



GeoEasy^{OS} 3.1

The development of the GeoEasy program started in 1997. Twenty years later in 2017 it has become free software under GPL license, freely available for everybody. The ComEasy module of the project was released under open source license from the beginnings (see <https://github.com/zsiki/ComEasy>). The core development of GeoEasy is made on Linux operating system, using Tcl/Tk script language, thanks to the Tcl/Tk ports to several operating system the program can be used on Linux, on Windows (32 and 64 bit version), on Android tablets and on OSX machines. Intensive tests of the code were made on Linux and Windows only.

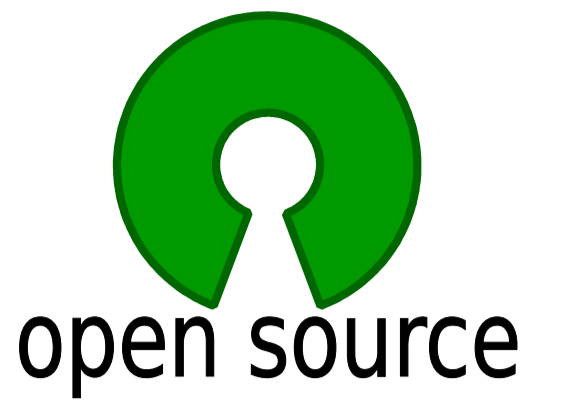
New features:

- German, Czech, Russian GUI
- Tcl console for your scripts
- Portable windows release
- Variable column widths in field-books
- Parallel line regression

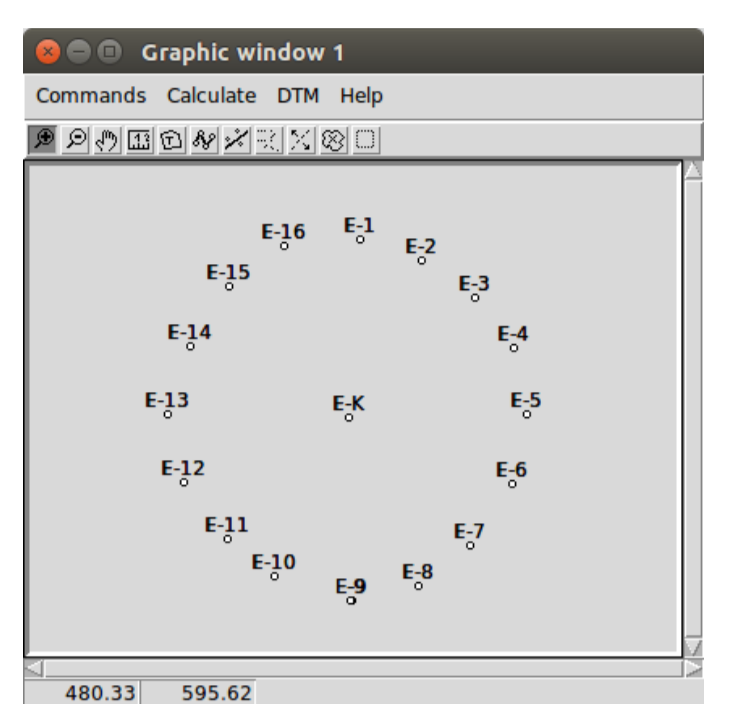
- Vertical transformation
- KML export of coordinate list
- Many bugfixes
- More than 180 commits and 43 issues solved after 3.0

Objectives

- User friendly graphical user interface
- Modular, extendable structure
- Direct process of data from total stations
- Flexibility and openness connecting to other programs
- Educational and professional usage



Graphic window



Field-book

Station number	Point number	Signal height	Horizontal angle	Vertical angle	Slope distance
Reference object	Instrument height	Horizontal ref. angle			Horizontal distance
kalvaria	ordogorom	1.450			
5004	328.7886				
5002	363.7417				
szegvar	377.5179			954.730	
231	78.9108				
231	258.7759				
5004	302.0500				
5002	331.1481			1117.280	
kalvaria	371.4846				
231	379.9639				
5002	58.6701				
5004	223.3142				
231	236.2438				
kuphegy	523.2898				
szegvar	194.9256				
kalvaria	32.9941			1078.440	
5002	56.8861				
5004					

Coordinate list

Point number	Point code	Easting	Northing	Elevation
		Easting prem.	Northing prem.	Height prem.
101	89817.601	3124.333	125.316	
102	89888.176	3112.641	126.834	
103	90043.336	3181.331	127.003	
201	90257.641	3134.366	124.375	
202	90112.929	3104.322	120.762	
231	88568.240	2281.760		
232	88619.860	3159.880		
301	90543.542	2842.501	139.243	
302	90467.022	2904.657	137.432	
303	90443.190	2958.541	139.844	
5001	89562.497	3587.526	180.000	
5002	90587.628	2590.110	138.800	
5003	89398.565	2775.084	118.425	
5004	90246.207	2195.193		
gurgohegy	84862.540	3865.360		
kalvaria	91515.440	2815.220	111.920	
kuphegy	90050.240	3525.120		
magyarlak	86808.180	347.660		
ordogorom	90661.580	1475.280		
szegvar	91164.160	4415.080	130.000	

Download the binary releases for Windows and Linux:
http://digikom.hu/english/geo_easy_e.html

