Project Information system (Geodatabase)

Norway Grants

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CZECH GEOLOGICAL SURVEY

Project Information System

=> input data for all activities

=> data outputs from all activities

❖ ARCHIVE AND NEW DATA

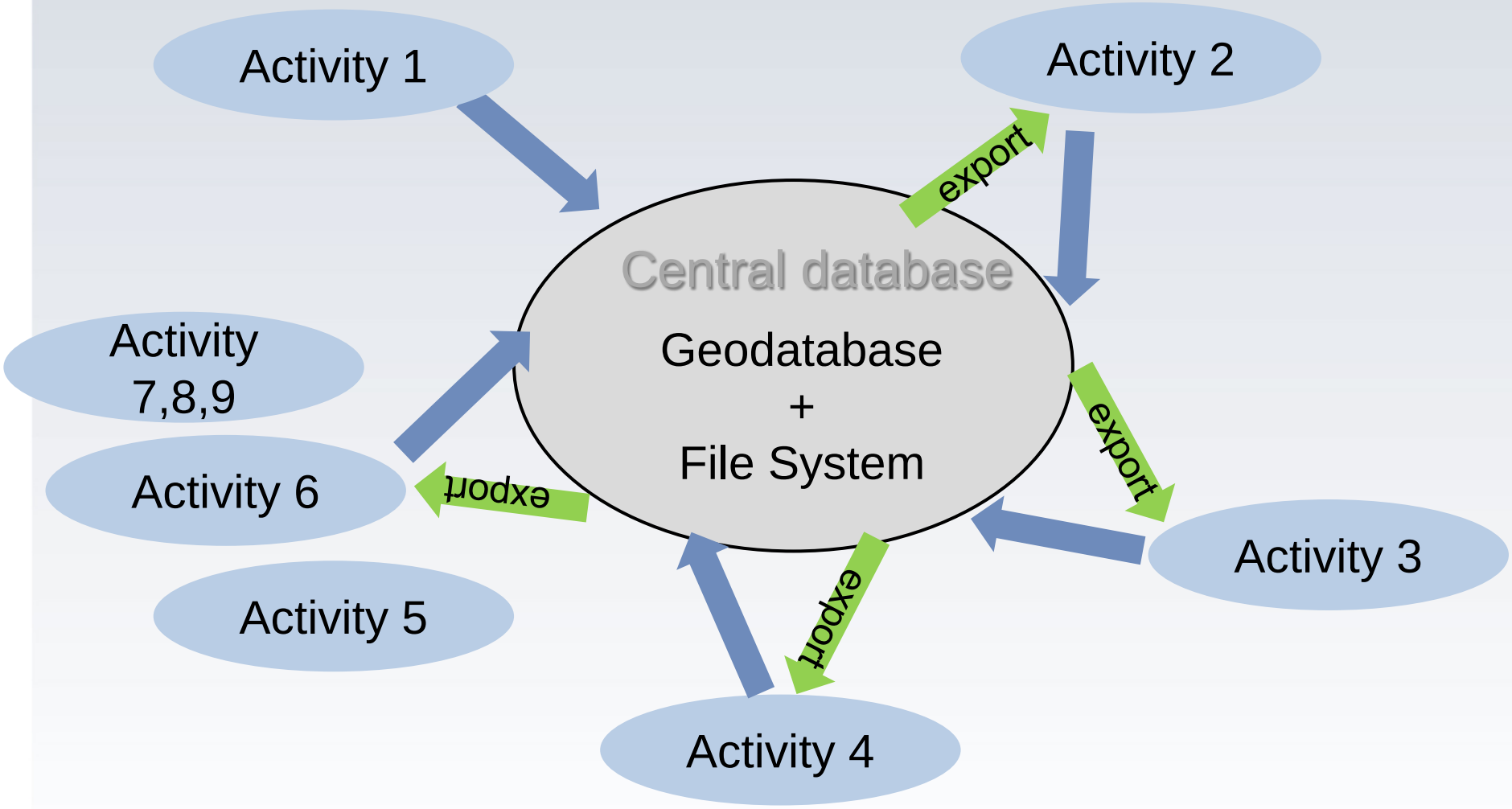
- RASTER data
- VECTOR data
- TABULAR data

Central database

GEOGRAPHICAL DATA (geodatabase)

NON-GEOGRAPHICAL DATA (file system)

General Data Flow



Project shared folder

Shared project environment on CGS server

1 Data Entry

File System directory:
*\\nts46\661130_REPP-CO2**07 Vystupy-Deliverables**\Data_for_GDB*

2 Project Geodatabase | File System

*\\nts46\661130_REPP-CO2**10 Data**\01_GEODATABASE*
*\\nts46\661130_REPP-CO2**10 Data**\02_FILE SYSTEM*

3 common email address for information about GIS project data:
GIS.REPP@geology.cz

Project Geodatabase

Geodatabase - Part of Central data storage (CDS)

What does the geodatabase contain?

- Geographic data
- Feature Classes (Point x Line x Polygon objects)
- Tables
- Relationships
- Raster datasets
- Topology

Advantages

- Edits and updates of data in one place
- No duplications of data

Technology

- Esri SW (central geodatabase ArcSDE, file geodatabase, ArcGIS for Desktop – floating licenses)

Project Geodatabase

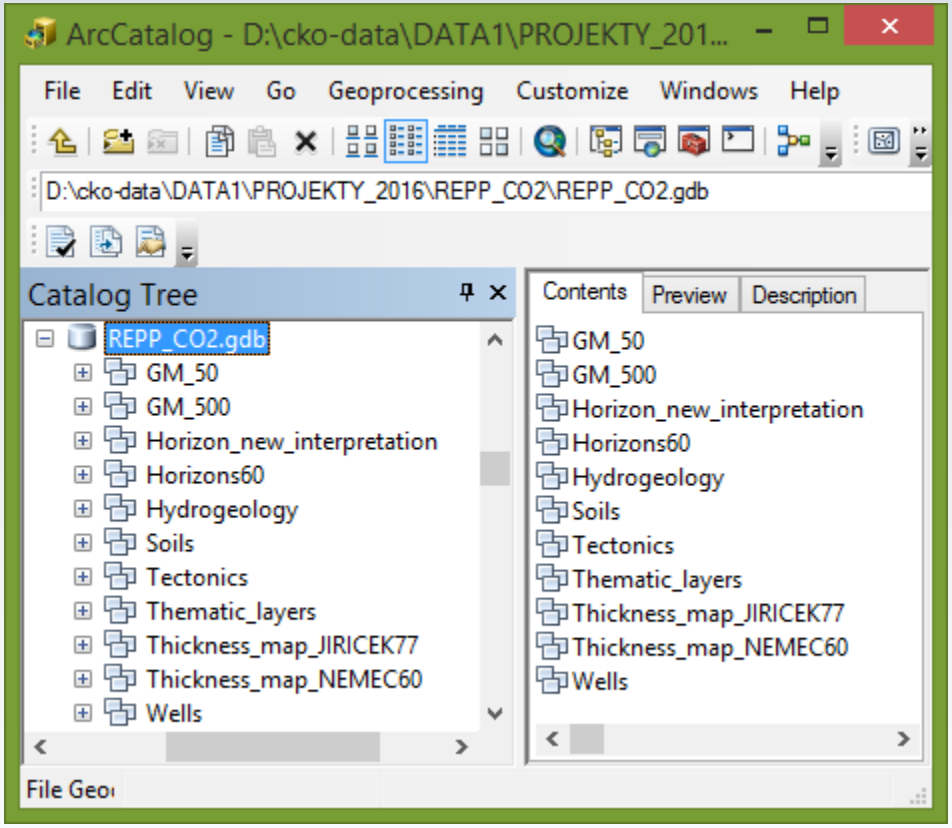
Spatial reference: single coordinate system

