



**Česká geologická služba**  
Czech Geological Survey



## Geological Documentation





Geological documentation is a **record of data** needed to compilation of geological map/report

Archive documentation

Field documentation

Exploration/mining documentation

Laboratory documentation





## Why field documentation?

Geological mapping is the process of making observations of geological phenomena in the field and recording them.

The information recorded must be factual, based on objective examination and made with an open mind.

Documentation is a base for compilation of the geological map and serves for checking of the map.





# Field documentation

Documentation in a topographic map

Field notebook

GPS documentation

Photo-documentation







# Documentation in a topographic map

Traversing is a basic method of geological mapping.

Traversing is made by walking a more or less predetermined route from one point to another, plotting the geology on the way.

The rocks are marked to topographic map by colours or agreed symbols and are completed by position of reference point, tectonic symbols and supplementing informations.

Alternatively, traverse could be saved as a track in GPS or using applications in SmartPhones





Geological field maps are records of factual observations made in the field.

They are not interpretative maps!

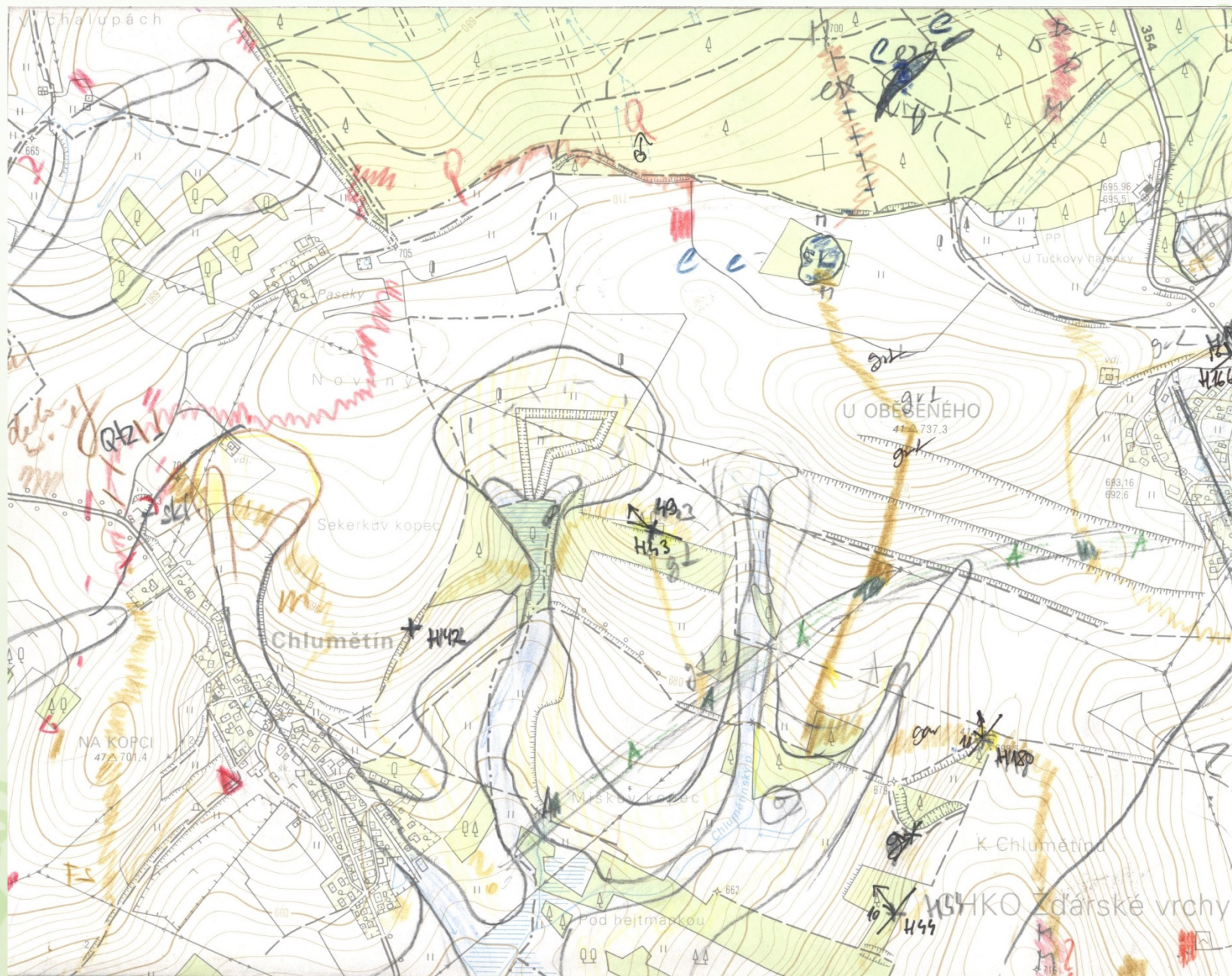




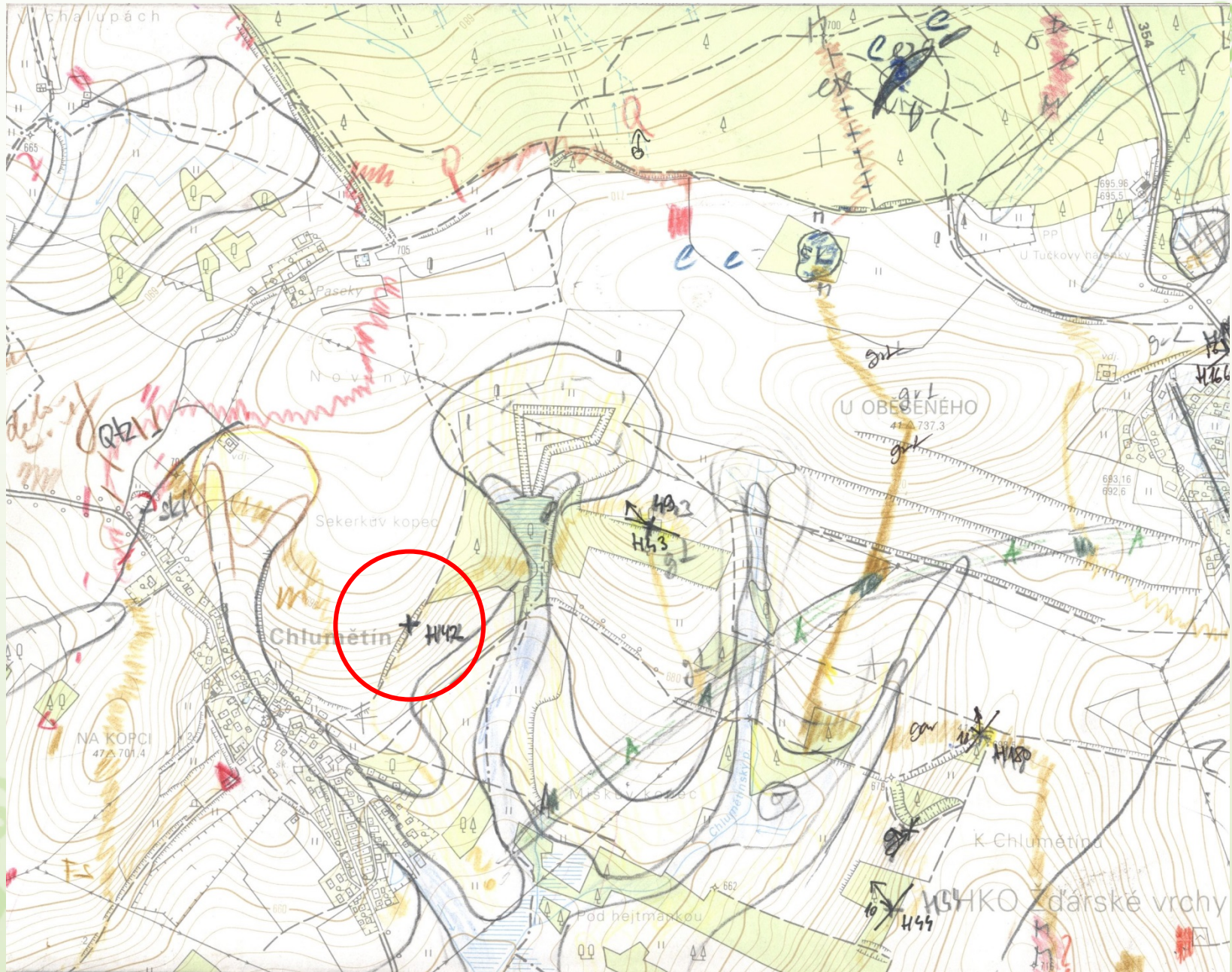
## Hand made pencil remarks in field map