Development tool

- Console window to run ad-hoc Tcl commands
- Extend the functionality of GeoEasy with user defined scripts loaded from file
- Write your own app using GeoEasy as a library



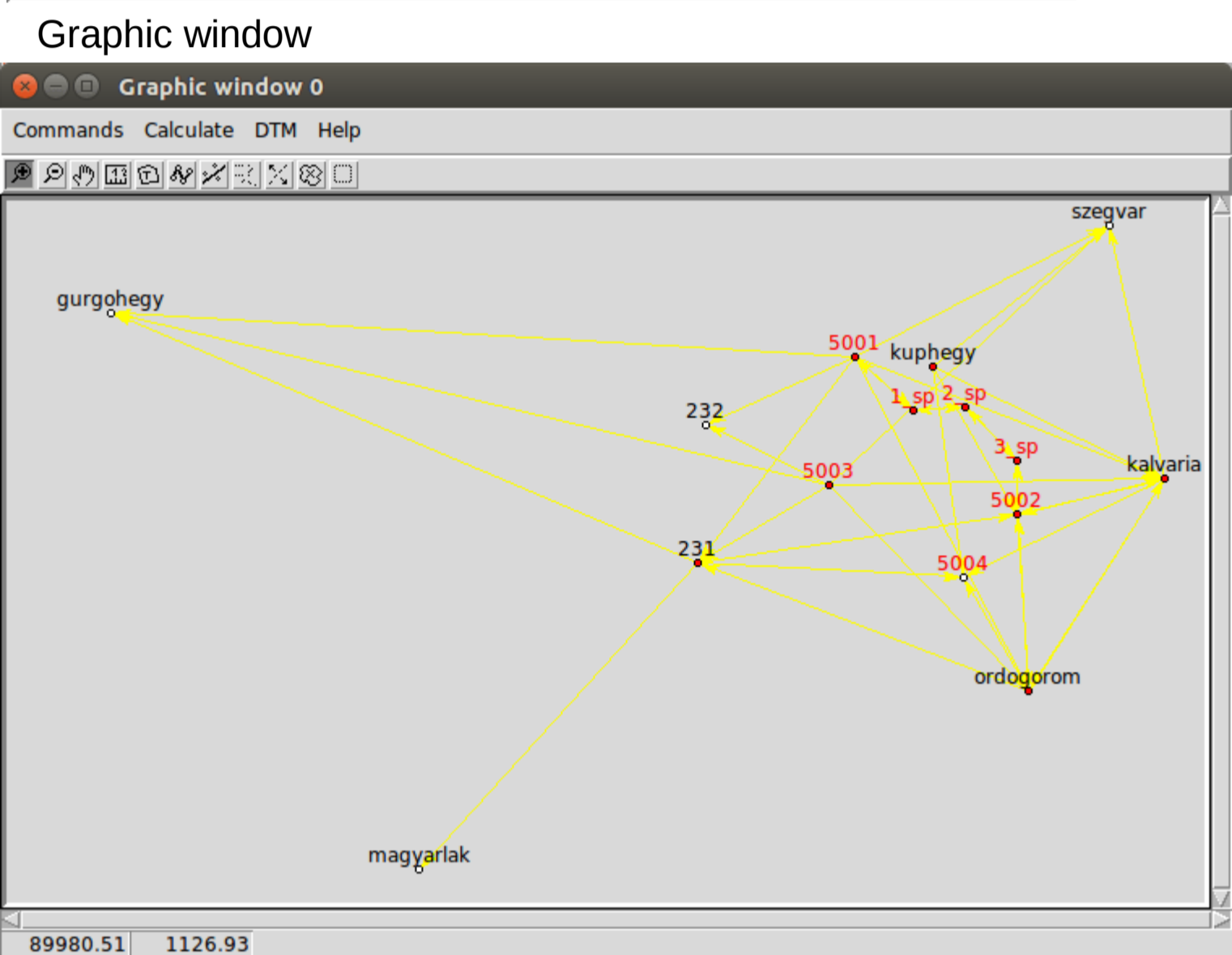
Regression circle

Calculation results

2017.11.01 12:10 - Circle
 YO = 477.688 XO = 589.631 R = 29.568

Point num	E	N	dE	dN	dR
E-1	479.390	619.630	-0.027	-0.478	-0.479
E-2	489.810	616.200	0.151	0.332	0.364
E-3	498.750	610.025	0.180	0.174	0.251
E-4	505.080	601.470	-0.250	-0.108	-0.273
E-5	507.319	590.356	-0.071	-0.002	-0.071
E-6	504.929	578.789	0.232	-0.092	0.249
E-7	497.890	568.570	0.267	-0.278	0.385
E-8	489.140	561.830	-0.190	0.461	-0.499
E-9	478.040	559.480	-0.007	0.584	-0.584
E-10	465.190	563.560	-0.284	-0.592	0.657

RMS=0.417



Surveying calculations

- Edit field-books
- Intersection, resection, orientation, ...
- Traversing, trigonometric line
- Coordinate transformations
- Coordinate list and field-book import (several formats)
- DXF export

Regression calculation

- Solving engineering surveying tasks
- Regression lines, plan, circle, sphere, 3D line, parallel lines