Project instruction (to easily include archive data):
Gauss-Krüger A (S-42, zone 12E-18E)
3rd Meridional zone

in Esri SW:
Projected Coordinate System > Gauss Kruger
> Pulkovo 1942 > **Pulkovo 1942 GK Zone 3.prj**
EPSG code (WKID): 28403

Project Geodatabase

\\nts46\661130_REPP-CO2\10 Data\01_GEODATABASE



- Geology50
- Geology500
- Horizons60
- Horizons_new_interpretation
- Wells
- Hydrogeology
- Soils
- Tectonics
- Thematic layers
- Thickness maps_JIRICEK77
- Thickness maps_NEMEC60
- DEM

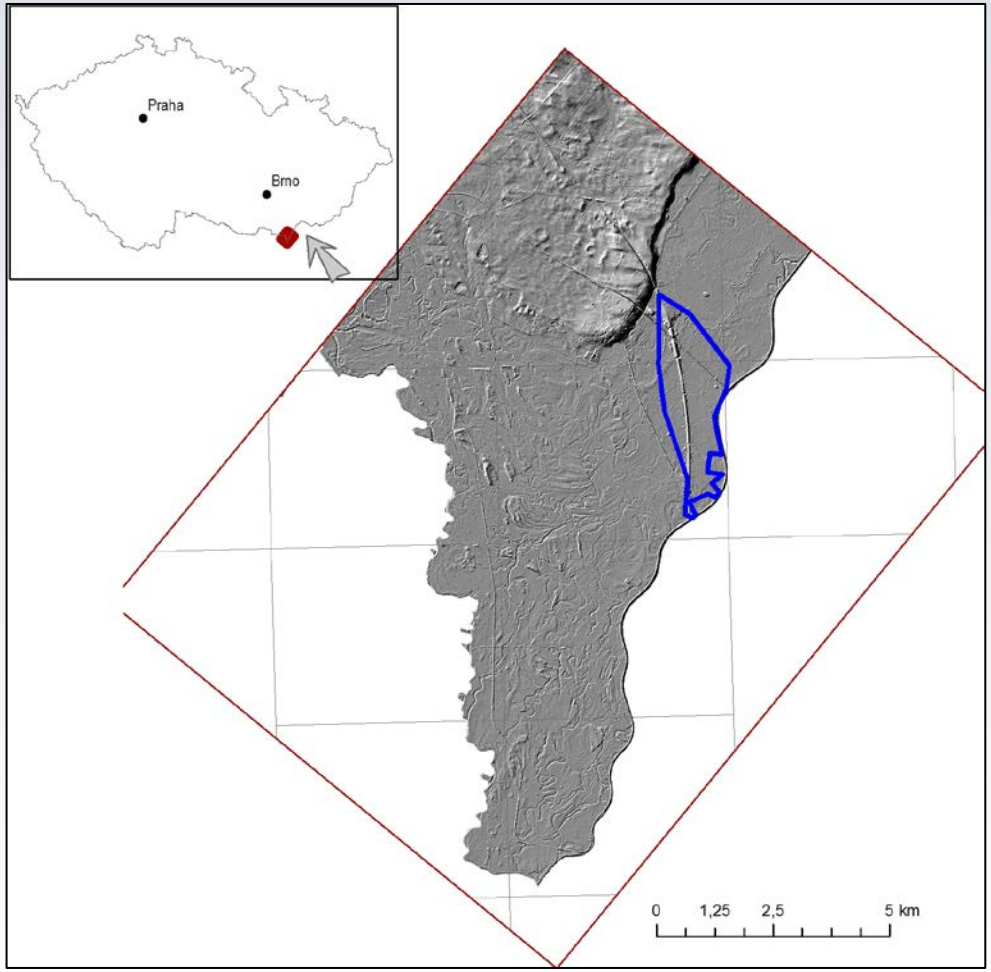
Related Tables (Petrology, Pressure, Saturation, Seismic profiles description)

Project Geodatabase

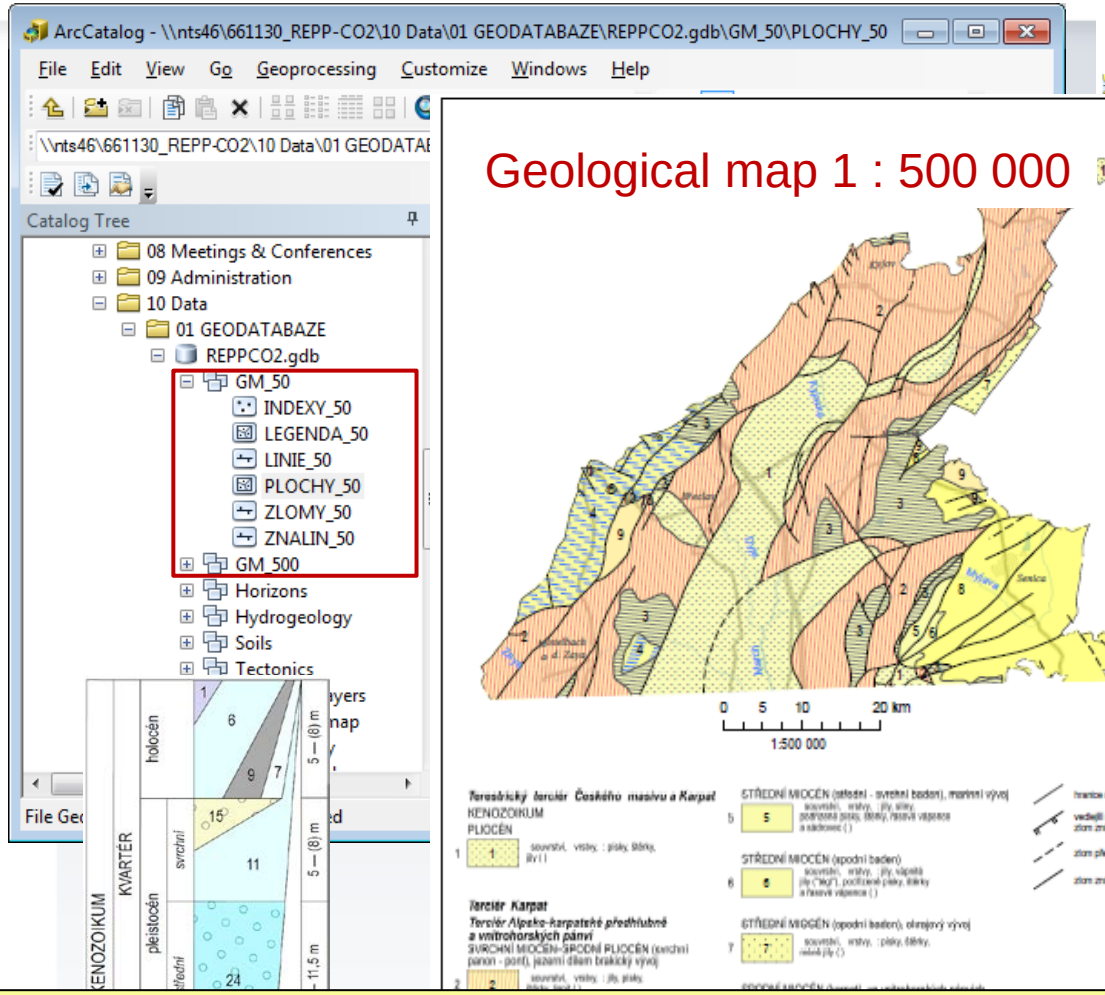
Geodatabase REPP CO_2

Archive data:
- Surface topography
- Wells (xyz)
- Property tables (with Ids)
- Stratigraphy
- Mining data (mining lease)
- Protected areas
- Digital elevation model
- Orthophoto