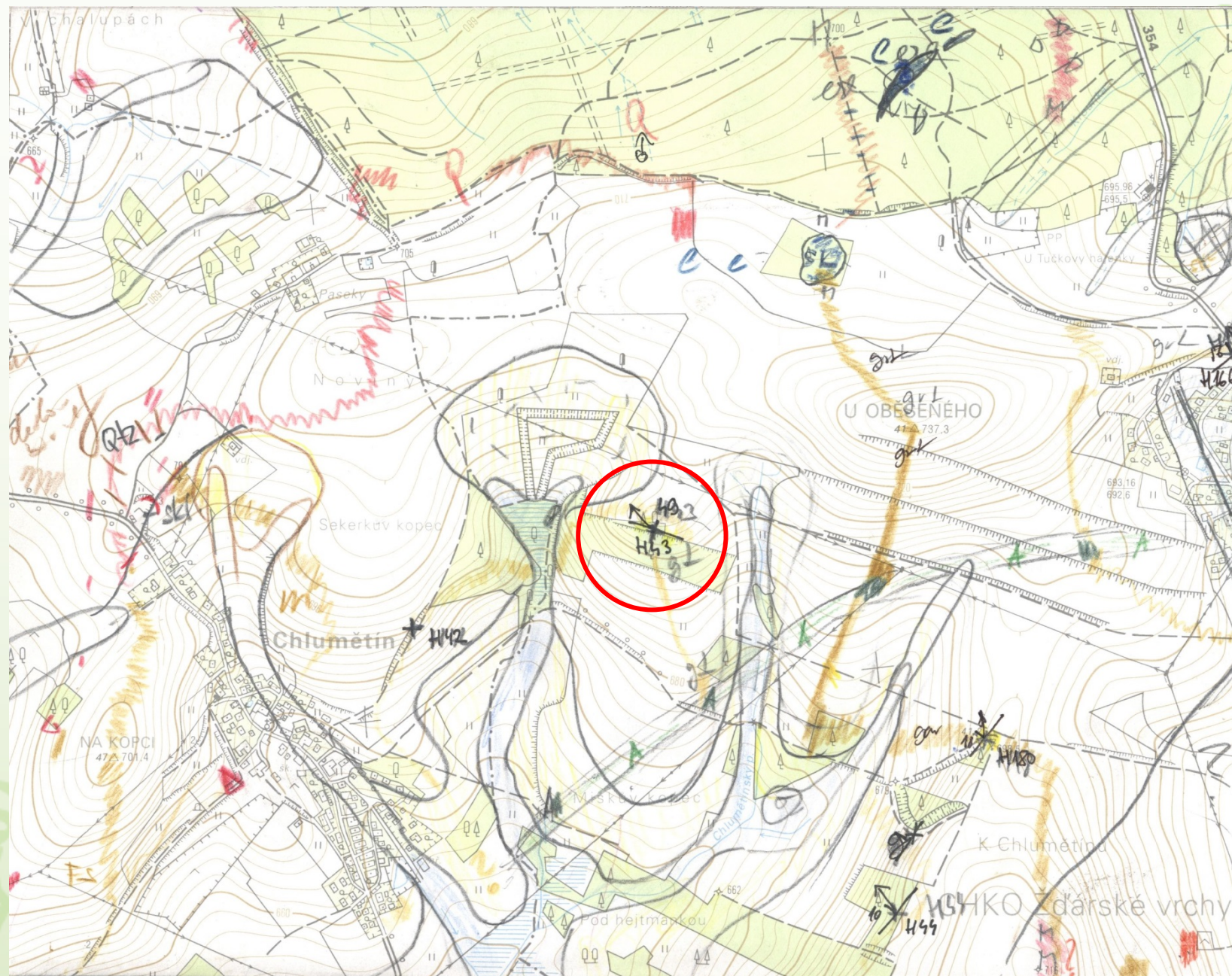








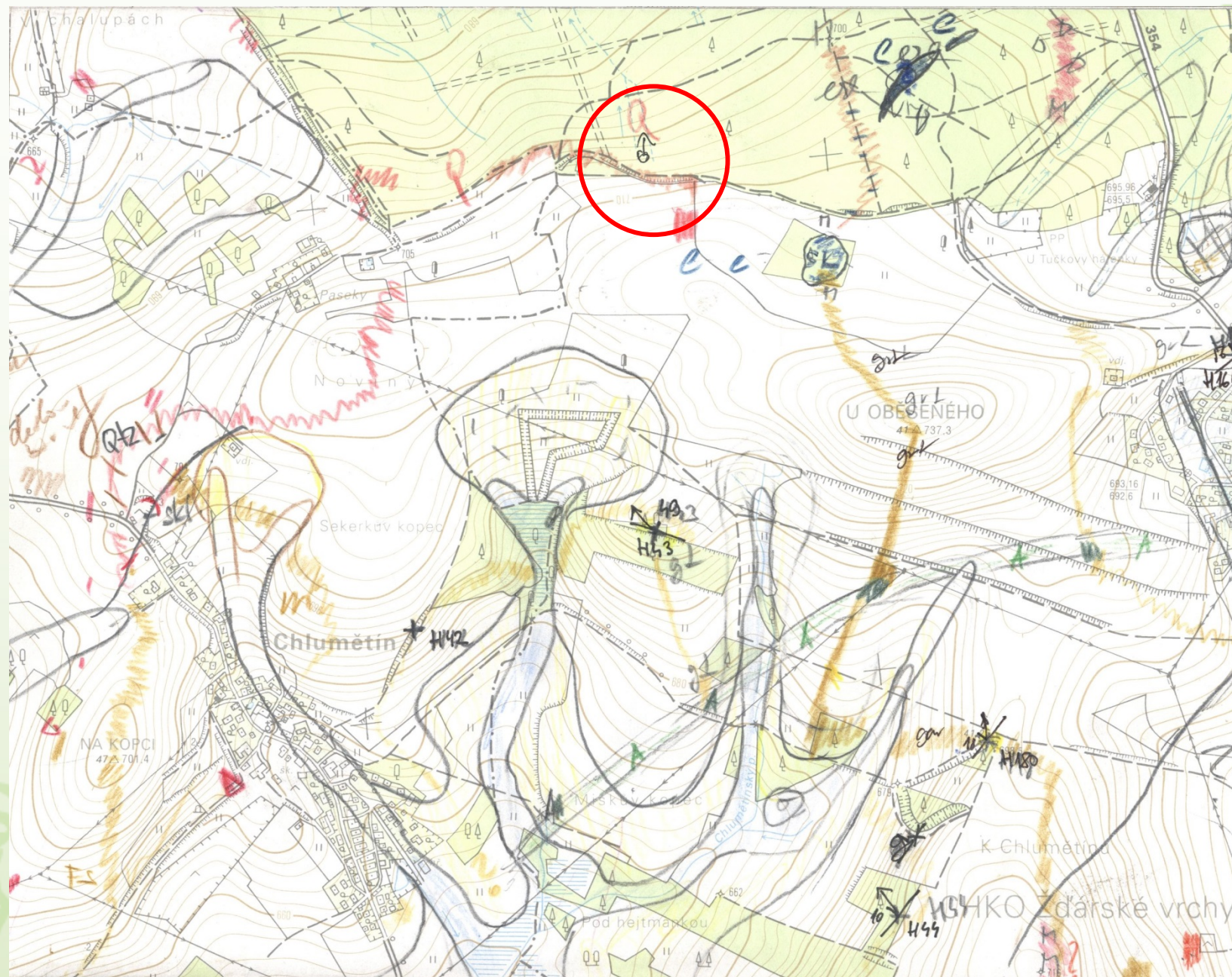
















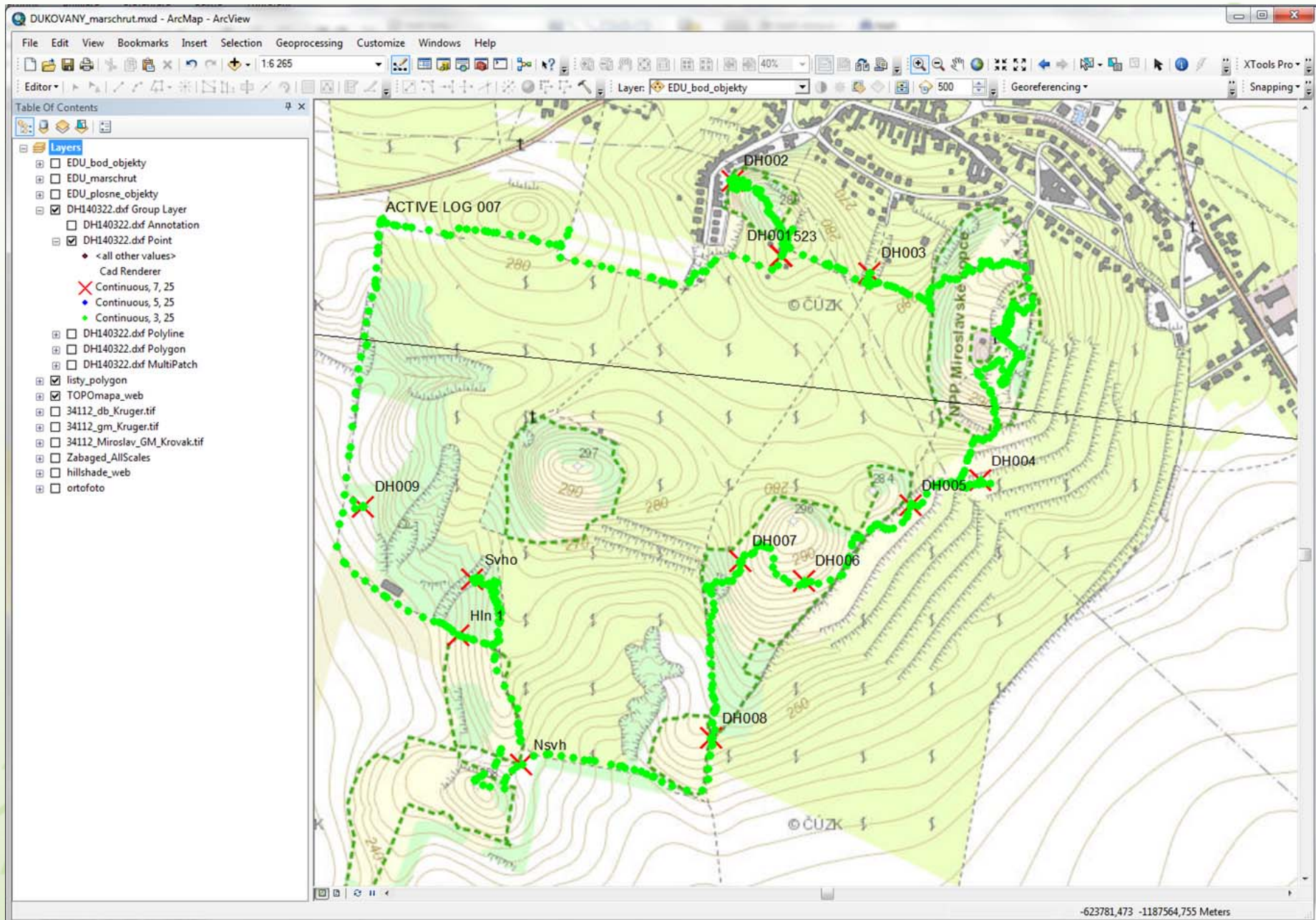
Remarks done by GPS or mobile GIS device



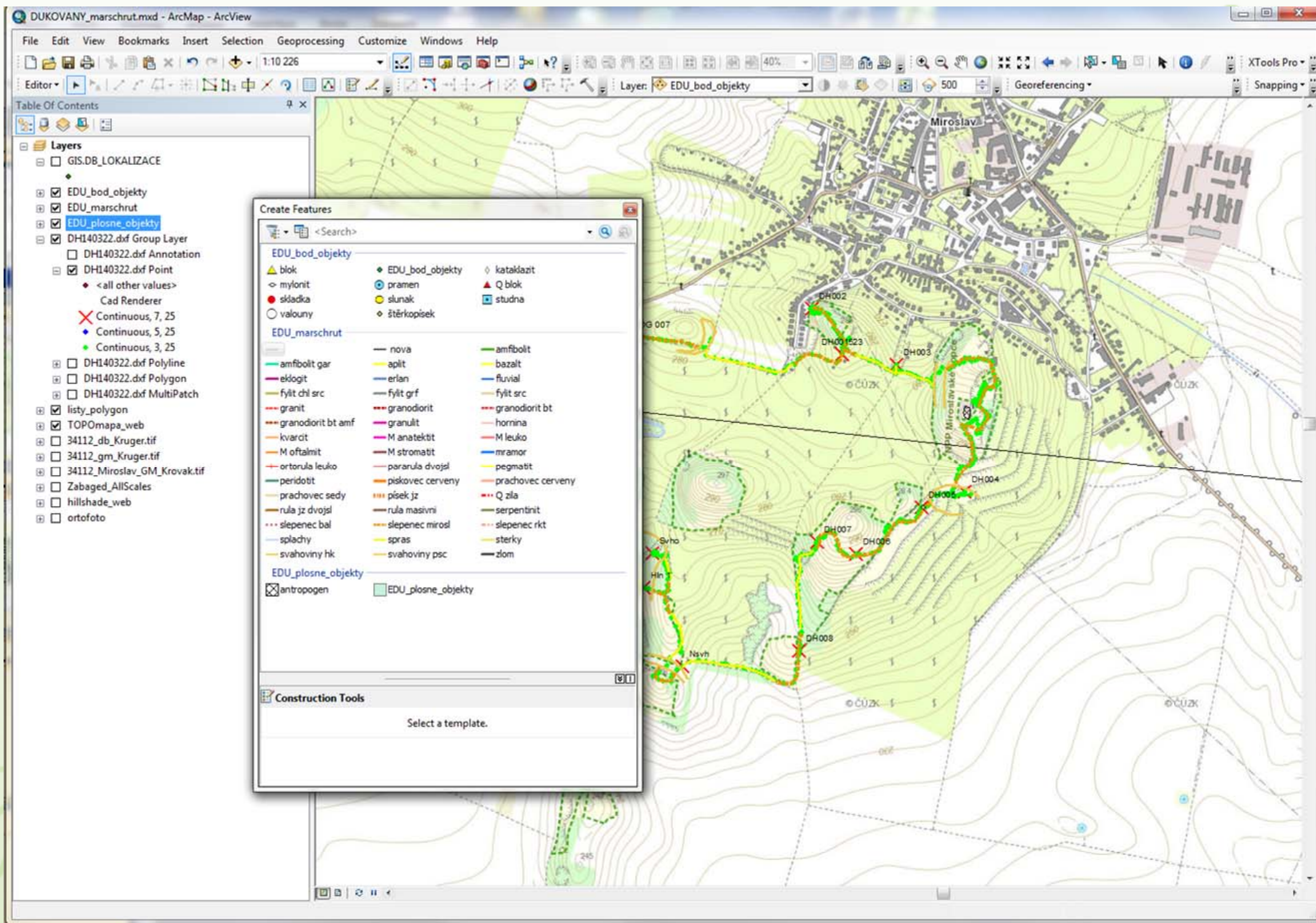














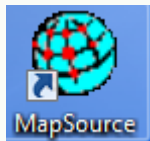
# How to get GPS data to ArcGIS?