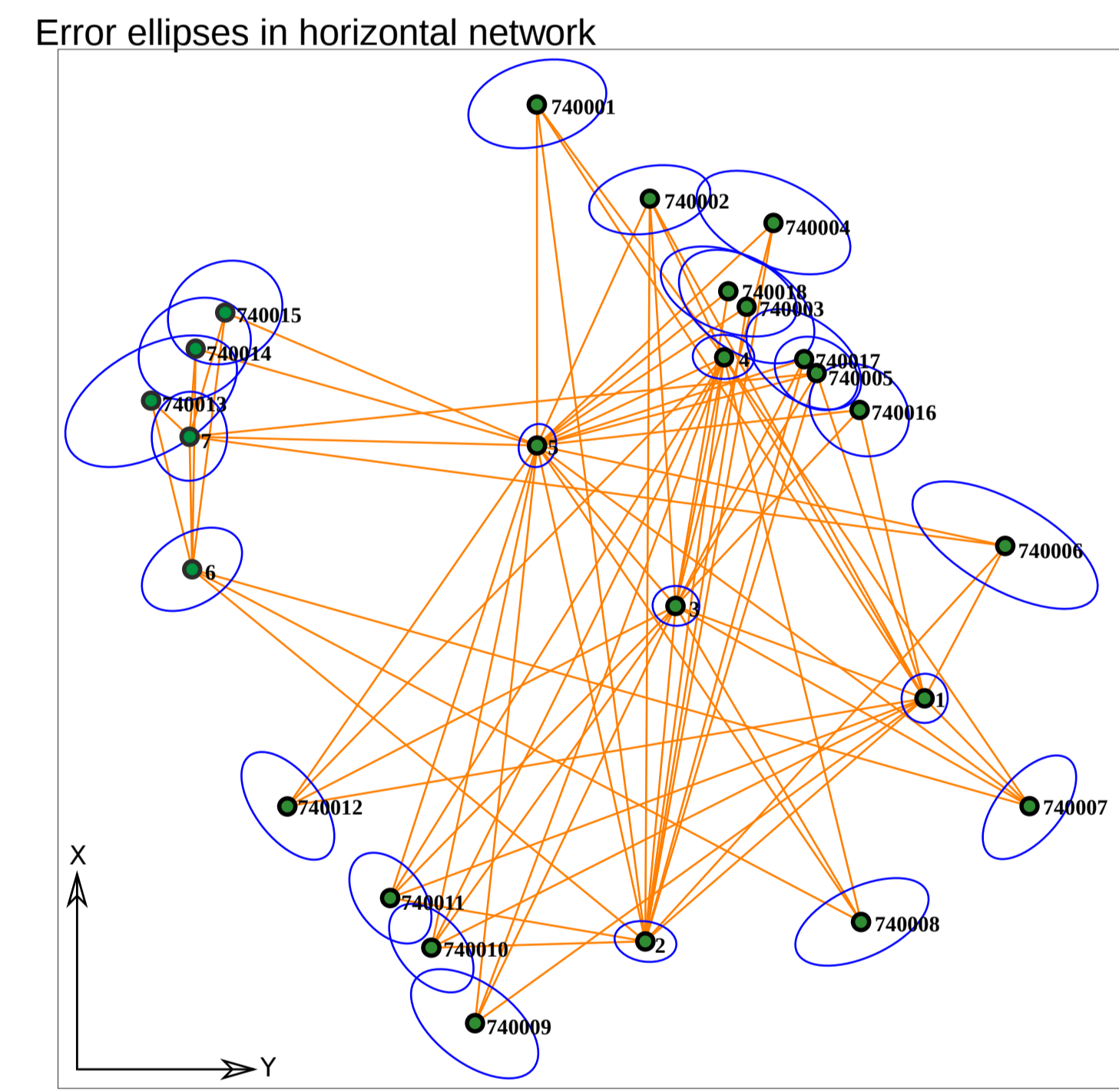
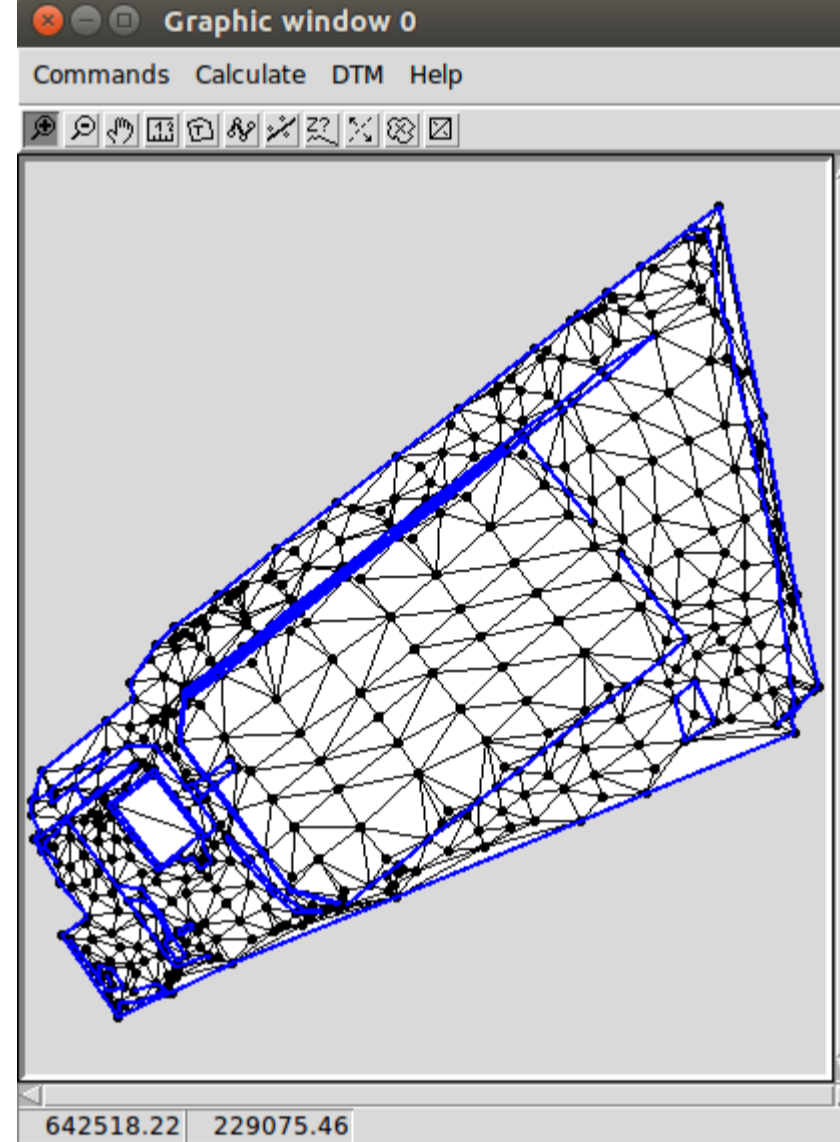
Network adjustment

