

Slovakia

Creating a new Digital Elevation Model for Slovakia

Progress towards developing a new Digital Elevation Model (DEM) for the whole of Slovakia continued in 2019.

The six-year project will create the new DEM 5.0 from airborne laser scanning data. The laser scanning and following post-processing of data is carried out by private companies with quality control independently performed by the suppliers and the Geodesy, Cartography and Cadastre Authority.

Currently, 17 of the 42 localities, which are known as lots and cover the whole territory, have been completed and published via the authority's geoportal. Individual lots are scanned separately and the process of laser scanning goes from the west of the

country to the east. All the products created from the airborne laser scanning data are provided free of charge.

There are three main outcomes of the project: Digital Elevation Model DEM 5.0; Digital Surface Model DSM 1.0; and Classified Point Cloud.

The project has set mandatory quality criteria such as:

- > Scanning density of at least 5 points per m².
- > Lots with 250m swath on 95% of their overlap.
- > Horizontal and vertical system: S-JTSK(JTSK03)+H_{Bpv}; ETRS89-TM34+h_{ETRS89}.
- > Absolute vertical accuracy of point cloud at ellipsoidal heights ETRS89 - $m_h \leq 0.15$ m.
- > Absolute positional accuracy of point cloud in ETRS89-TM34 - $m_{xy} \leq 0.30$ m.
- > Absolute vertical accuracy of DMR 5.0 in ETRS89-h - $m_h \leq 0.20$ m.

The control of absolute horizontal and vertical accuracy is performed at geodetically surveyed checkpoints located on open paved areas at several randomly selected locations within each lot.