MapSource

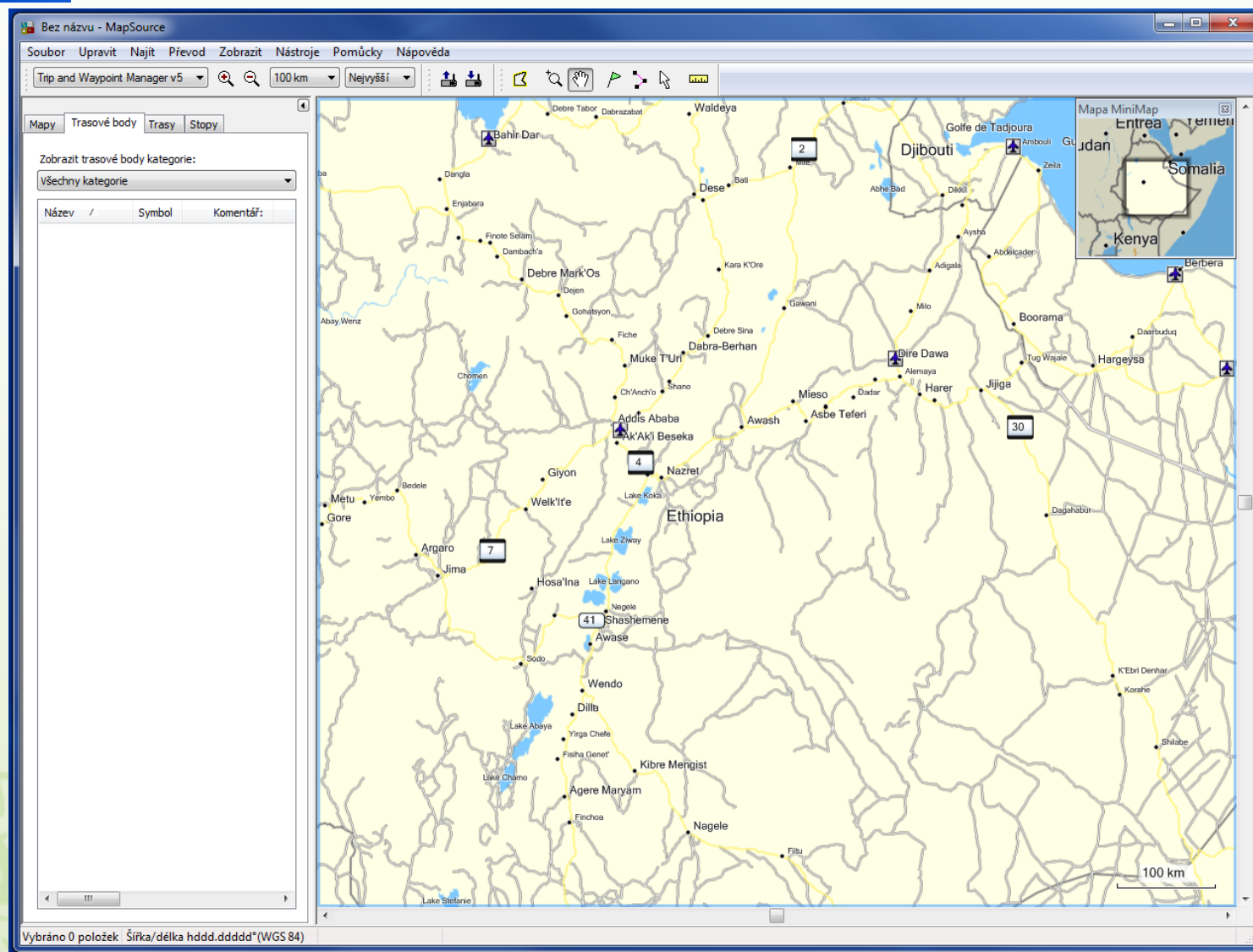
BaseCamp

QGIS



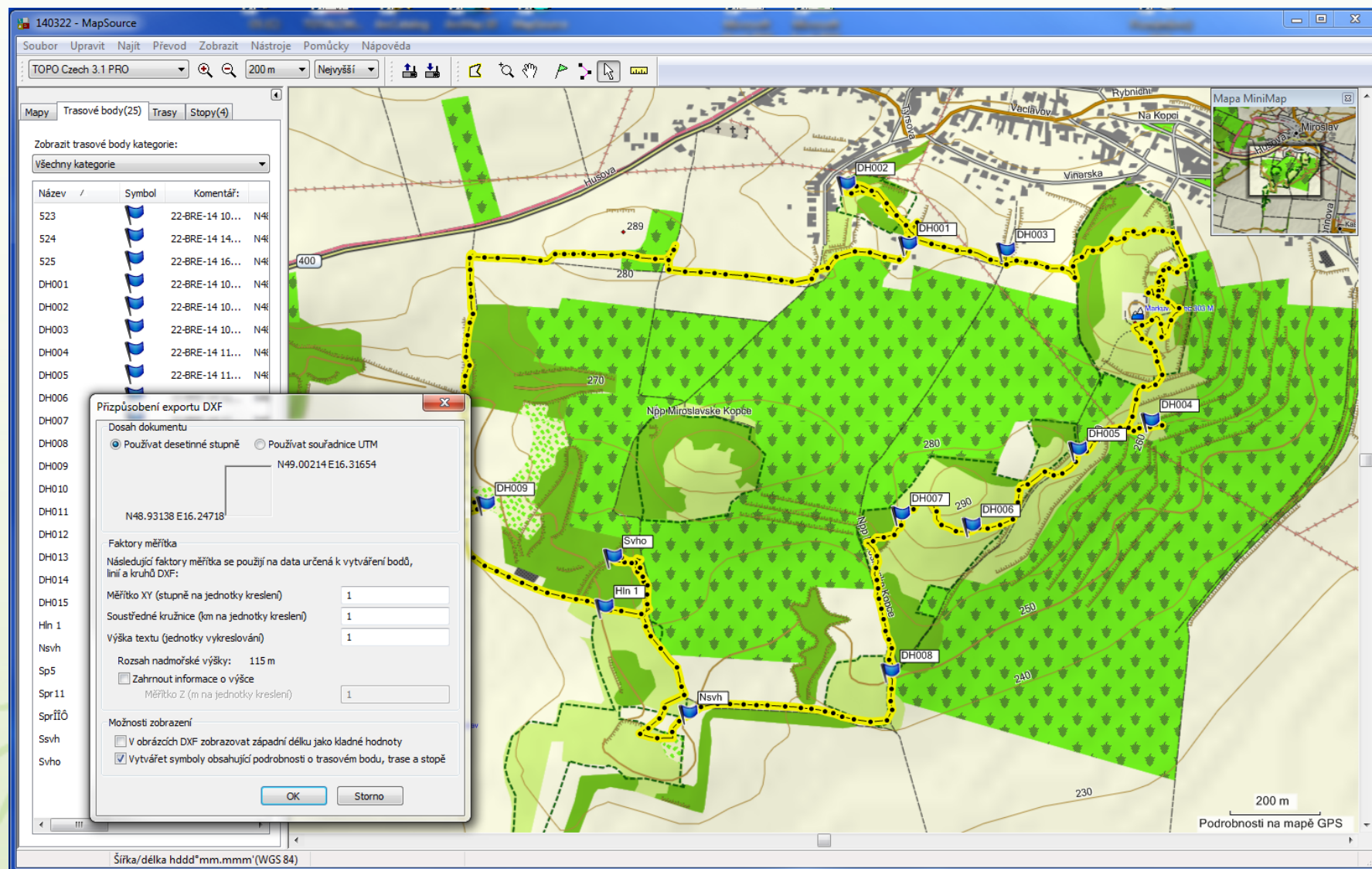


# Garmin MapSource

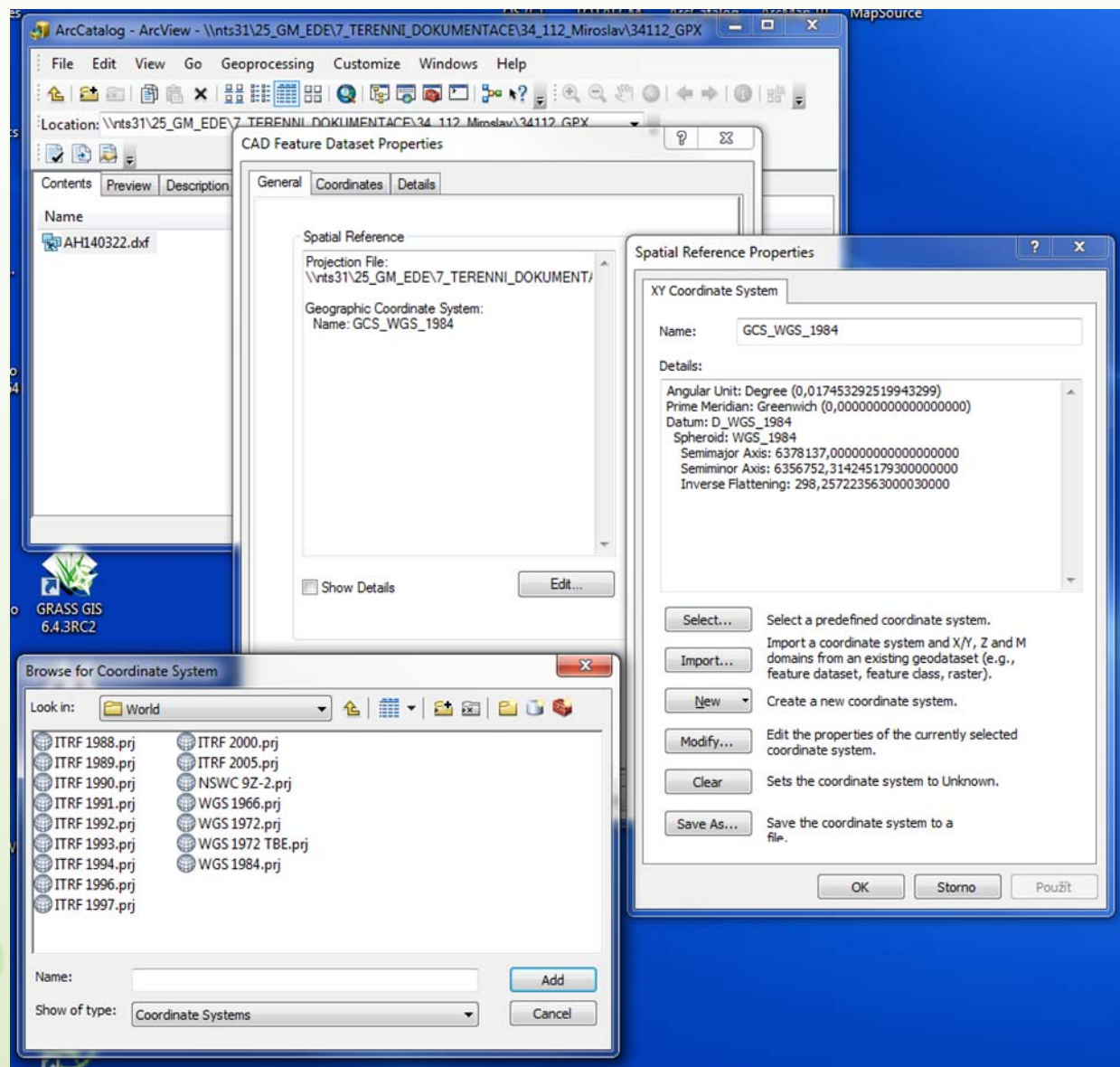




# Save as DXF

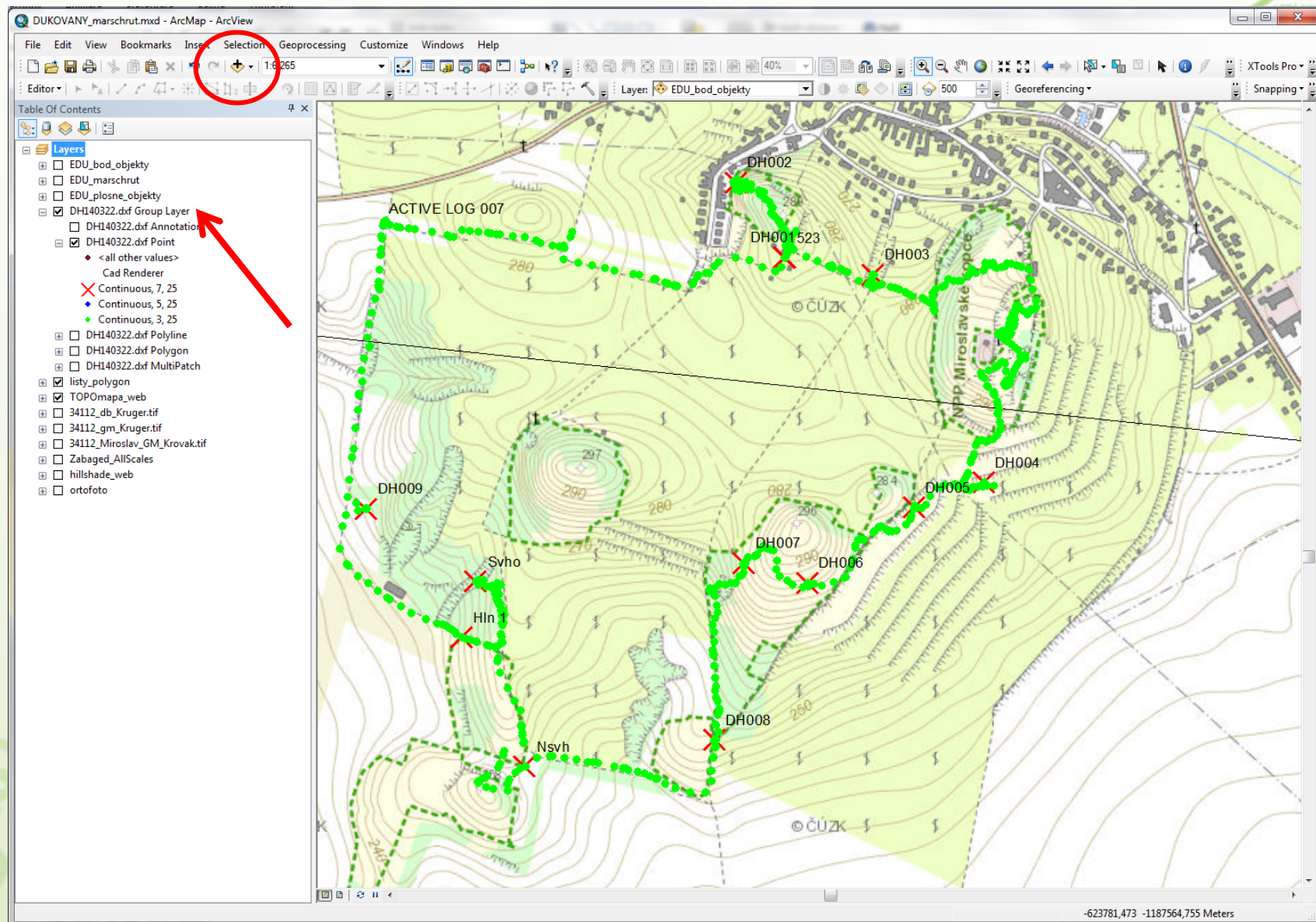


# Setting a coordinate system in ArcCatalog



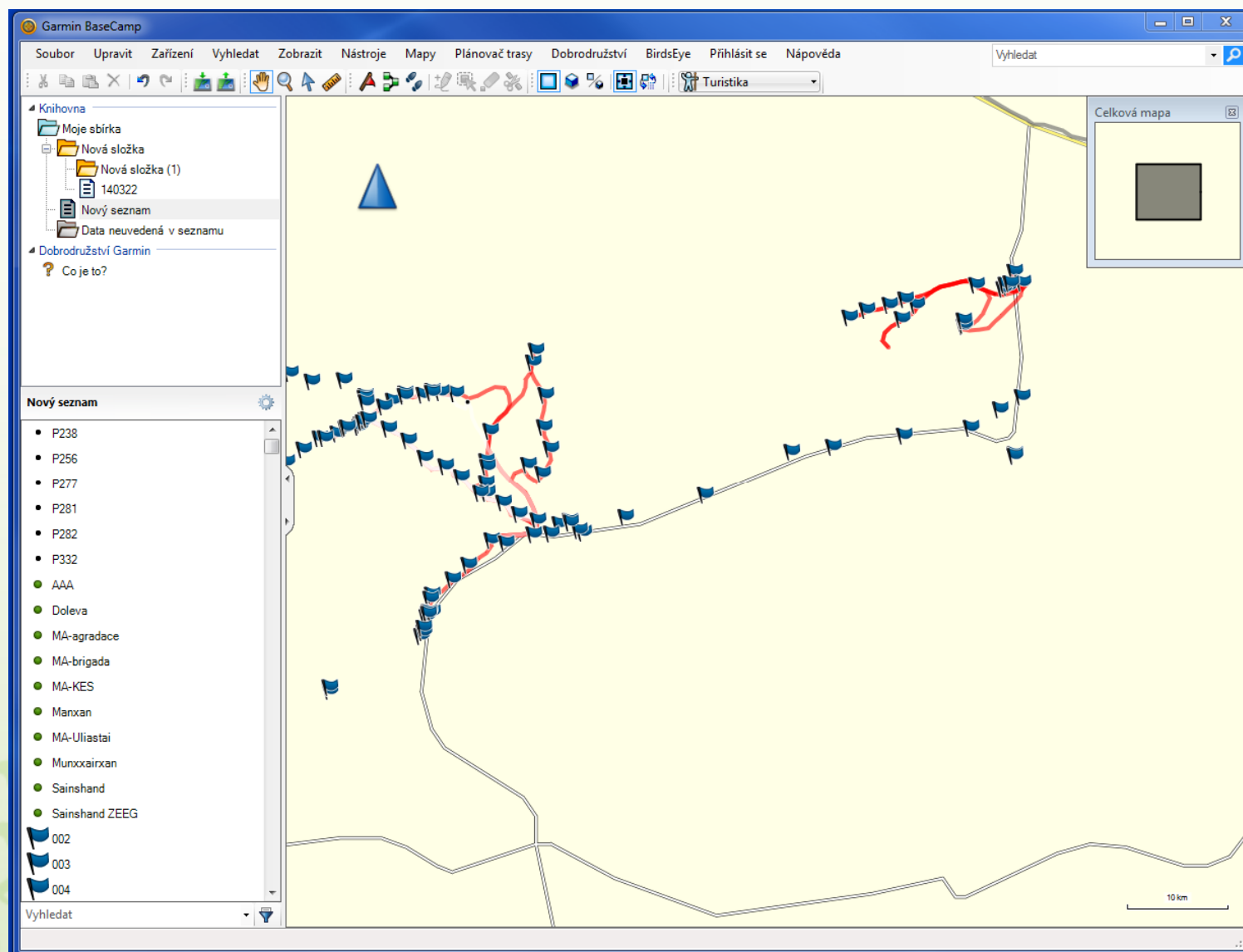


# Add to ArcGIS project by „yellow +“

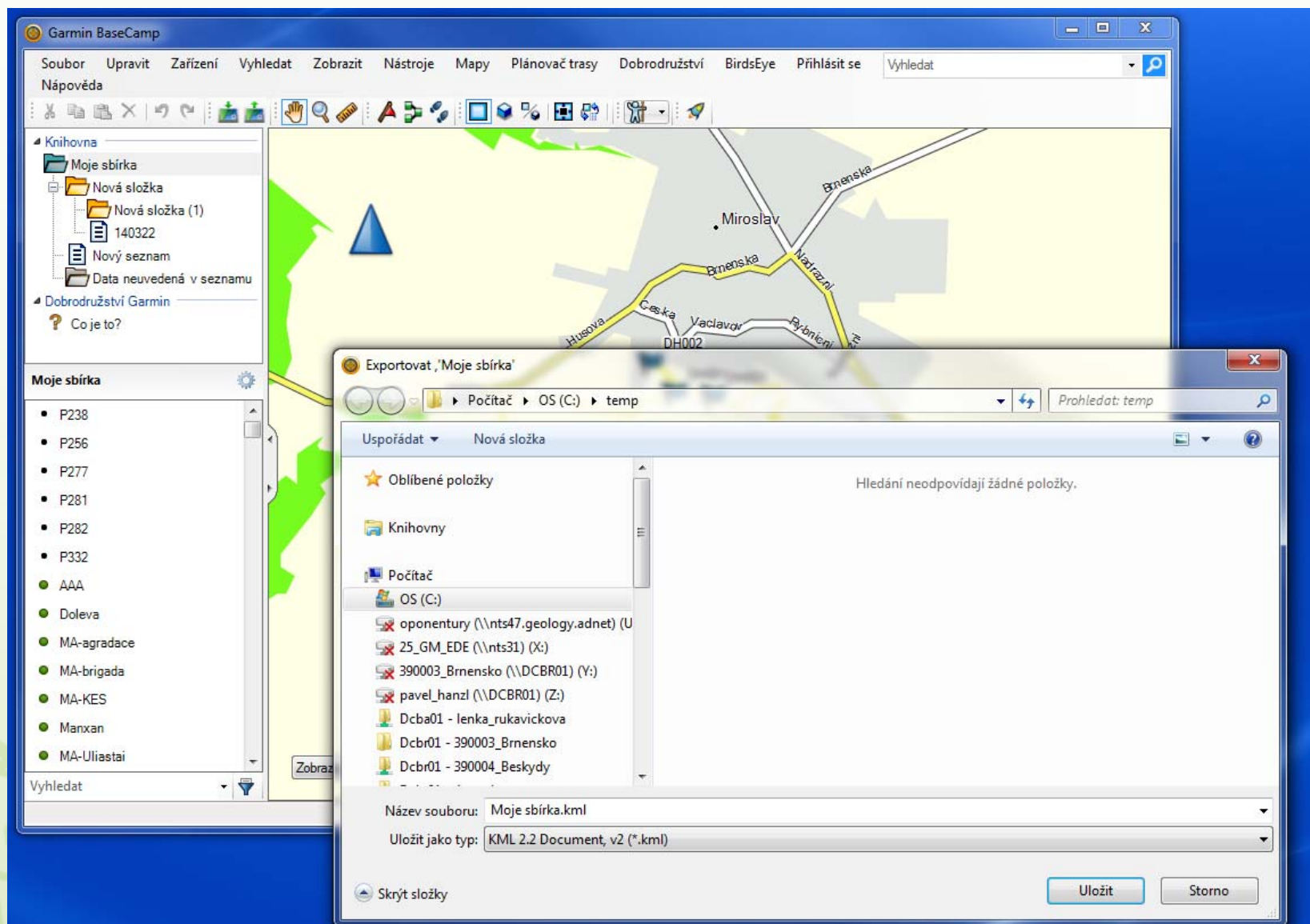




# Garmin BaseCamp

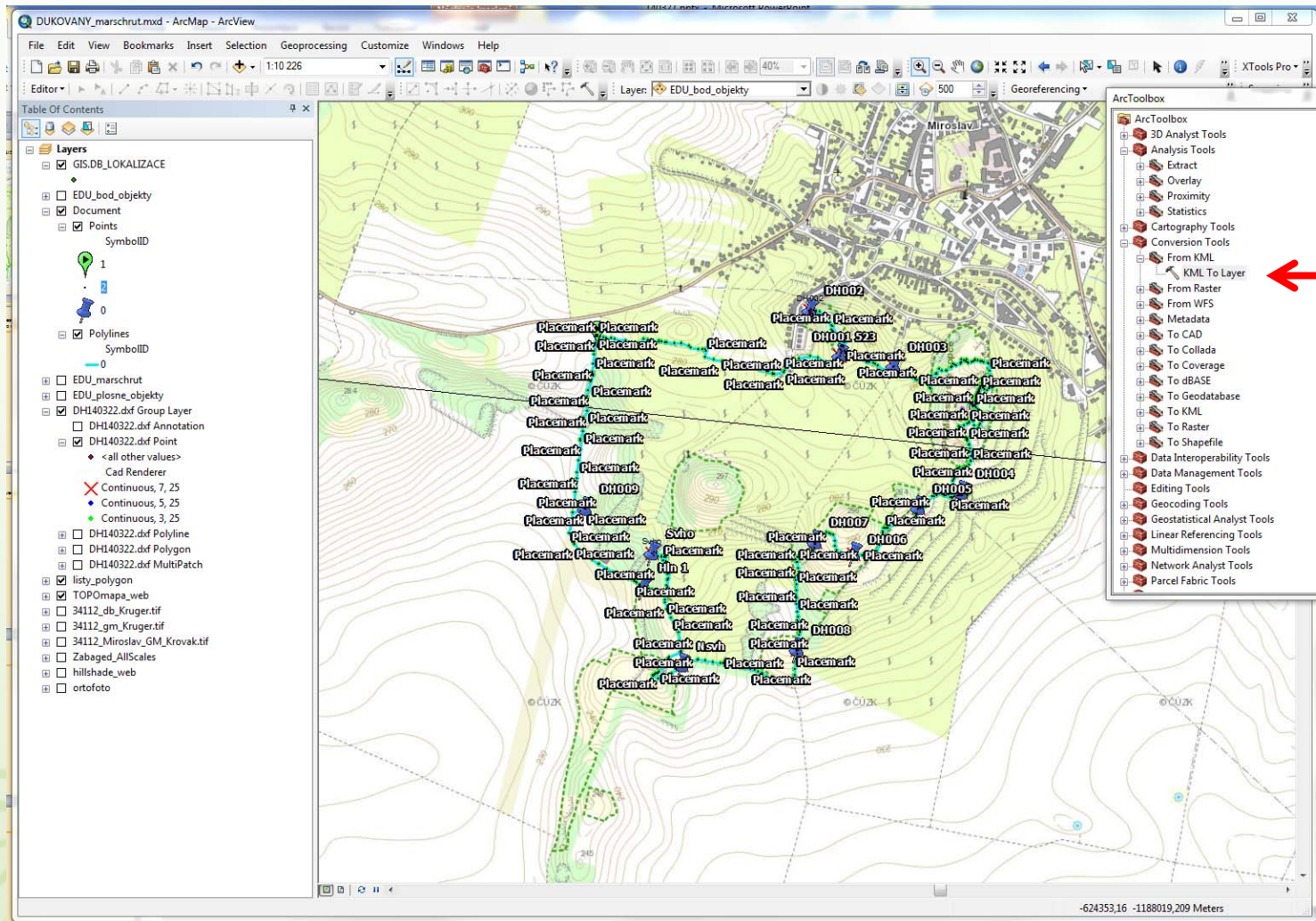


# Export to KML

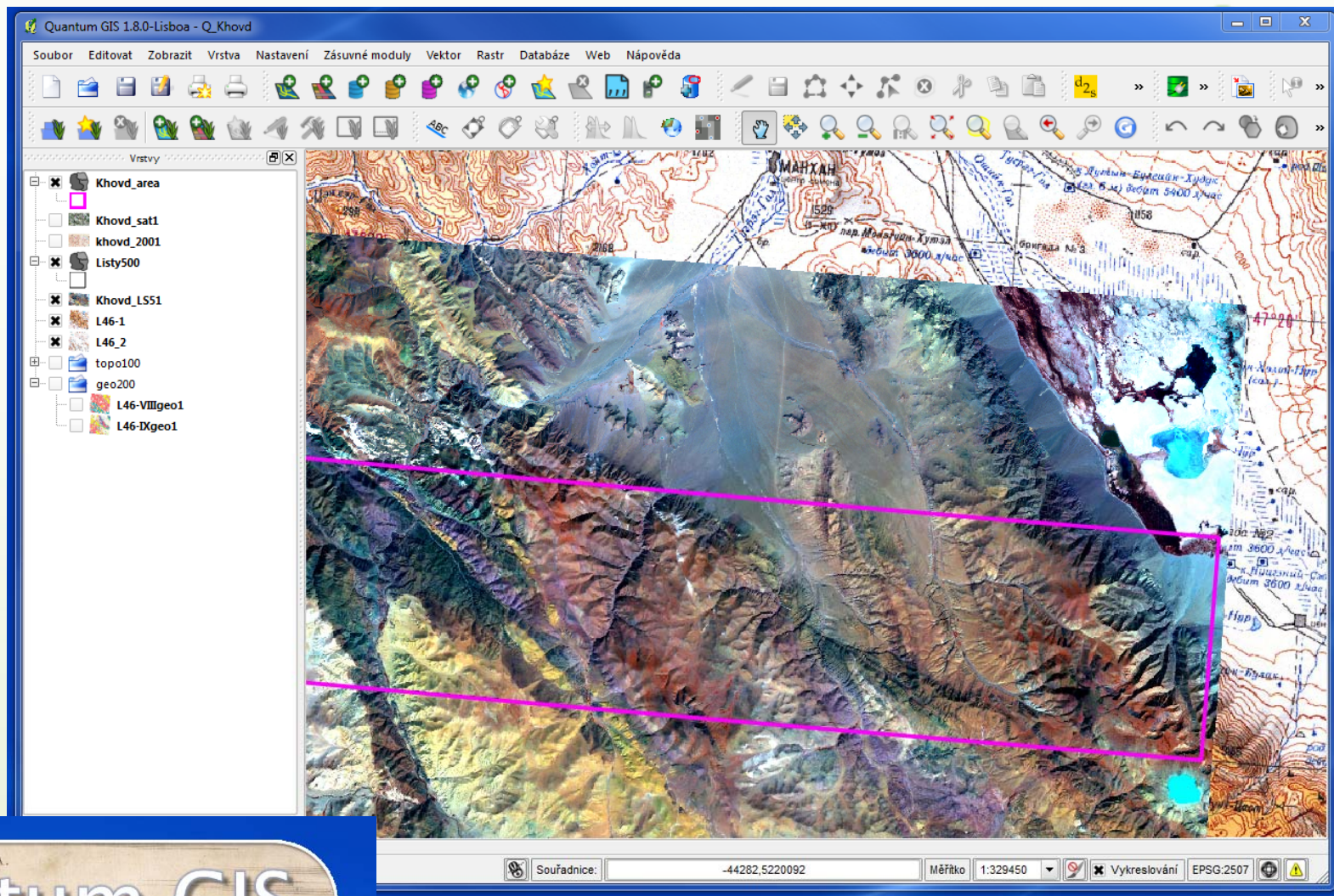




# Open KML file in ArcGIS using ArcTool Box



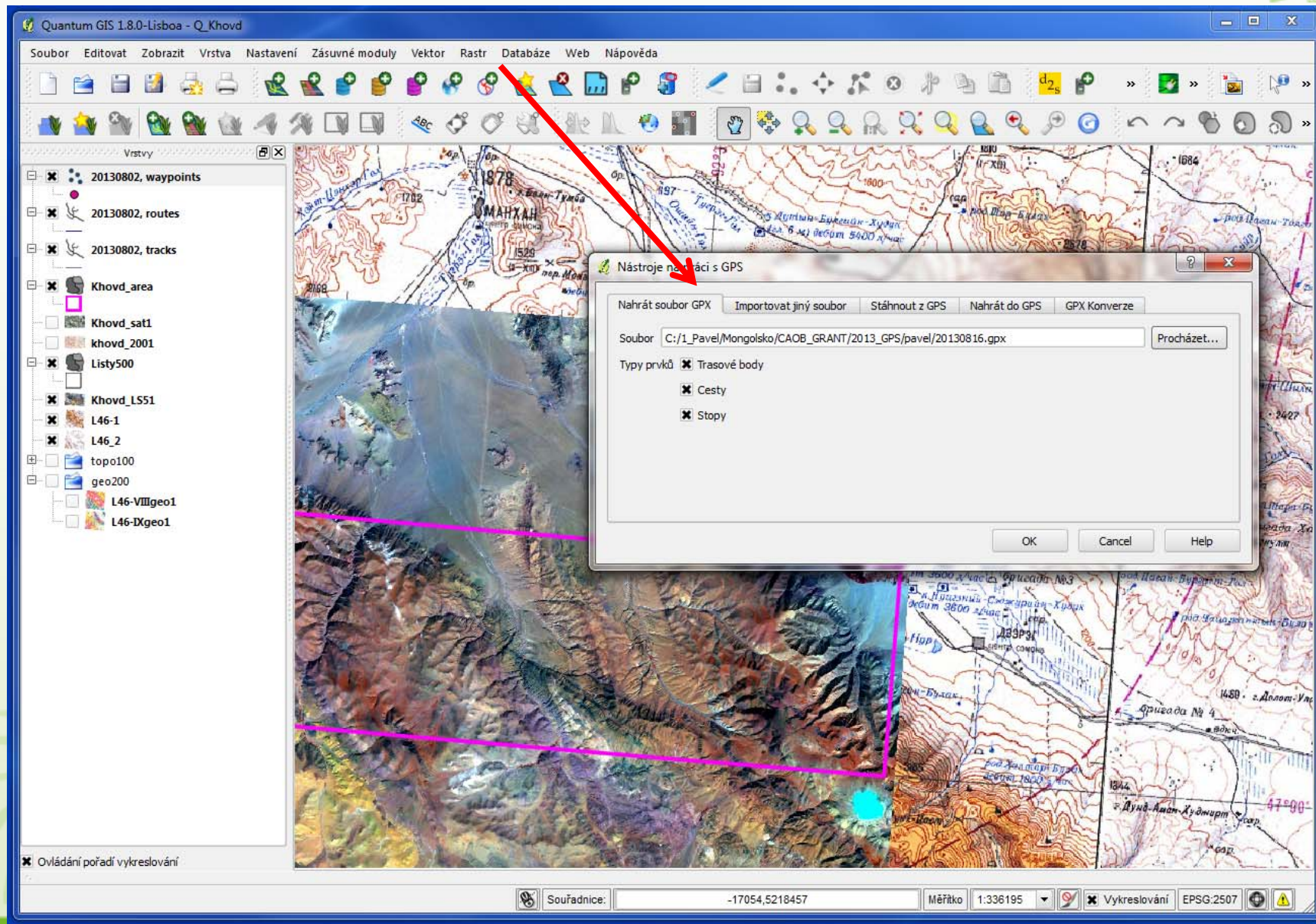