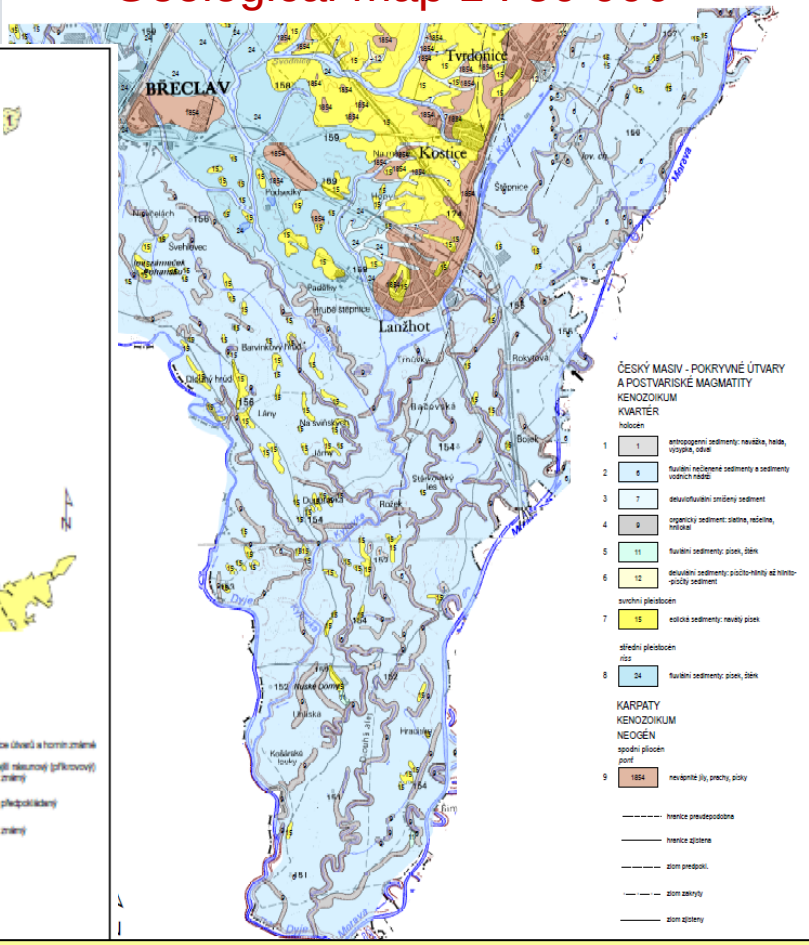
New data:
- Subsurface topography
- Cross sections
- Geology (boundaries, faults…)
- new interpretations



Geology 50, 500



Geological map 1 : 50 000



\\nts46\661130_REPP-CO2\10 Data\02_FILE_SYSTEM\styly

Horizons

Horizons1960 – archive data

Top 1 Sarmatian sand horizon
Top 3 Sarmatian sand horizon
Top 6 Sarmatian sand horizon
Top 7 Sarmatian sand horizon
Top 11 Badenian sand horizon
Top 12 Badenian sand horizon
Top 12a Badenian sand horizon
Top 13 Badenian sand horizon
Top 13a Badenian sand horizon
Top 14 Badenian sand horizon
….

→

Horizons_new_interpretation

L1
L2
L3
L4

geometry

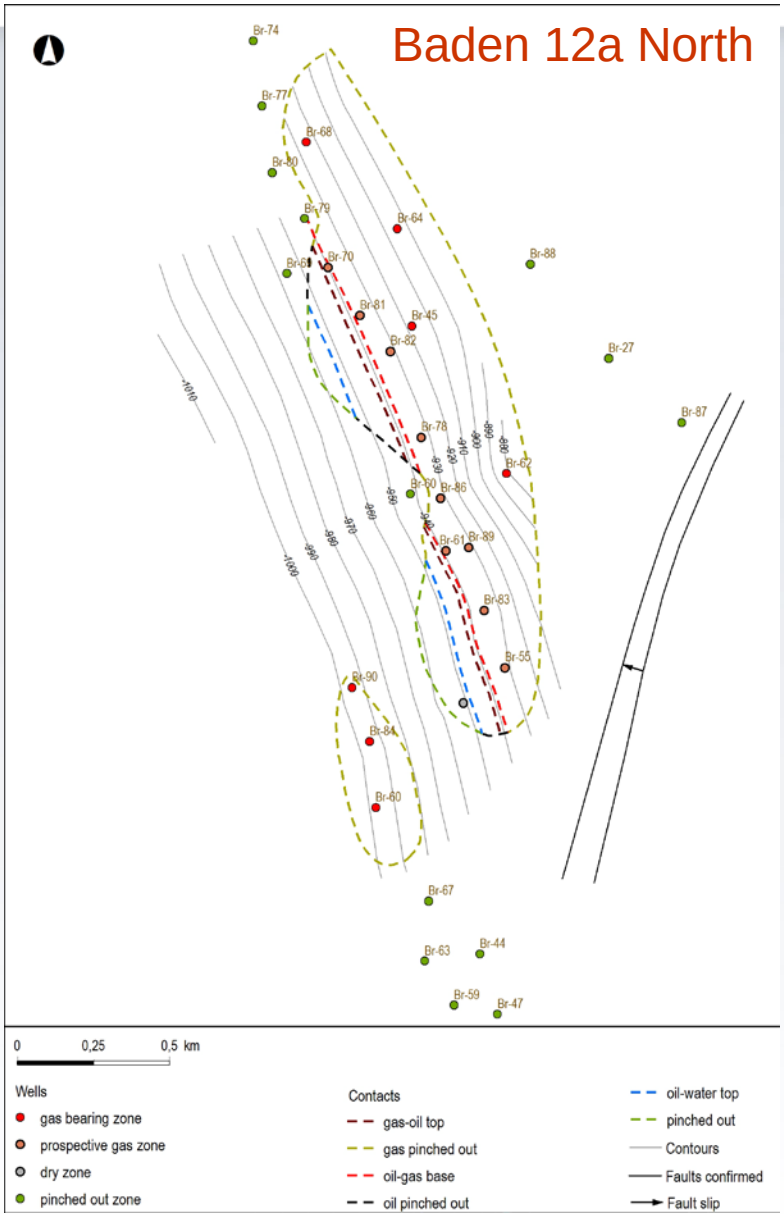
- Contacts
- Contours
- Faults
- Fault_slip
- Well-inclination
- Zones