- 1D/2D/3D geodetic network
- Normality check
- Data snooping
- Network sketch with error ellipses

Digital Terrain Models

- DXF import
- TIN models
- Break lines
- Contour lines
- Volume calculation
- Cross sections
- VRML, KML, DXF, ASCII GRID export
- Update, regenerate

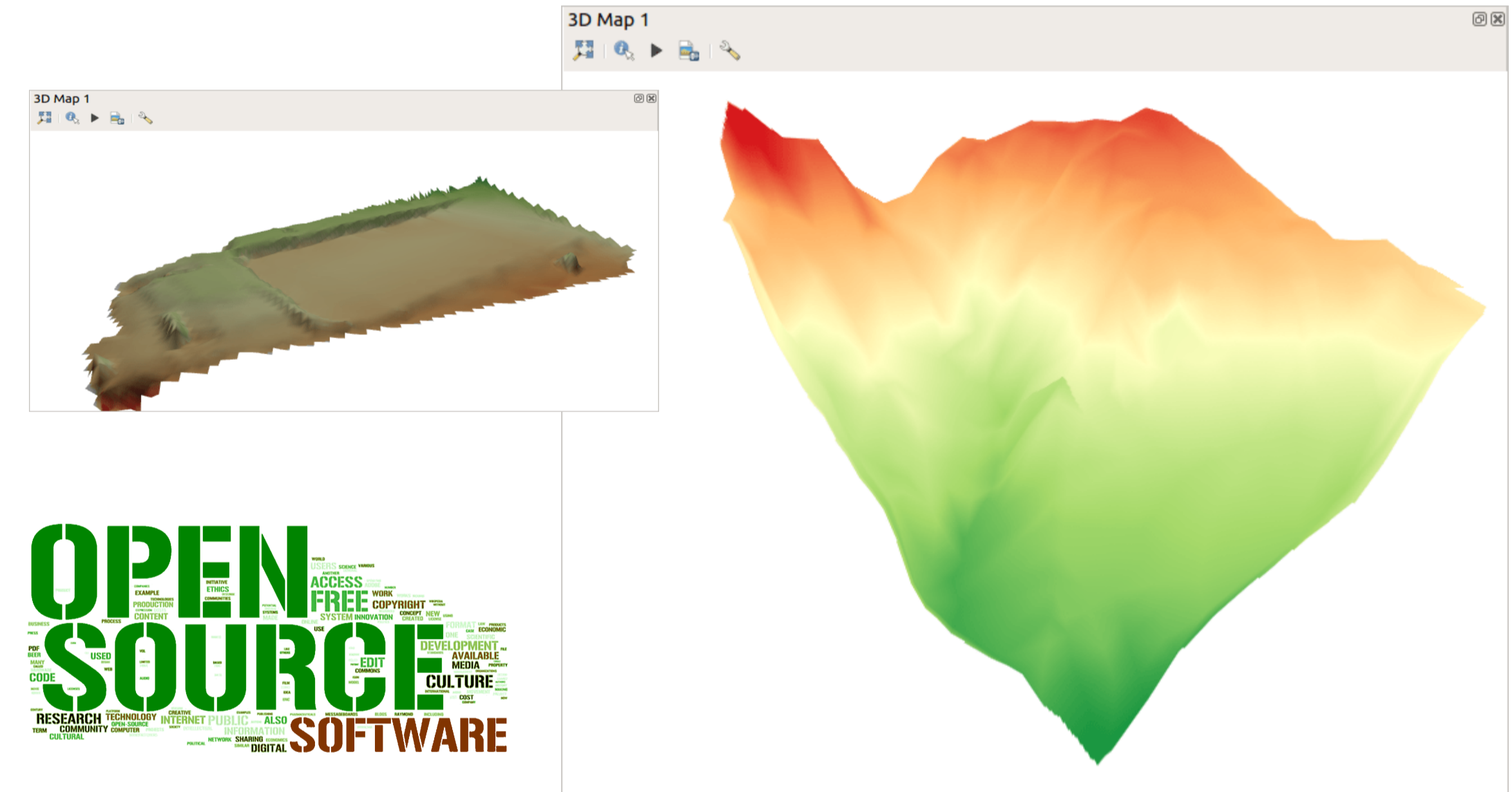
TIN model (Triangle)