Using QGIS free software



# Open GPX file could be directly saved as SHP





## Exercise with GPS data



# Description of reference point

## Field notebook

Saturday 17 April 2003 Light drizzle.  
Aim is to examine the east side of Caswell Bay

Sheet No.		Point No.		N E Z	
Type of outcrop:			Localisation:		Author:
Type of sample:					Date:
Valley:		Stream gradient:		Grain size:	
Fm.	Rock	Grain size	Composition	Alteration	Tectonics
Ore minerals:			Fossils:		
Other observations:					

(108) near the  
and the  
(567129)  
S  
scale,  
post=1.5m  
F3  
younging  
(x-bedding)  
405  
brown coarse  
dolomite  
horizon  
(ins  
ch level) These  
reverse  
ray up (X-  
ek (12/04)  
right fold not  
near to fault

Fig. 1.2-1. Documentation card for the record of the field description of reference point.





# Steps (parts) of description of exposure

**Localisation**

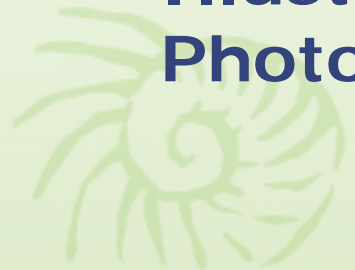
**Rocks**

**Tectonics**

**Samples**

**Supplementary remarks**

**Illustration**  
**Photograph**





## Localisation

Point in the field map with number

GPS coordinates (in proper format and coordinate system)

Verbal description

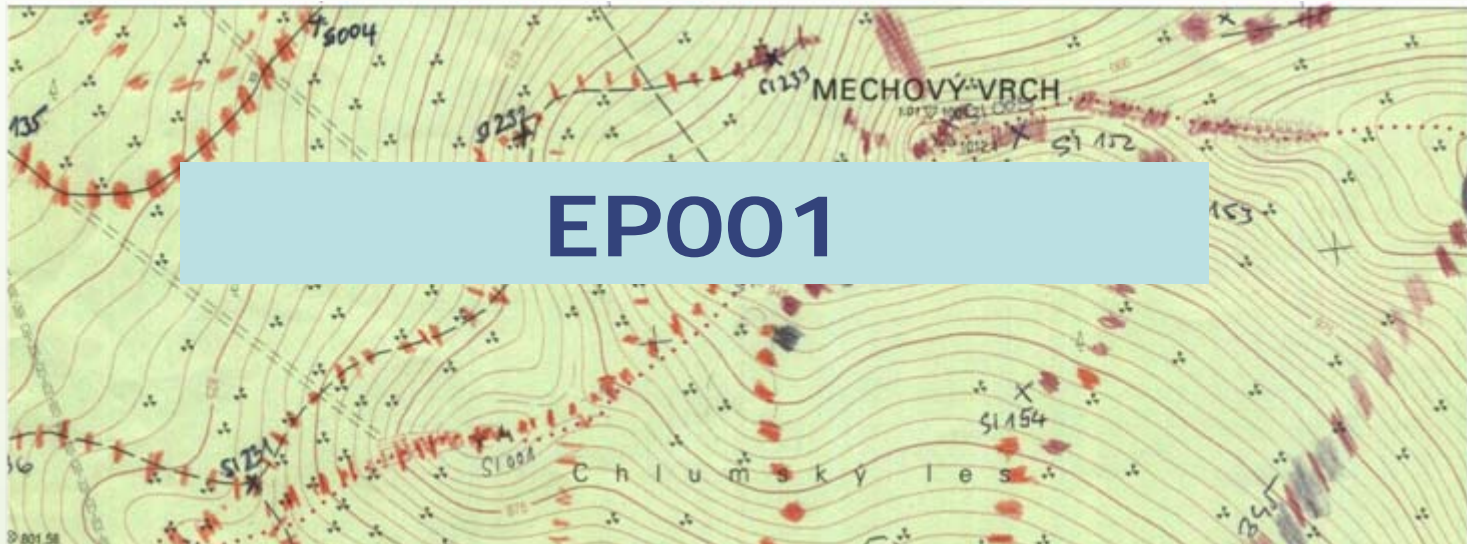
Type of outcrop

Name of geologist

Date