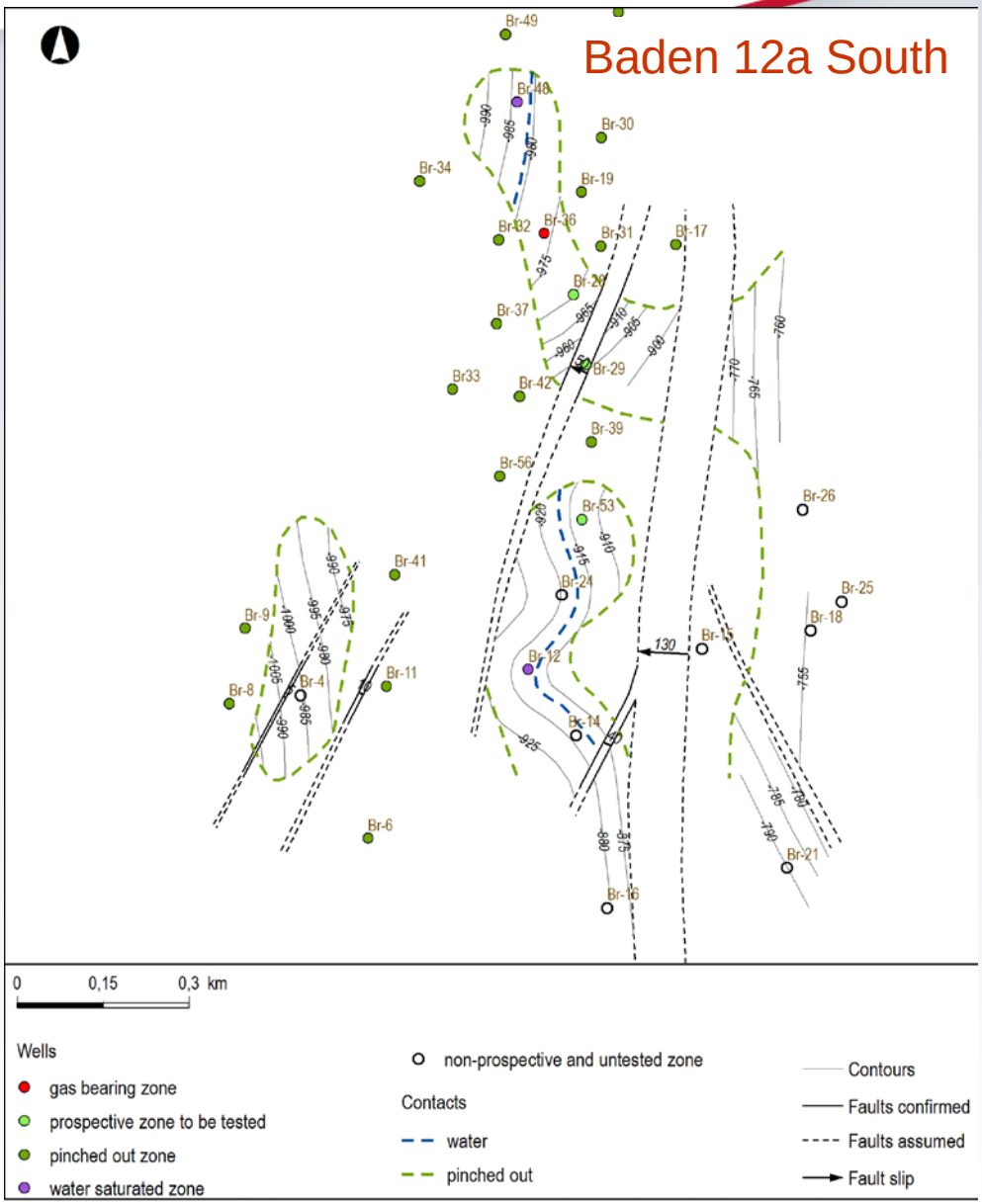
for each horizon

parameters

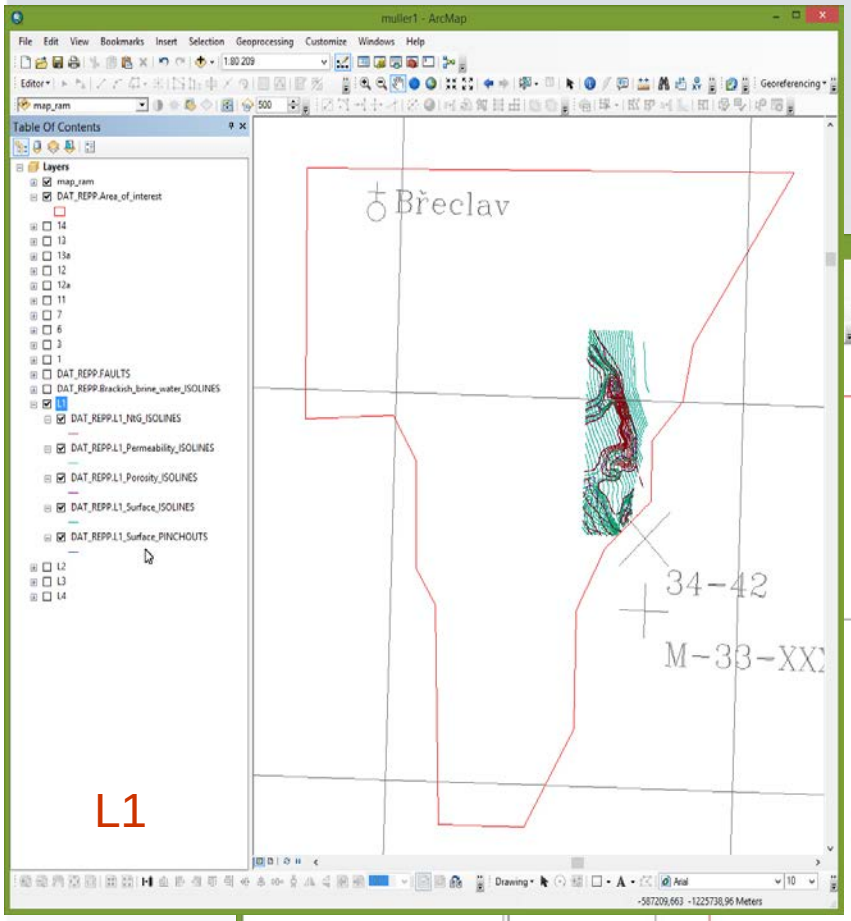
- NtG_ISOLINES
- Permeability_ISOLINES
- Porosity_ISOLINES
- Surface_ISOLINES
- Surface_PINCHOUTS

