



Pan Mapa – Profile Tool

Quick guide: installation and use · version 1.2.1

Terrain profiles in QGIS and from the command line · Polish PL-1992 grid (EPSG:2180)

1. What it does

The tool processes terrain profiles stored in **ProfilTerenu_*.txt** files (segments labelled „w górę” / „w dół” — up / down — with X, Y, Z coordinates) and can also build a profile directly from a line layer and a DEM raster. It computes horizontal and slope chainage, generalises the profile, and produces vector layers and DXF drawings.

- **QGIS plugin** — one toolbar icon, four tools, all of them also available in the Processing Toolbox (batch mode and models included).
- **Command-line version** (folder cmd) — the same engine without QGIS, for batch work.
- No external dependencies — QGIS or plain Python 3 is enough.

The interface is in Polish; section 4 lists what each option means.

2. Installation

1. In QGIS: **Plugins** → **Manage and Install Plugins** → **Install from ZIP**, pick `panmapa_profile_tool_1.2.1.zip` and click **Install Plugin**.
2. Make sure the plugin is ticked in the installed list.
3. If an earlier version was installed: close QGIS and delete the old `profil_terenu` folder from `...\QGIS3\profiles\default\python\plugins\` — two copies clash over the same provider id.

The command-line version needs no installation; it sits in the `cmd` folder inside the plugin.

3. First run

A single icon with the Pan Mapa logo appears on the toolbar, plus a **Vector** → **Pan Mapa** menu entry. Clicking it opens a chooser window — you pick the tool there, then its parameters.

The same tools live in the **Processing Toolbox** under the provider **Pan Mapa**, where batch processing and models work as usual.



4. The four tools

Polish name in the interface	What it does	What you provide
Wszystko naraz: warstwy + DXF (Everything at once: layers + DXF)	One pass: four layers, the profile drawing, the 3D polyline and optionally a CSV table — with a single set of parameters.	the .txt file, vertical exaggeration, rest by default
Import profilu terenu (txt) do warstw (Import profile file into layers)	Reads the profile file and creates four layers: points and segments, full and generalised.	the .txt file, CRS (EPSG:2180 by default)

Polish name in the interface	What it does	What you provide
Profil terenu (txt) do DXF (Profile file to DXF)	Longitudinal profile drawing (chainage horizontally, elevations vertically) and a 3D polyline in PL-1992.	the .txt file, vertical exaggeration, Z factor, datum level
Profil terenu z linii i NMT (Profile from a line and a DEM)	Samples an elevation raster along a reference line and yields the same layers; can also write a .txt file in the source format.	line layer, DEM raster, sampling step

Unless you need otherwise, pick the first one — it does the whole job in one go. Output layers are named after the source file, e.g. ProfilTerenu_20260829_1445_punkty (points), ..._odcinki (segments), ..._gen_punkty / ..._gen_odcinki (generalised).

5. Attribute fields

Field	Meaning
km	horizontal chainage — distance measured in plan view
km_skos	slope chainage — distance along the terrain, $\sqrt{(\Delta x^2 + \Delta y^2 + \Delta z^2)}$ accumulated
Z / Z_wzgl	elevation / relative elevation, where the lowest point of the profile is 1.00 m
dlugosc / dl_skosna	horizontal and slope length of a single segment
dz / spadek_proc	elevation difference and gradient of the segment, in percent
segment / kierunek	segment number and direction from the source file (up / down)
gen	1 = point kept by generalisation (in the full layer only)

Slope distance depends on the DEM sampling step: a profile sampled every 1 m gives a slightly larger value than the same alignment sampled every 5 m. That is resolution, not an error — compare profiles only at the same step.

6. Generalisation

Three stages in sequence: prominent extrema are kept, then Douglas-Peucker simplification with the deviation measured vertically, then densification using points from the source data. Synthetic points are never created.

Parameter	Default	Effect
Maksymalny odstęp punktów (maximum point spacing)	0 (auto)	0 = 1/20 of the profile length; smaller value = denser description
Tolerancja D-P (Douglas-Peucker tolerance)	0.15 m	allowed vertical deviation of the simplified line
Próg wybitności (prominence threshold)	0.20 m	below this, a peak or hollow is DEM quantisation noise

7. Command-line version

Folder cmd inside the plugin. The script uses the same computation module as the plugin, so results are identical.

Started with no options, the script asks for the parameters — what to write, vertical exaggeration, maximum point spacing, advanced settings and the output folder. Enter keeps the default shown in brackets. Passing any option turns the questions off; --pytaj forces them, --bez-pytan disables them for scripts and scheduled tasks.

```
python cmd/panmapa_profil.py ProfilTerenu_20260829_1445.txt
python cmd/panmapa_profil.py *.txt --wszystko --katalog results
python cmd/panmapa_profil.py profile.txt --przewyższenie 20 --max-odstep 5
```

```
python cmd/panmapa_profil.py profile.txt --tylko-raport
python cmd/panmapa_profil.py --help
```

Option	Effect
--dxf2d / --dxf3d	profile drawing / 3D polyline
--csv / --geojson / --txt	point table, vector data, copy in the source format
--wszystko	all output formats at once
--pelne	write the full, non-generalised profile to CSV and GeoJSON
--tylko-raport	write nothing, print statistics only
--katalog DIR	output folder (next to the source file by default)
--przewyzszenie / --max-odstep	vertical exaggeration / maximum point spacing
--pytaj / --bez-pytan	always ask for parameters / never ask

On Windows the easiest way is `cmd\profil.bat` — drag one or more `.txt` files onto it. The script asks a few questions, computes everything and leaves the console open with a report:

```
=== ProfilTerenu_20260829_1445.txt ===
Punkty (points): 222 (generalised: 38)
Dlugosc pozioma (horizontal): 220.23 m
Dlugosc skosna (slope): 221.26 m (+1.02 m, +0.46%)
segments up: 113.24 m horizontal / 113.78 m slope
segments down: 107.00 m horizontal / 107.48 m slope
Rzedne (elevations): 94.70 - 97.30 m (relief 2.60 m)
```

8. Troubleshooting

Symptom	What to do
Clicking the icon does nothing, or „algorithm is not registered”	A second copy of the plugin is present in the plugins folder. Close QGIS, delete the old folder, start QGIS again.
Error while uninstalling an older version	Close QGIS and delete the plugin folder by hand — the Plugin Manager cannot uninstall a plugin that fails while unloading.
The plugin does not load	Read the message in View → Panels → Log Messages, tabs „Plugins” and „Python warnings”.
No elevations in the DEM-based profile	The line falls outside the raster extent, or the CRSs do not match — check the messages in the algorithm window.

The plugin is free. If it saves you time, you can buy a coffee: buymeacoffee.com/panmapa — the link is also in the **Vector** → **Pan Mapa** menu and in the footer of the plugin window.