Label of reference point must be unique in the map sheet or in the mapping area.

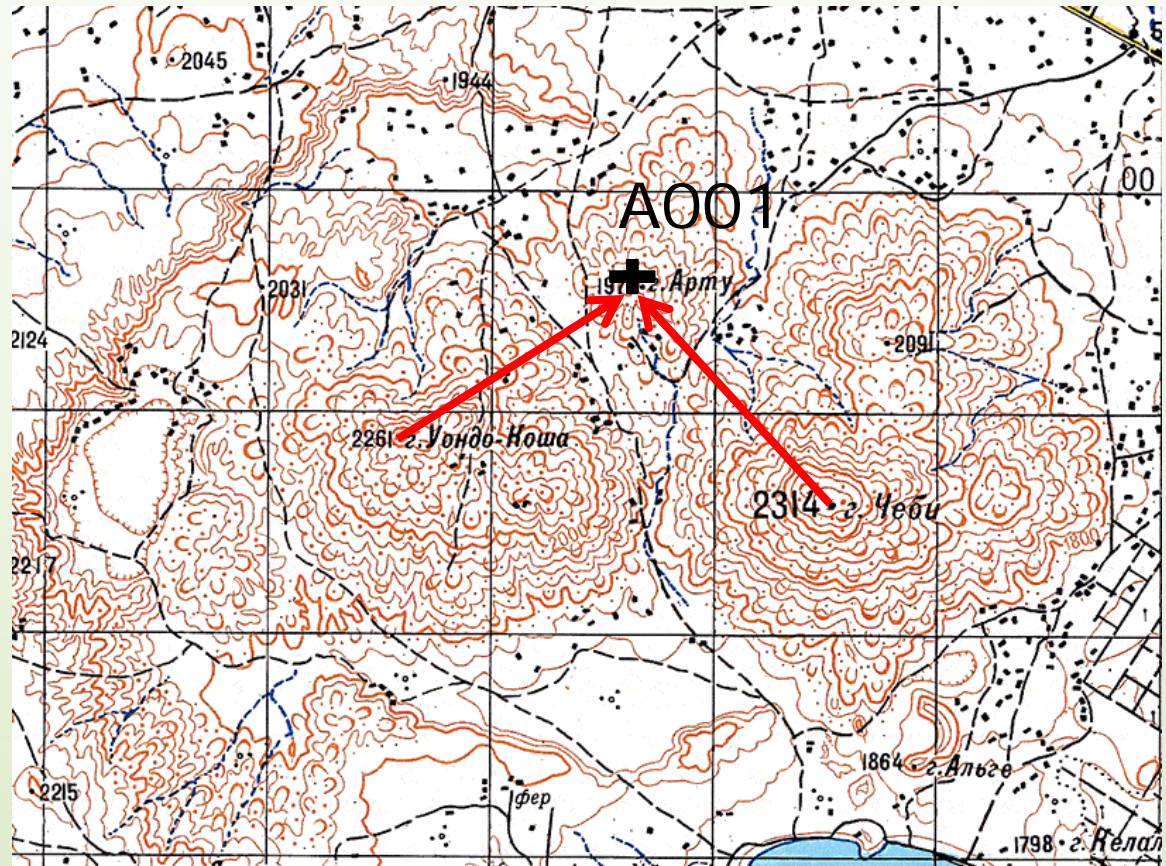


RP No is expressed as combination of letters and numbers, which indicates name of geologist and/or map sheet and ordinal number of point.

GPS coordinates - WGS84 dd.ddddd, Adindan  
UTM 37 N

Verbal description – distance from two points on  
topographic base

2300 NE from spot  
height 2314 m Tschebi,  
1950 m from spot hight  
2261 Yondo-Nosha

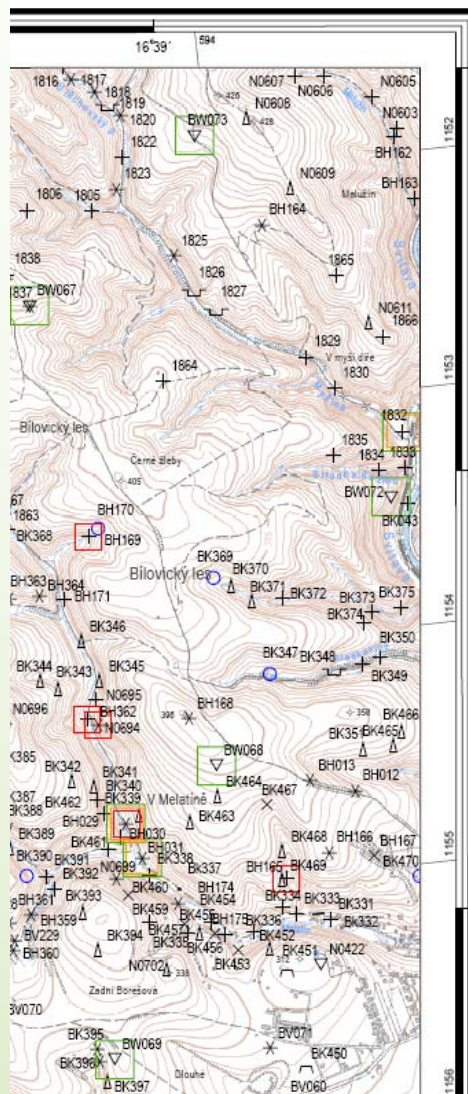




# Type and size of the outcrop

Rock  
Block  
Cut of road  
Quarry  
Sand pit  
Borehole  
Bank of river  
...