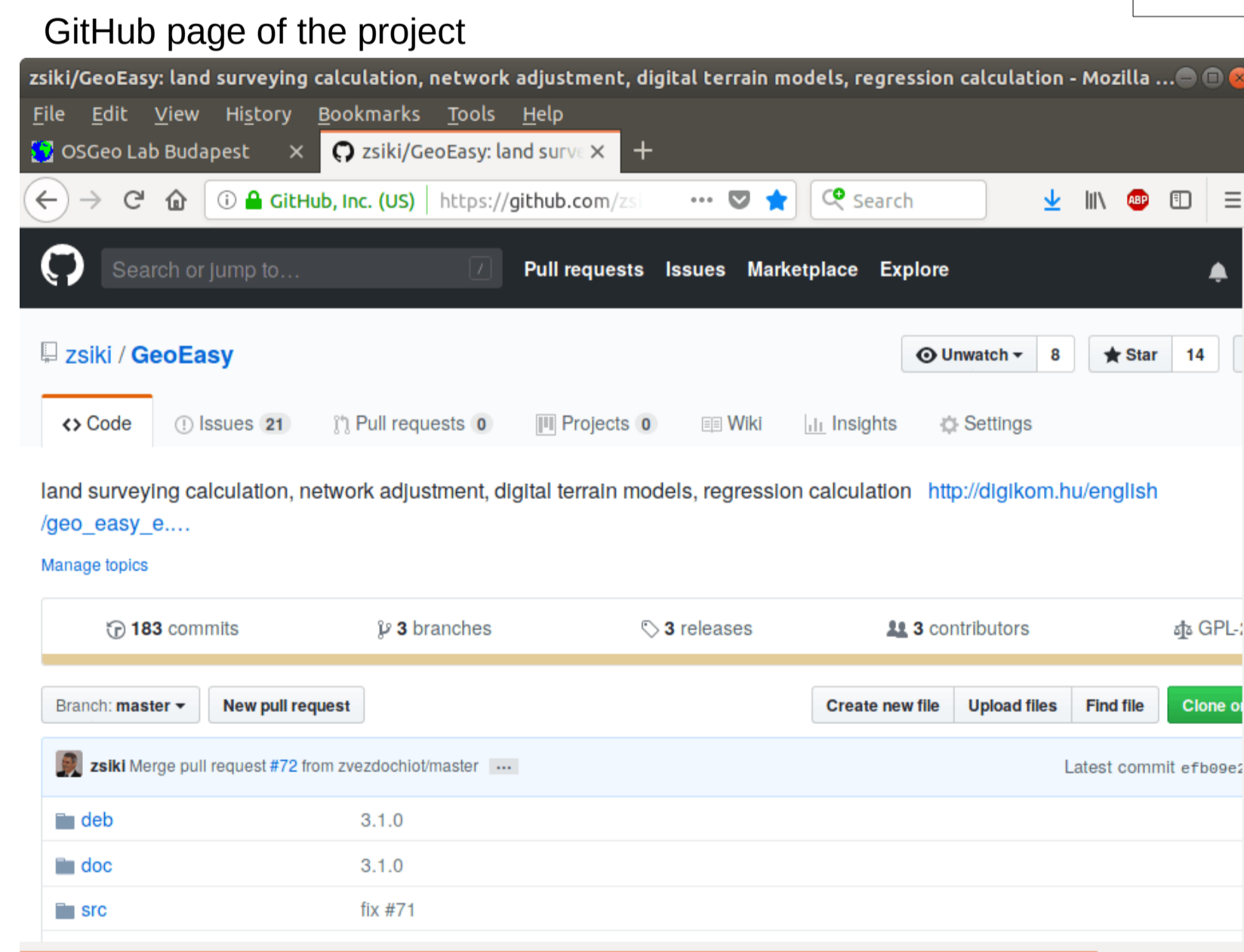
Adjustment results (GNU Gama)

