - point over ground, vegetation, building for example cloud

When laser scanning, classification and quality control are finished for a scanning area it will be provided in classification level 1 – Automatic classification.

After that every scanning area go through a new classification which means classification of points on bridges, improved ground classification of dams and improved separation between water and ground. This new classification corresponds to classification level 3. When the new classification has been done for a scanning area it will be provided in classification level 3 instead.

Current classification level is presented in metadata and at the website [Planer och utfall](#).

2.3 Maintenance

2.3.1 MAINTENANCE FREQUENCY

The laser scanning will be regularly according to a long-term scanning plan.

For detailed presentation of production plans and available scanning areas see the website [Planer och utfall](#).

- Skanningsplan (pdf) – The annual scanning plan.
- Produktionsstatus – A status overview presenting areas at different status level; scanning has started (“Skanning pågår”), scanning is completed (“Skanning avslutad”, re-scanning may be considered if the quality is not approved during the subsequent verification), quality control has started (“Kvalitetskontroll pågår”) and areas ready for download (“Klart för nedladdning”).

- Långsiktig skanningsplan - The long-term scanning plan. This plan will be reviewed every year and is underlying the detailed annual scanning plan.

2.4 Metadata

Metadata is presented in two files per tile of 2,5 x 2,5 km according to descriptions below.

Table 1. Description and example of contents in metadata file, grouped by flight line.

Field	Description	Example
	Geometry, polygon The approximate area of the flight line	
id	Identity of the flight line, Point Source ID	1
datum	Scanning date	20180301
kommentar	Scanning notes	
flyghojd	Planned height above ground (metre)	3000
flyghastighet	Planned speed (knots)	135
overtackning	Planned overlap between flight lines (%)	22
punkttathet	Planned minimum point density inside a flight line (points/m ²)	1.46
skannerid	Scanner ID	8236
skannerfabrikat	Scanner manufacturer	Leitech
skannermodell	Scanner model	LS1A
opningsvinkel	Field of view (degrees)	40
pulsfrekvens	Pulse frequency (Hertz)	180000
skanningsfrekvens	Scan frequency (Hertz)	50
uteffekt	Scanner output power, as percentage of maximum possible (%)	80

Table 2. Description and example of contents in metadata file, grouped by tile.

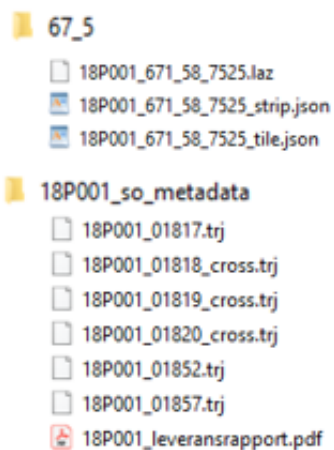
Field	Description	Example
	Geometri, polygon The area of the tile	
klassificeringsniva	Classification level	1
senastandard	Date of the most recent update for example classification	20190508

3 Data access and contents

Data can be downloaded with Geotorget Beställning or from FTP.

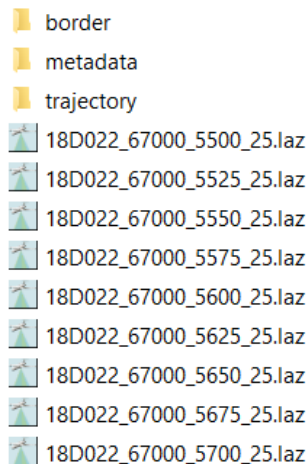
Download with Geotorget Beställning generate folders and files according to description below.

Figure 2. Example of a delivery from Geotorget Beställning



When download from FTP the files are found in data folder “Laserdata Skog” and underlying data folders are divided according to scanning areas.

Figure 3. Directories and files for one scanning area.



3.1 File sets and contents

Table 3. Description of files downloaded with Geotorget Beställning

File name (example)	Description
18D022_670_55_0025.las (supplied compressed in .laz)	Laser data in LAS-format version 1.2, point data record format 1, compressed with Laszip. The filename includes the identity of the scanning area and the coordinates of the lower left corner of the tile. Border files not included, can be downloaded from FTP.
18D022_670_55_0025_strip.json	Metadata in GeoJSON-format, one file for each las-file.
18D022_670_55_0025_tile.json	Metadata in GeoJSON-format, one file for each las-file
18D022_0001.trj 18D022_0022_cross.trj	Trajectory data, one file for each flight line included in current scanning area and cross lines. The filename includes the identity of the scanning area and ID for the flight line (Point Source ID).
18D022_leveransrapport.pdf	The contractor's report on collection, processing and quality control.

Table 4. Description of files downloaded from FTP.

File name (example)	Description
18D022_67500_5500_25.las (supplied compressed in .laz)	Laser data in LAS-format version 1.2, point data record format 1, compressed with Laszip.

File name (example)	Description
	<p>The filename includes the identity of the scanning area, the coordinates of the lower left corner of the tile and the size of the tile given in 100s of metres.</p> <p>Border files are found in folder “border”.</p>
18D022_67500_5500_25_strip.json	<p>Metadata in GeoJSON-format, one file for each las-file.</p> <p>Files are found in folder “metadata”.</p>
18D022_67500_5500_25_tile.json	<p>Metadata in GeoJSON-format, one file for each las-file</p> <p>Files are found in folder “metadata”.</p>
<p>18D022_0001.trj</p> <p>18D022_0022_cross.trj</p>	<p>Trajectory data, one file for each flight line included in current scanning area and cross lines.</p> <p>The filename includes the identity of the scanning area and ID for the flight line (Point Source ID).</p> <p>Files are found in folder “trajectory”.</p>
18D022_leveransrapport.pdf	<p>The contractor’s report on collection, processing and quality control.</p> <p>The file is found in folder “metadata”.</p>