24-324 Brno-sever



## Dokumentace vlastní a převzatá

- |    |       |                         |
|----|-------|-------------------------|
| 1  | +     | skalní výchoz           |
| 2  | BV345 | defilé                  |
| 3  | ×     | výchoz                  |
| 4  | Δ     | bloky, suť, úlomky      |
| 5  | ○     | pramen                  |
| 6  | ■     | studna                  |
| 7  | *     | odkryv                  |
| 8  | ⊕     | sonda kopaná (šachtice) |
| 9  | ⊗     | sonda zarážená          |
| 10 | ▮     | rýna kopaná             |
| 11 | ⊙     | vrt                     |
| 12 | ┌     | halda                   |
| 13 | ┐     | hliniště                |
| 14 | └     | lom                     |
| 15 | ∨     | pinky                   |
| 16 | ~     | pískovna (štěrkovna)    |
| 17 | ▽     | jiný objekt             |

## Laboratorní zpracování

- |    |   |                         |
|----|---|-------------------------|
| 18 | □ | výbrus                  |
| 19 | □ | těžké minerály          |
| 20 | □ | paleontologická analýza |

## Chemické analýzy:

- |    |   |                  |
|----|---|------------------|
| 21 | □ | gamaskopie       |
| 22 | □ | analýza z hornin |





## Rock(s)

**Field name** – descriptive, will be specified according to thin sections

**Colour** – subjective

**Grain size** – massive, fine, medium, coarse-grained

**Texture** – various for sedimentary, magmatic and metamorphic rocks

**Mineral composition** – additional qualifiers

**Alteration**

**Mineralisation**





# Tectonics

Plane elements – bedding, cleavage, foliation, fault, joint, axial plane, limb...

Linear elements – lineations, flute cast, ripple marks, fold axis, striae...



## Samples

Petrography, geochemistry, petrophysical properties, mechanical properties...

Each sample should be related to the RP No. and rock and should be well labeled

L408B  
Basalt  
Paleomag







# Supplementary remarks

Relation of rocks  
Relation of tectonic elements  
Presence of water  
Paleontology  
...

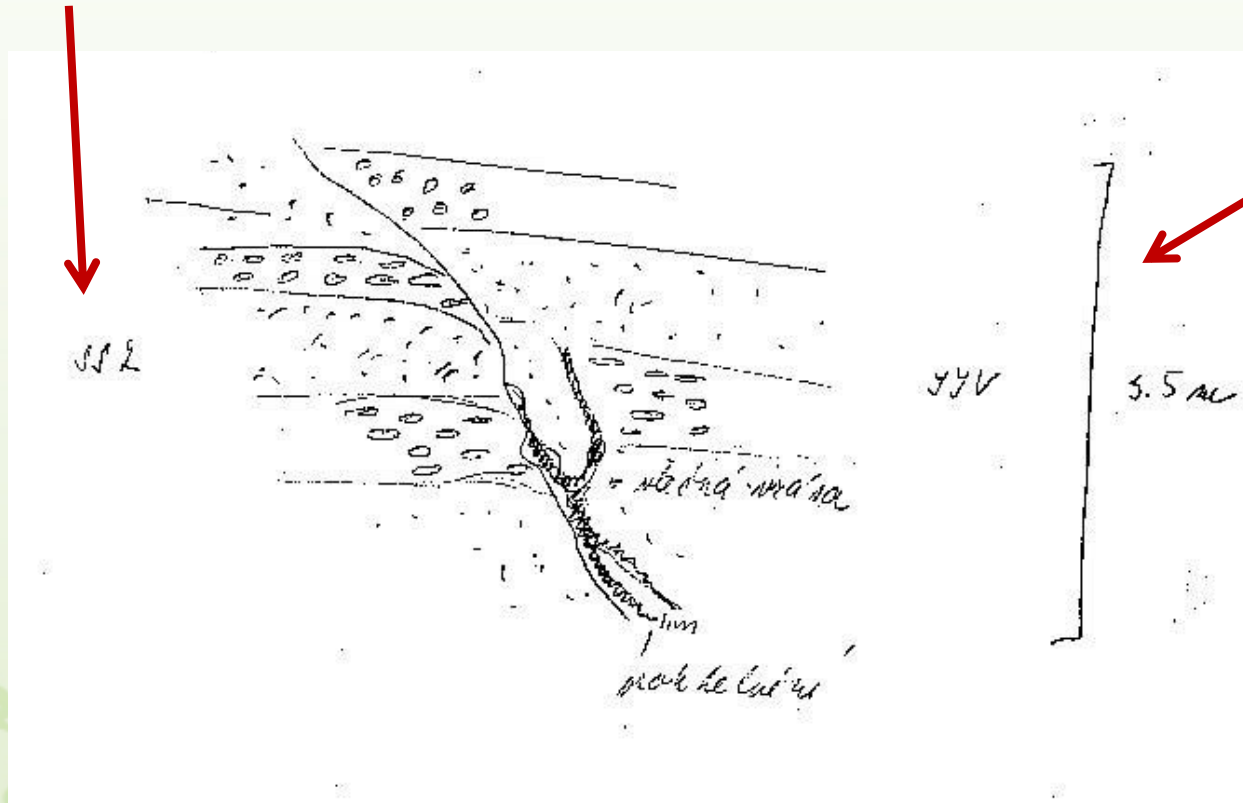
Should be completed by illustration and photodocumentation



# What is important to be on illustration?

orientation

scale





## Storing of field data

Archive of documentation cards or field notebooks

Scanned coppies of field notebooks

Databases







The image displays the 'altay\_form : Formulář' (Form) window, which is a data entry interface for geological samples. The form is organized into several sections:

- map\_sheet:** Fields for map sheet, point no., author, date, and coordinates (N\_coordinate, E\_coordinate, altitude).
- outcrop\_type:** A dropdown menu for outcrop type.
- localisation:** Fields for rock, valley\_type, gradient, and grain-size.
- description:** A dropdown menu for description, with options: silt (<0.063 mm), fine sand (<0.250 mm), coarse sand (<1 mm), very coarse sand (<2 mm), granules (<4 mm), pebbles (<64 mm), cobbles (<256 mm), and boulders (>256 mm).
- ore:** Fields for ore type and name.
- fossils:** A dropdown menu for fossils.
- Alteration:** Fields for alteration type and name.
- sample\_type:** A dropdown menu for sample type.
- label:** A text field for the label.
- rock:** Fields for rock type, grain\_size, and IDrock.
- Formation:** Fields for Fm, rock, and grain\_size.
- Alteration:** Fields for alteration type and name.
- Sample:** Fields for sample type, label, and name.
- Stream:** Fields for S type, dip dir, dip, L type, trend, plunge, and map.

Below the form, a database schema diagram is shown, illustrating the relationships between the data tables. The tables and their fields are:

- point\_no:** point\_no, ore, description
- altay\_gamma\_sp:** sheet\_no, point\_no, rock, IDrock, composition, formation, description, kapa
- altay\_litholo:** sheet\_no, point\_no, rock, IDrock, grain\_size, composition, formation, description, kapa
- altay\_tectonics:** sheet\_no, point\_no, rock, IDrock, TYPE\_S, DIPDIR\_S, DIP\_S, TYPE\_L, TREND\_L, PLUNGE\_L, description, map
- altay\_alteration:** sheet\_no, point\_no, rock, IDrock, alteration, abbrev

Desktop version – MS ACCESS



**Kód dokumentačního bodu** **BH117** **Číslo mapového listu (ZM)** **24-324** Geologické mapování

**Nejbližší geogr. název/polohepis** Jinačovice **Autor** Hanžl Pavel

**Lokalizace**  
Výkop na elevaci nad erozní rýhou jv. od obce

**Popis**  
spraše lokálně přesucovány granodioritovým eluviem, mocnost spraší v erozní rýze min. 5 m.

**Typ výchozu** výkop (jáma) **Zvodnění** ☐

**Význam**  **Č.význ.lokalita (vysvětlivky)**

**Rozměr [m]** 20\*5\*8 **Č. listu mapy 1:10000**

**Instituce**

**Poznámka**

Číslo úkolu  Původní kód u revidované dok.

Dokumentace **vlastní** **Datum dokumentace v terénu:** 14.03.2010 (tvar DD.MM.RRRR) Datum přibližné (pro přibližné datum uvádějte 1. v měsíci je-li znám měsíc, případně 1.1., je-li znám pouze rok)

Uložit

Kopie

Odstranit

1. spraš SXQP - pleistocén, XX - nerozlišeno, Z2 - kvartér akumulačních oblastí Českého masivu

Nová hornina

## Přílohy k dokumentaci BH117



popis

✖

bh117  
14.03.10

**Altay project**  
Online field database

Search:  Submit

Logged in as pavel [Logout](#)  
[My Profile](#) [Change Password](#)

You are here: Sites :: P430 :: View

navigation  
Sites  
Units  
Structural types  
Rocks  
Samples  
Structural data  
Photos

Found 1787 of 1787 records in table Sites  
Now Showing 1 of 1787

**Current Record: P430**  
view edit photos rocks history

**P430**  
Coarse grained bt orthogneiss alternates with bt gneiss (to migmatite) containing calc-silicate lenses, S 278/86, L 6/61 b 9/49 API/5, b 192/10 AP 260/80, S 328/61 L 356/47  
Last updated Thursday, October 09, 2014 - 5 days ago

Rocks	see all	Details
orthogneiss		Site starts P
migmatite		SiteID 1599
		Site Name P430
		Longitude 94.709106
		Latitude 45.545813
		Description Coarse grained bt orthogneiss alternates with bt gneiss (to migmatite) containing calc-silicate lenses, S 278/86, L 6/61 b 9/49 API/5, b 192/10 AP 260/80, S 328/61 L 356/47
		Last modification Thu Oct 9 20:28:34 2014
		Author pavel

**Photos** see all  
P430.JPG  
P430a.JPG  
P430b.JPG  
P430c.JPG

**Samples**

**Map view**  
  
[Show in Google Maps](#)

**Neighbouring sites**  
V417 305 m  
Z436 593 m  
K421 294 m  
V418 605 m  
K420 1974 m  
V416 1976 m  
V411 2302 m  
Z442 2333 m  
V415 2546 m  
Z435 2608 m  
L420 2617 m  
P431 2714 m  
P429 2974 m  
Z441 2989 m