Adjusted coordinates

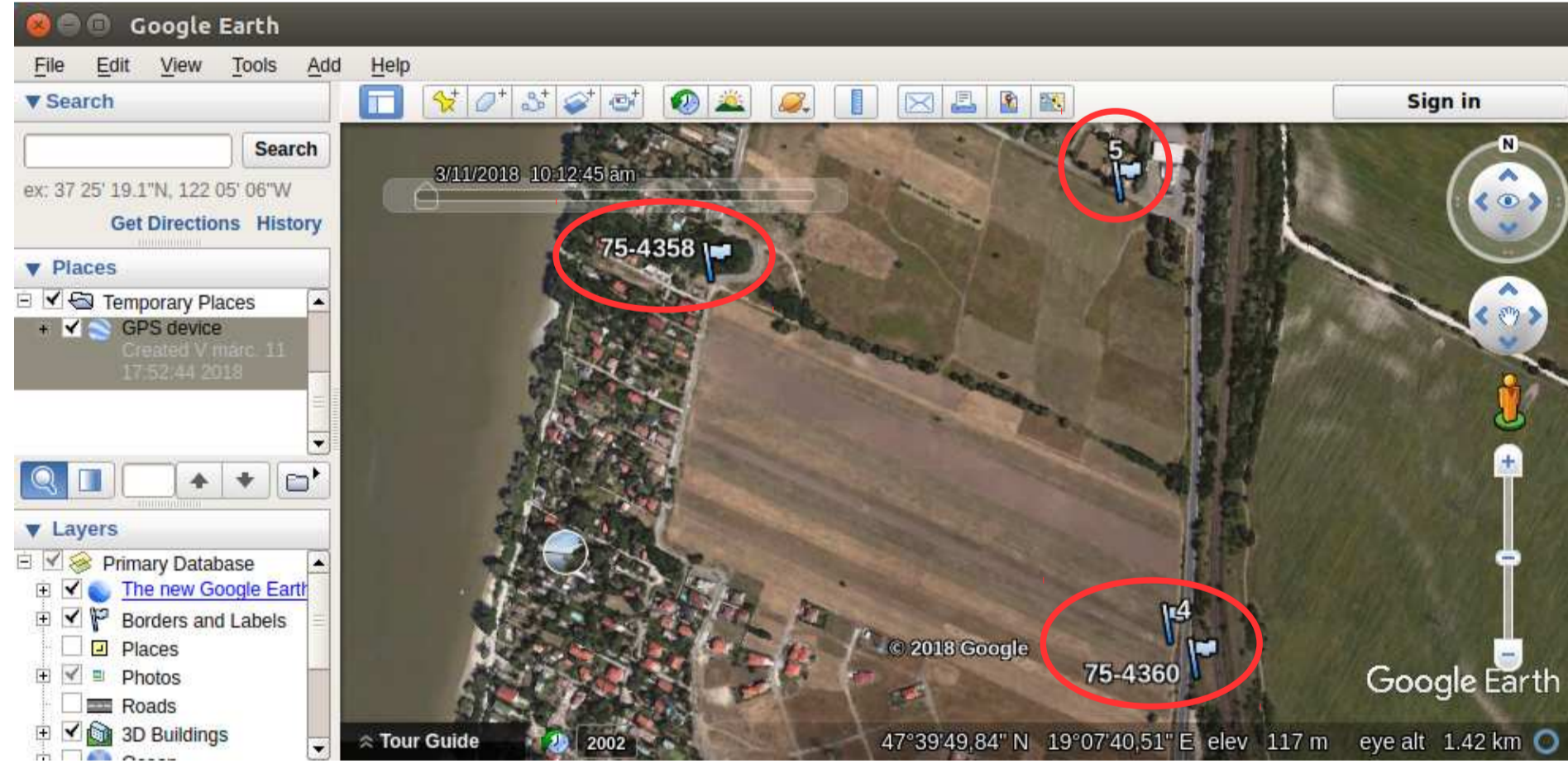
i	point	approximate value	correction [m]	adjusted value	std.dev [mm]	conf.i.
17	X *	735.53500	-0.00002	735.53498	0.4	0.7
18	Y *	598.88300	0.00013	598.88313	0.3	0.7
2						
23	X *	673.49900	-0.00001	673.49899	0.3	0.6
24	Y *	527.57600	-0.00087	527.57513	0.4	0.8
3						
1	X *	759.06300	-0.00002	759.06298	0.3	0.6
2	Y *	535.25100	-0.00007	535.25093	0.3	0.6
4						
36	X *	822.31000	0.00005	822.31005	0.3	0.7
37	Y *	547.62300	-0.00015	547.62285	0.4	0.9