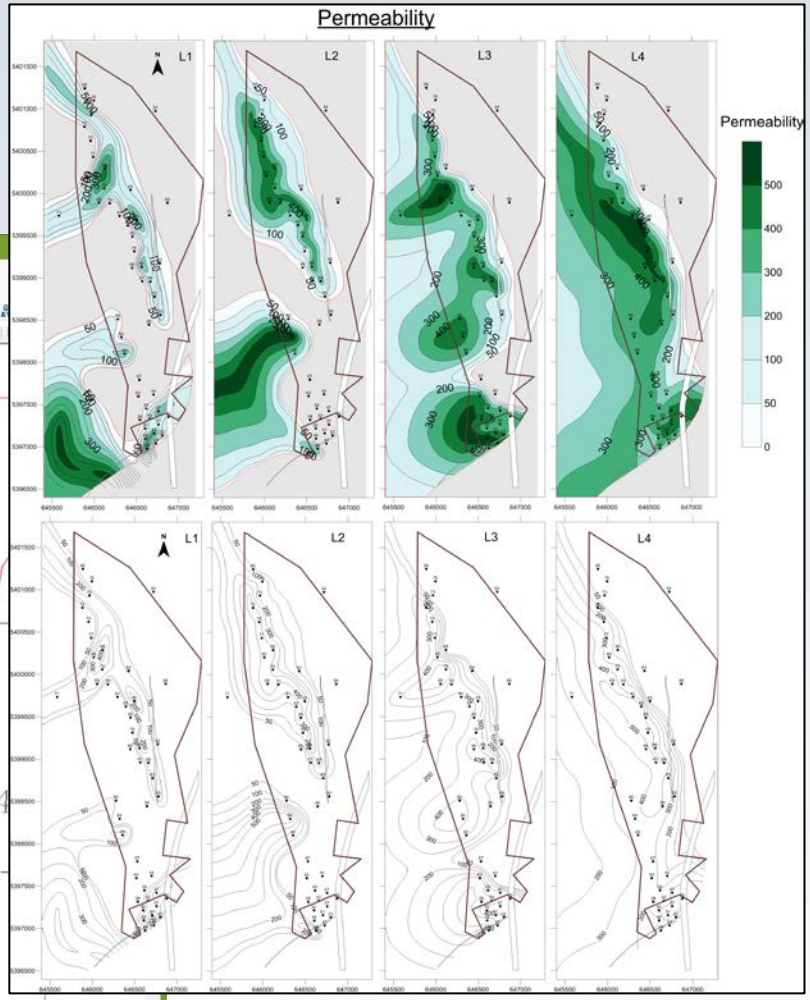
Horizons (Šele 1960)



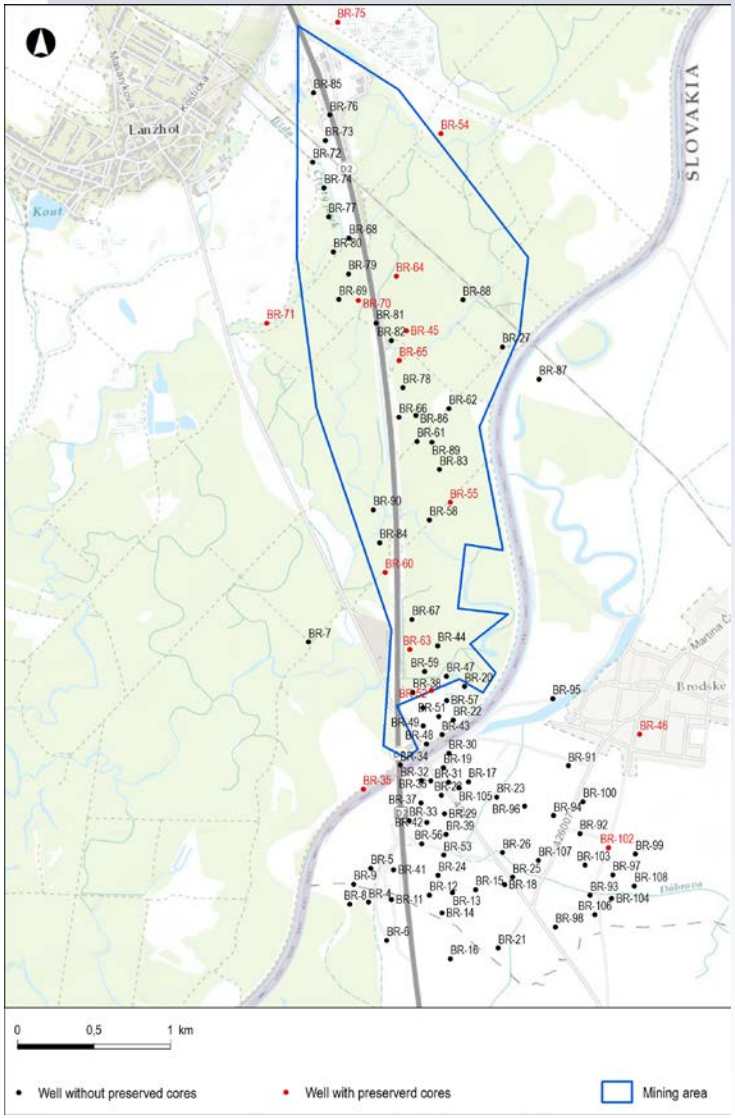


Horizons - new interpretation





Wells and related tables



Wells position

Related Tables:

- Saturation
- Pressure
- Petrology
- …..

Table

DAT_REPP.VRTY_SATURACE

OBJECTID *	Well *	Depth	Saturation	Saturation	Porosity	Permeability
1	BR-61	1107.8-111 5m int.2,05-2,10 m	not defined	not defined	0,285	166,2 md
2	BR-61	1107,8-1115 m int. 1,3-1,4 m	not defined	not defined	0,304	148,9 md
3	BR-61	1107,8-1115 m int. 0,7-0,8 m	0,749, 0,780	0,227, 0,217	0,281	192,6 md
4	BR-65	1095-1100 m	0,136, 0,133	0,131, 0,173	0,27	3,7 md
5	BR-68	1100-1105 m	not defined	not defined	0,246	5,3 md
6	BR-70	1105-1110 m	0,642, 0,555	0,136, 0,155	0,348	239,4
7	BR-70	1110-1115 m	0,111	0,466	0,236	20,8 md
8	BR-74	1110-1115 m	0,66	0,325	0,263	11,4 md
9	BR-79					
10	BR-86					
11	BR-65					
12	BR-68					
13	BR-74					
14	BR-74					
15	BR-82					
16	BR-86					
17	BR-86					