- Structural types
- Rocks
- Samples
- Structural data
- Photos

## P430.JPG

Last updated Thursday, October 09, 2014 - 5 days ago

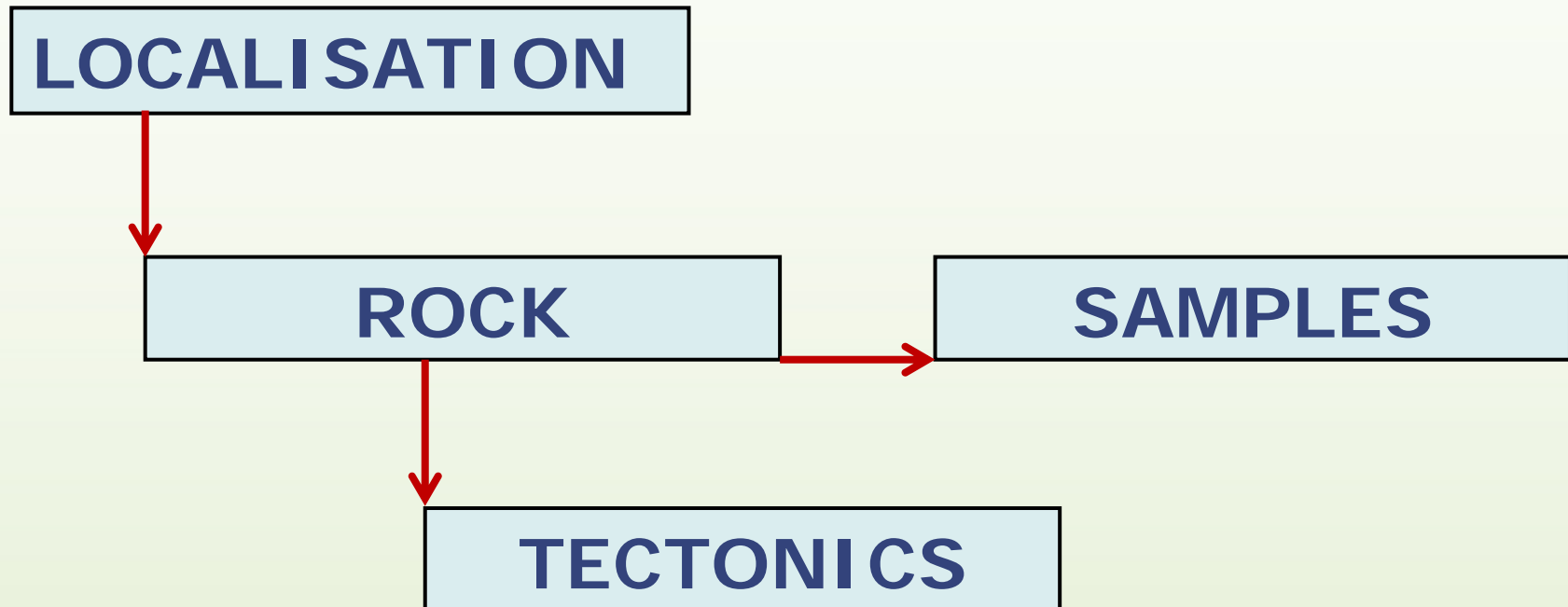
## Photo

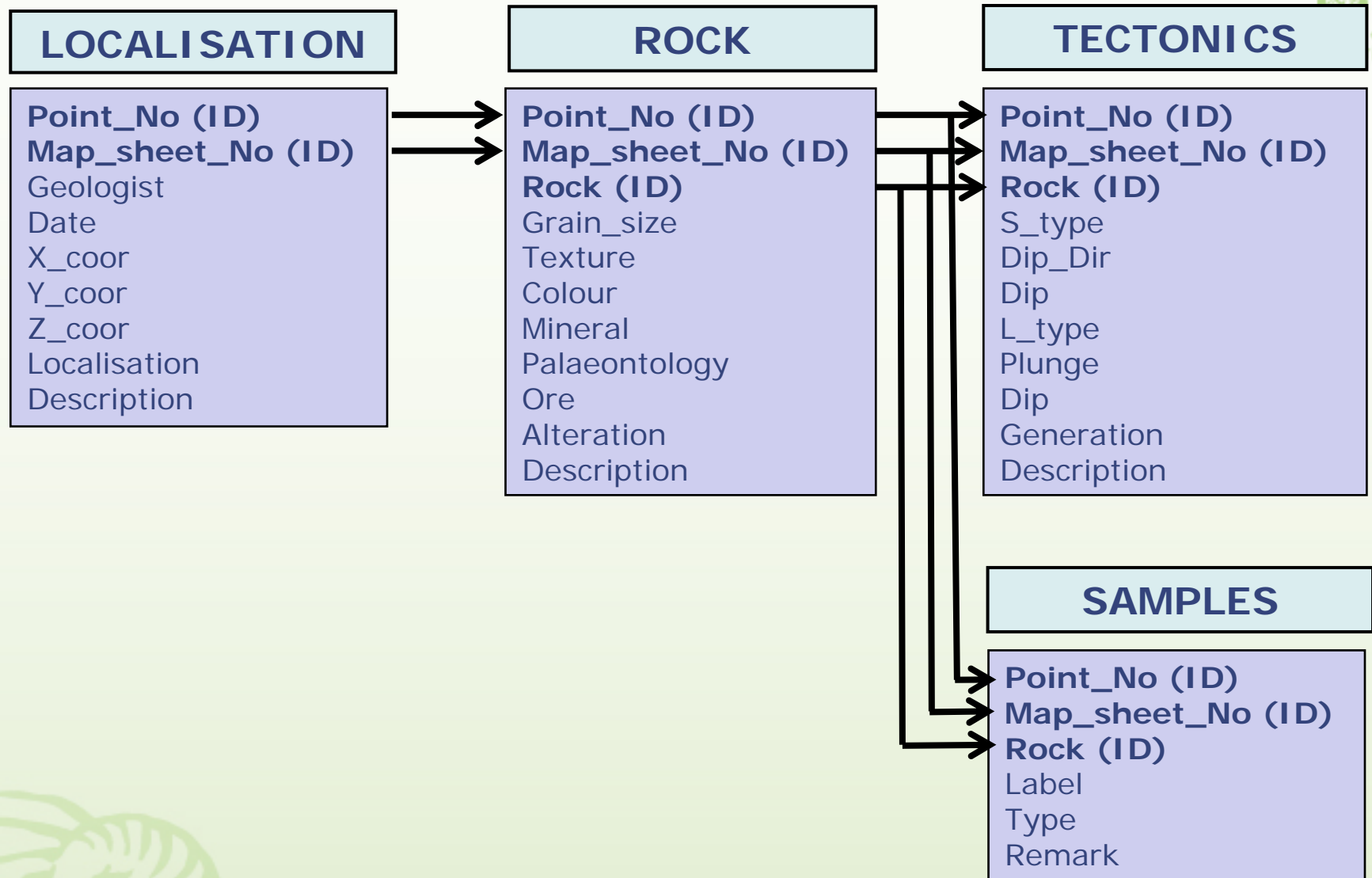


On-line database



# Documentation database - structure





altay\_form

map\_sheet: L-47-100 point\_no: 03\_11 author: Hanžl date: 22.5.2003

coordinates N\_coordinate: 45,25523 E\_coordinate: 98,96068 altitude:

outcrop\_type: rock localisation:

valley\_type: gradient: grain-size:

description: quartz dikes

ORE

ore pyrite

fossils:

Fm: ETG rock: phyllite composition: Alteration

grain\_size: phyllite phyllonite porcelanite porphyry porphyroid porphyry proluvial sediments pyroclastics quartz quartz rich gneiss quartz sill quartz-carbonate quartz-diorite quartz-epidote quartzite quartzitic slate quartzite rhyodacite rhyolite rhyolite tuff

IDrock:

S type Sm

sample type: M label:

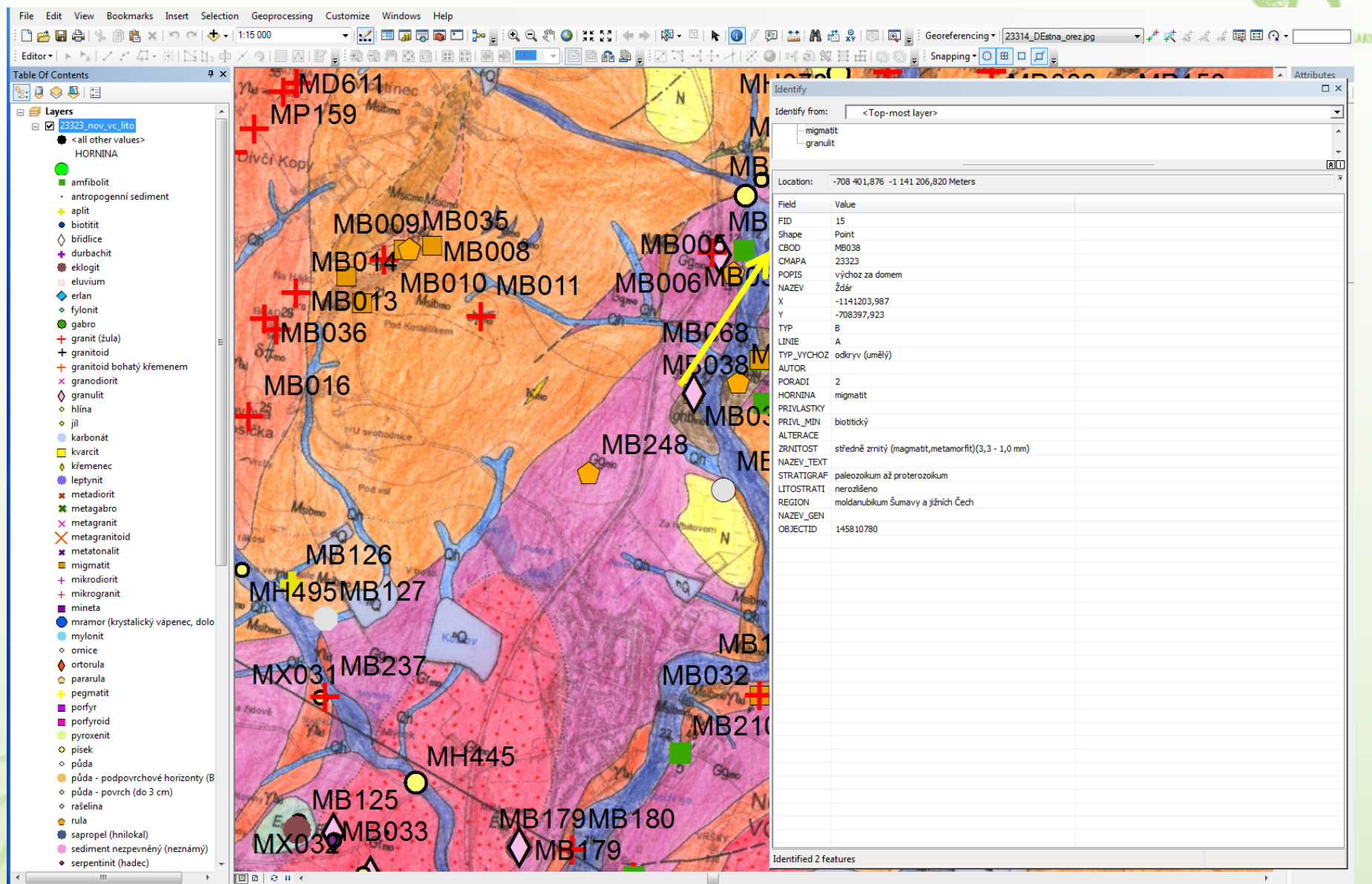
trend: 122 plunge: 1

Záznam: 1 z 1 Záznam: 1 z 1 Záznam: 1 z 1 Záznam: 1 z 3938

samp	sample_type
Pe	petrography
Ch	WR geochemistry
Pa	paleontology
PaM	micropaleontology
A	alluvial sample
S	silt (stream) sample
M	soil metalometry
L	lithogeochemistry
D	radiometric dating
R	R-max
O	ore petrography
D	Dickinson
*	

abbrev	structure	symbol	code
3D	bedding	33	2
S	foliation	35	4
C	cleavage	38	32
F	fault	58	3
M	mylonitization	80	5
J	joint	63	2
Dy	dyke	82	9
Sg	foliation magmatic	43	34
Sm	foliation metamorphic	35	4
Ap	Axial plane	72	35
*			







Questions ?