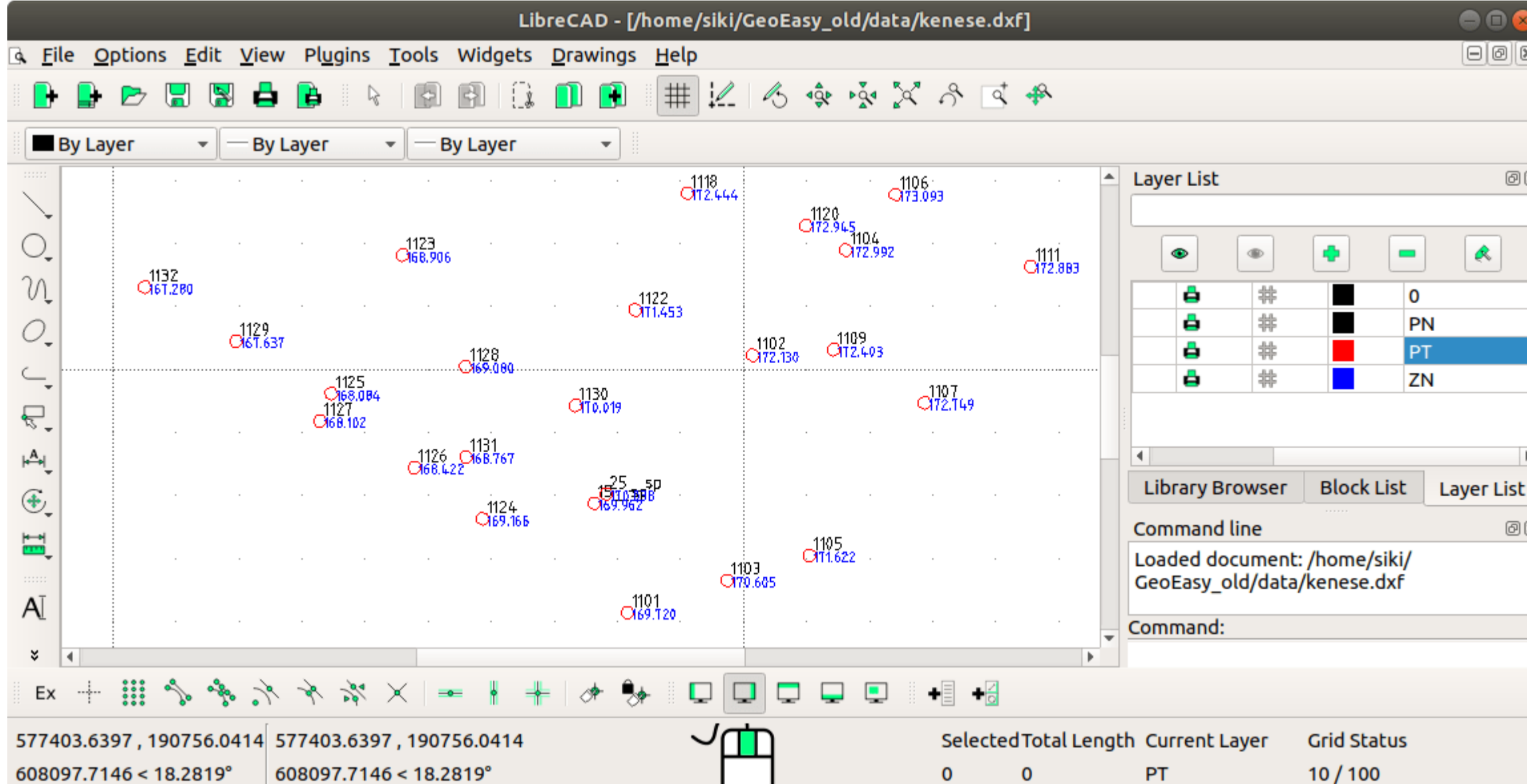
Exported GRID model in QGIS 3



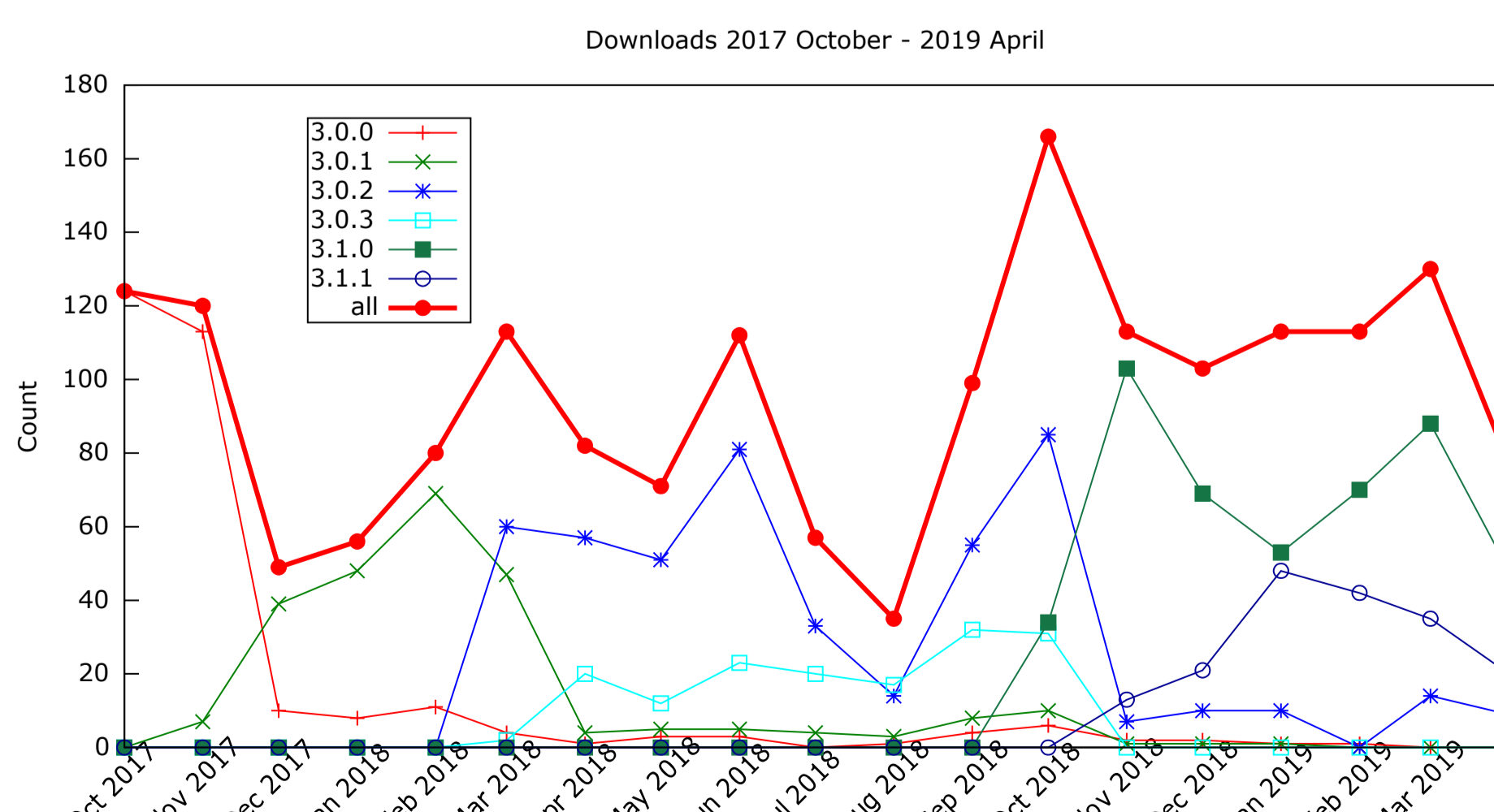
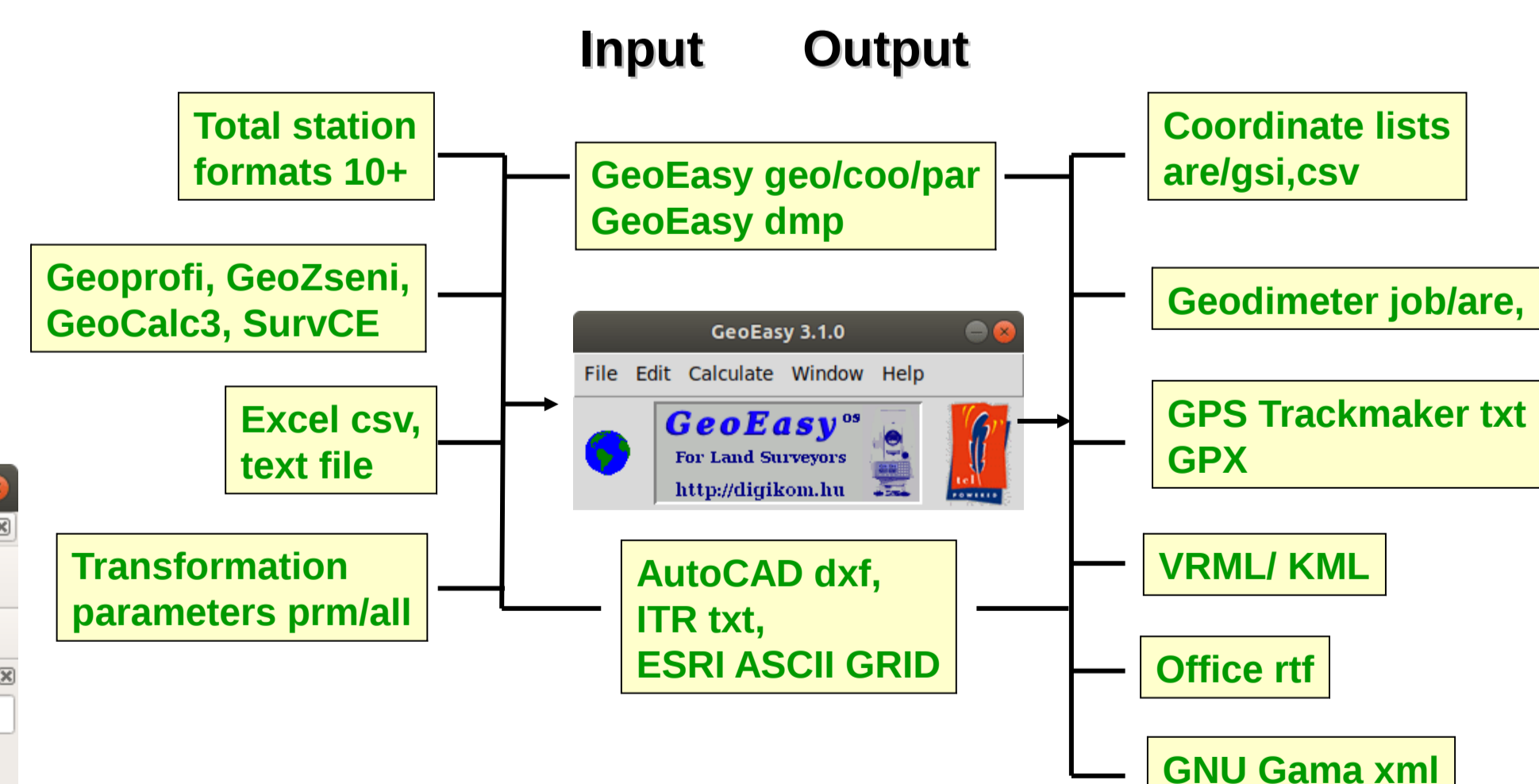
Exported (GPX) points in GoogleEarth



Exported (DXF) points in LibreCAD



Connections to other programs through data sets



OS software used

- Tcl/Tk (<https://www.tcl.tk/>)
- GNU Gama (<https://www.gnu.org/software/gama/>)
- Triangle (<https://github.com/MrPhil/Triangle>)
- Proj (<https://proj4.org/>)
- NSIS (http://nsis.sourceforge.net/Main_Page)
- Freewrap (<http://freewrap.sourceforge.net/>)

Let us develop GeoEasy together!

- Source code available on GitHub (<https://github.com/zsiki/GeoEasy>)
- Report the errors you found in issue tracker (<https://github.com/zsiki/GeoEasy/issues>)
- Extend and correct the documentation (<https://github.com/zsiki/GeoEasy/doc>)
- Help other users (<https://github.com/zsiki/GeoEasy/wiki>)