1

DAT_REPP.VRTY_SATURACI

Table

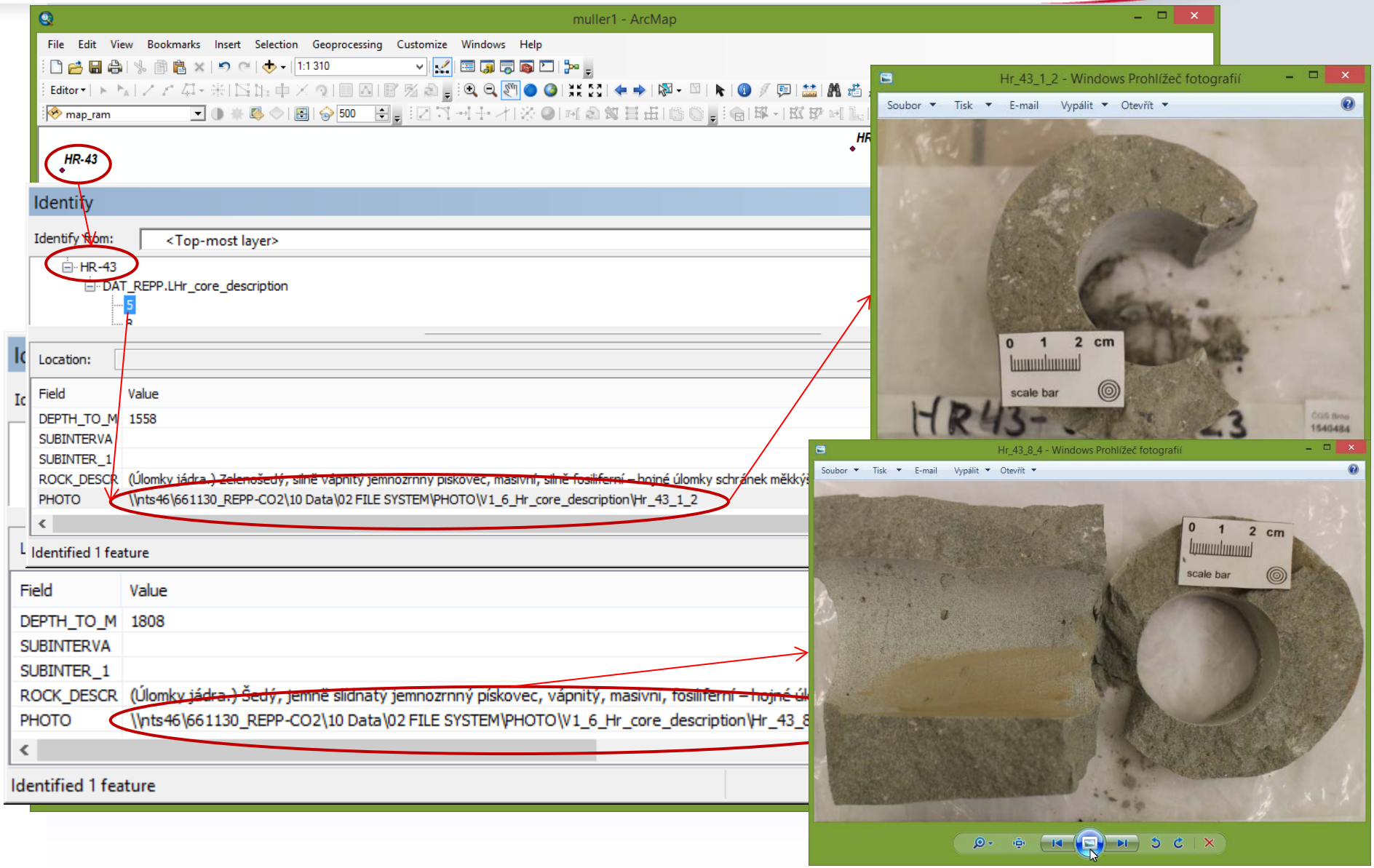
DAT_REPP.VRTY_TLAK

OB	WELL *	HORIZON	DATE_MEAS	MEASURED_VALUE
1	BR-55	14.+13.+12.BADENIAN 1100-96+109	28.1.1998	PWH 12 atp, fluid level at 62 m, oil-water 280
2	BR-66	13.BADENIAN 1093-1092+1090-108	12.10.1983	Naturel inflow of water
3	BR-73	12.BADENIAN 1097-1091,5 m	15.9.1993	PWH = 5,5 atp, PBH at depth 997 m
4	BR-77	13.BADENIAN 1104-1102 m	20.6.1997	Narurel inflow of water (25 m3)
5	BR-78	14.BADENIAN 1102-1101+1101-109	28.1.1998	PWH Pt 8,0 / Pc 18,0 kp/cm2
6	BR-82	13.BADENIAN 1099,5-1097,5 m	28.1.1998	PWH Pt 5,0 / Pc not measured kp/cm2
7	BR-83	13.BADENIAN 1099,5-1098,0 m	28.1.1998	Overpressure PWH 8,0 kp/ cm2 of oil with

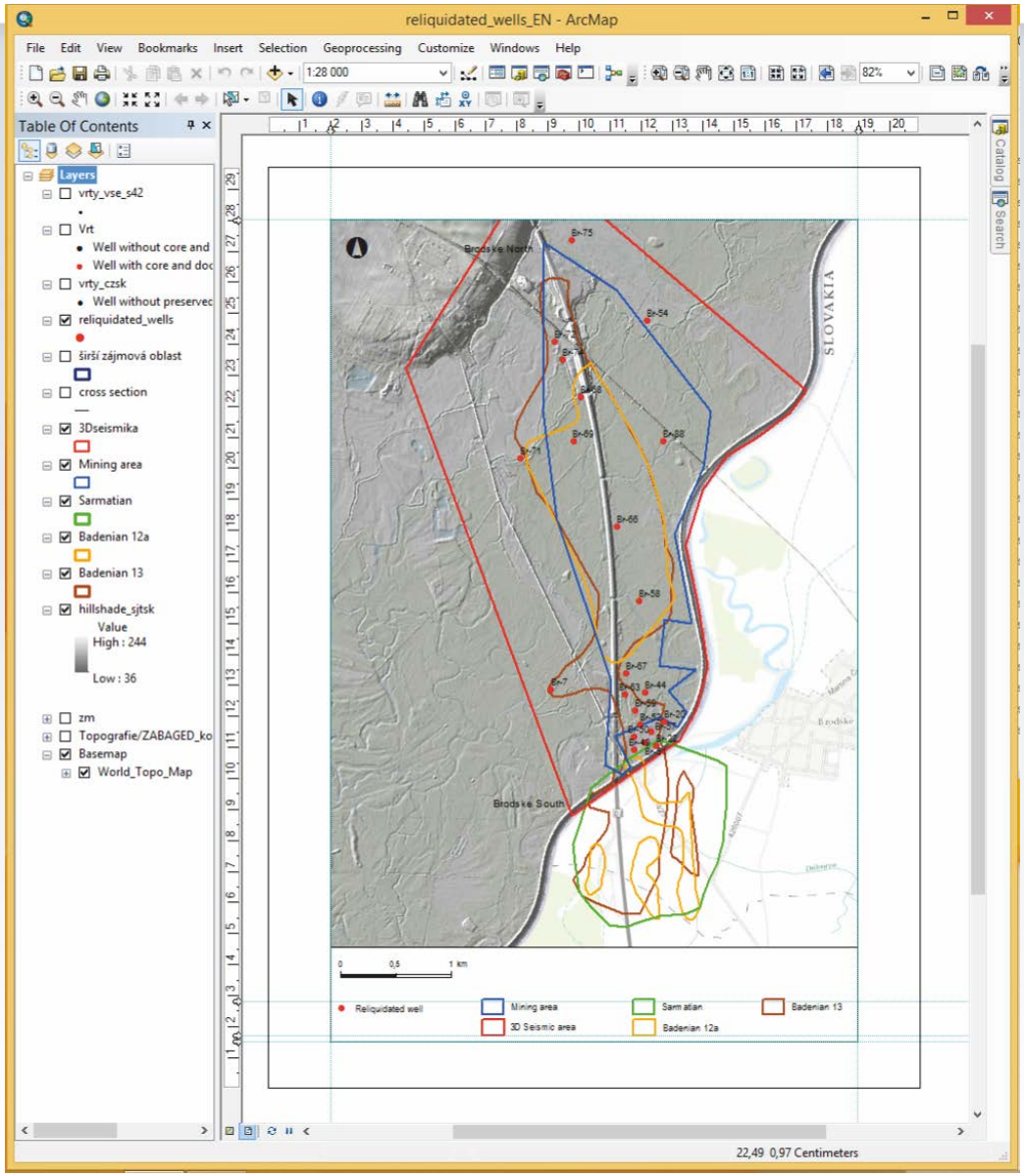
7 (0 out of 7 Selected)

DAT_REPP.Wells_Brodske DAT_REPP.VRTY_TLAK

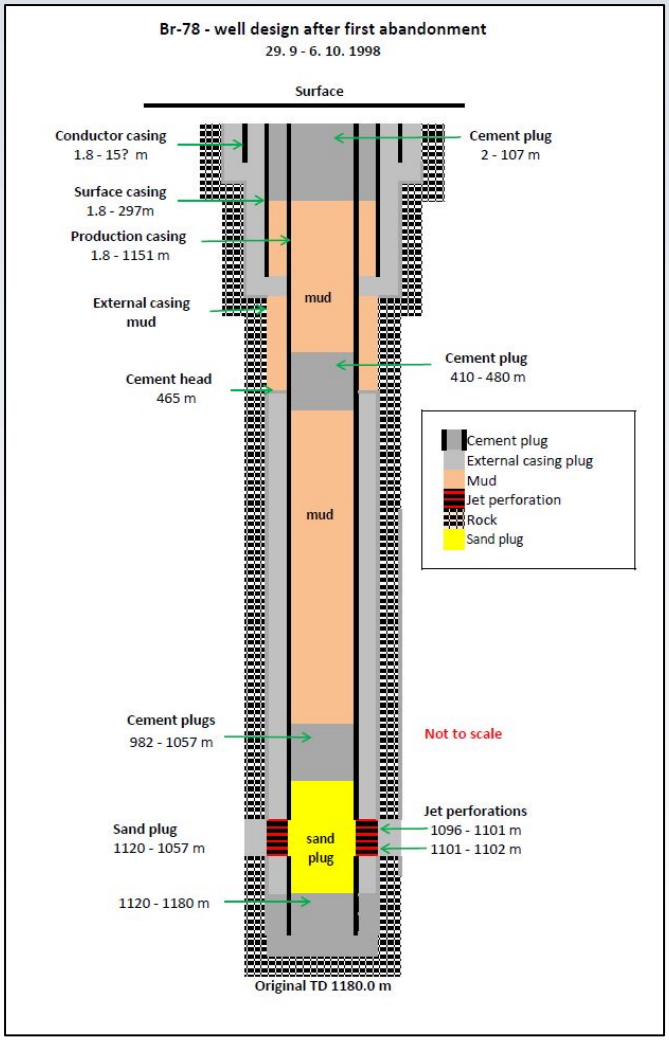
Wells and related tables



Wells and related tables

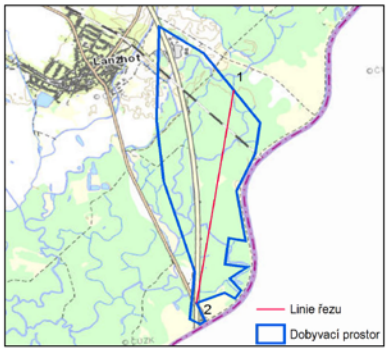


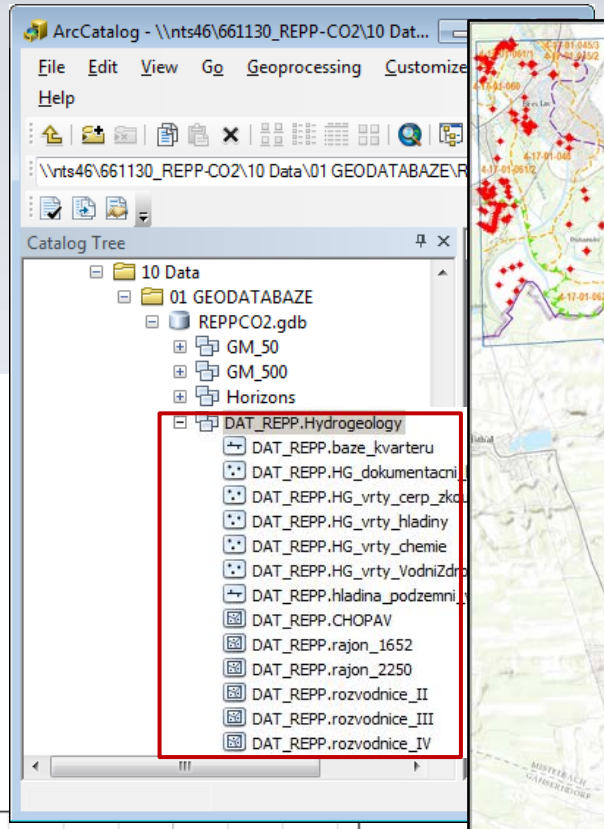
Re-abandoned wells

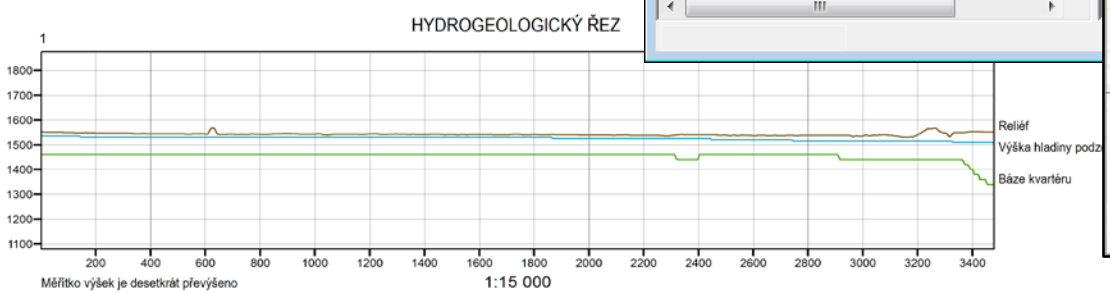


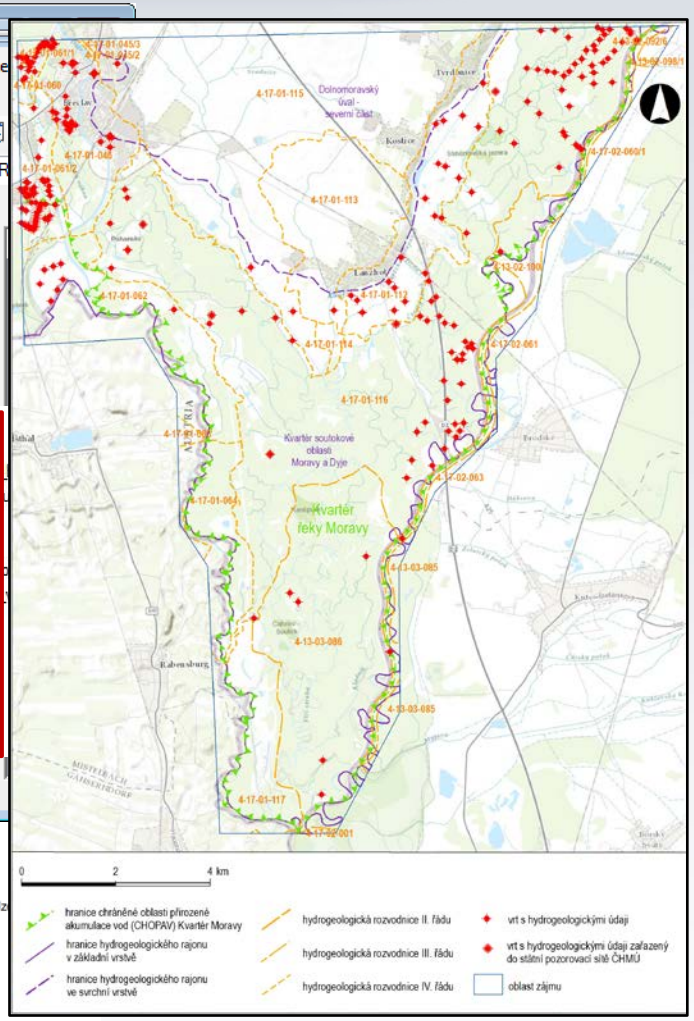
Hydrogeology

Hydrogeological cross-section





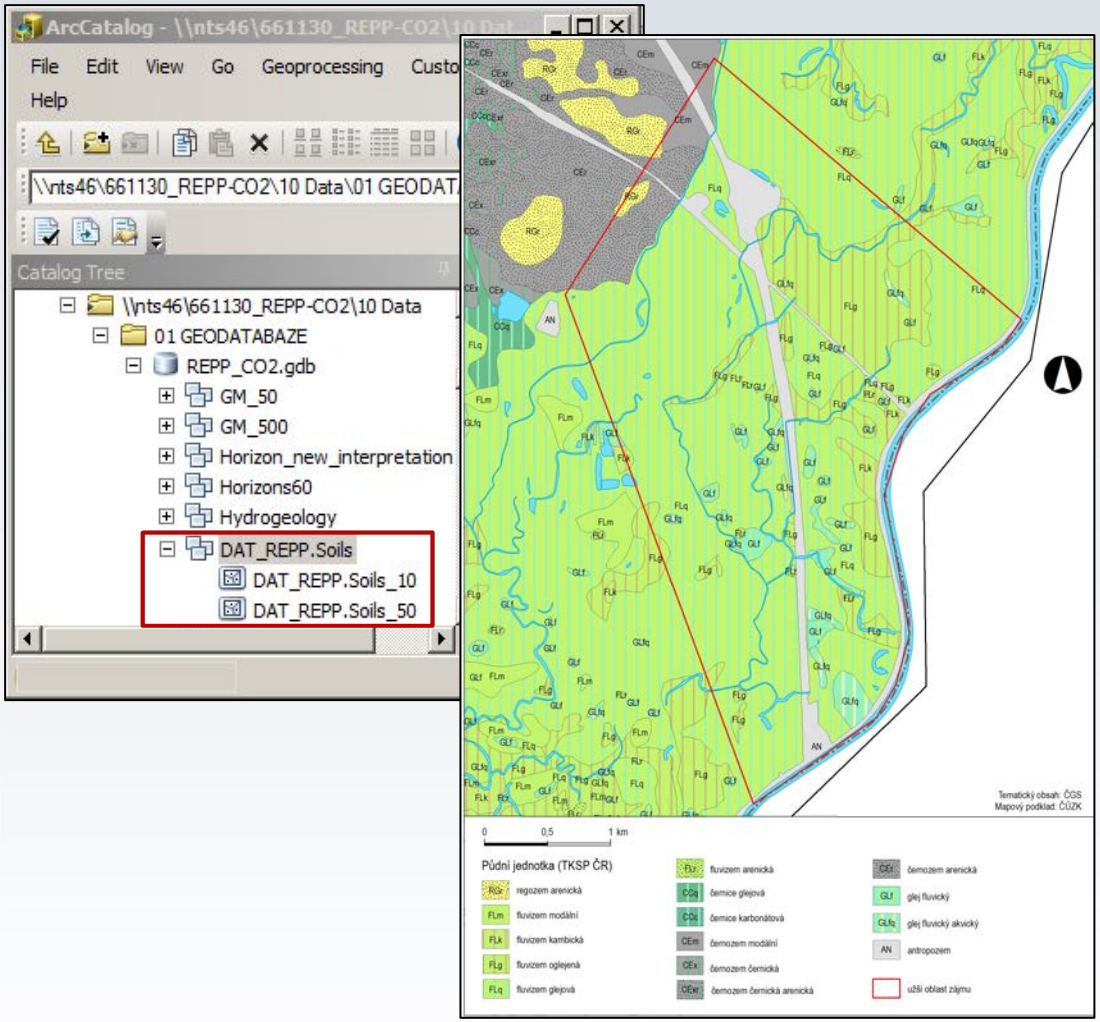


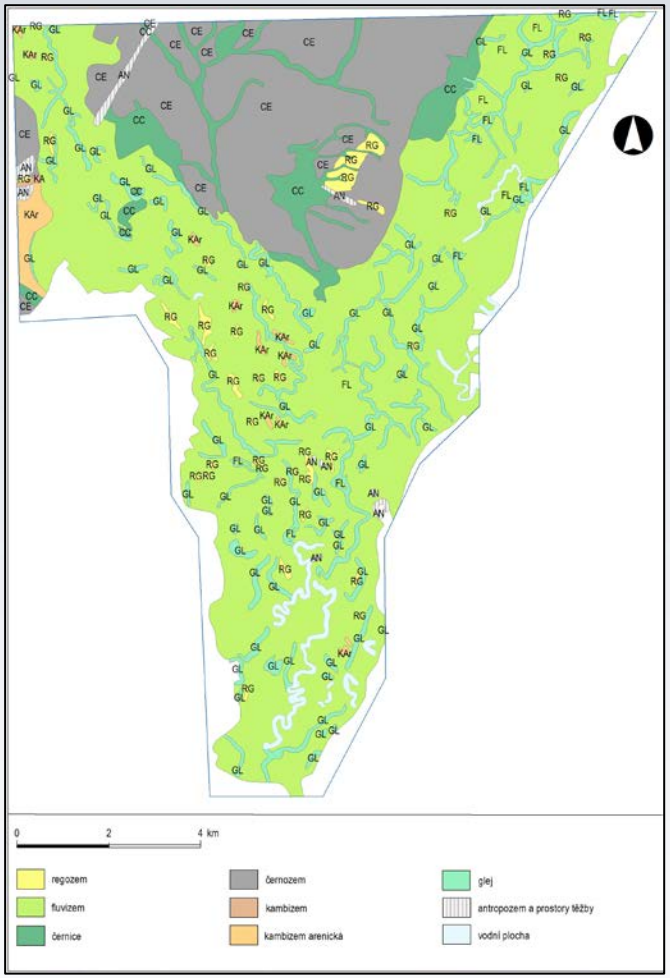


Hydrogeological scheme

Soils

Soil types scheme



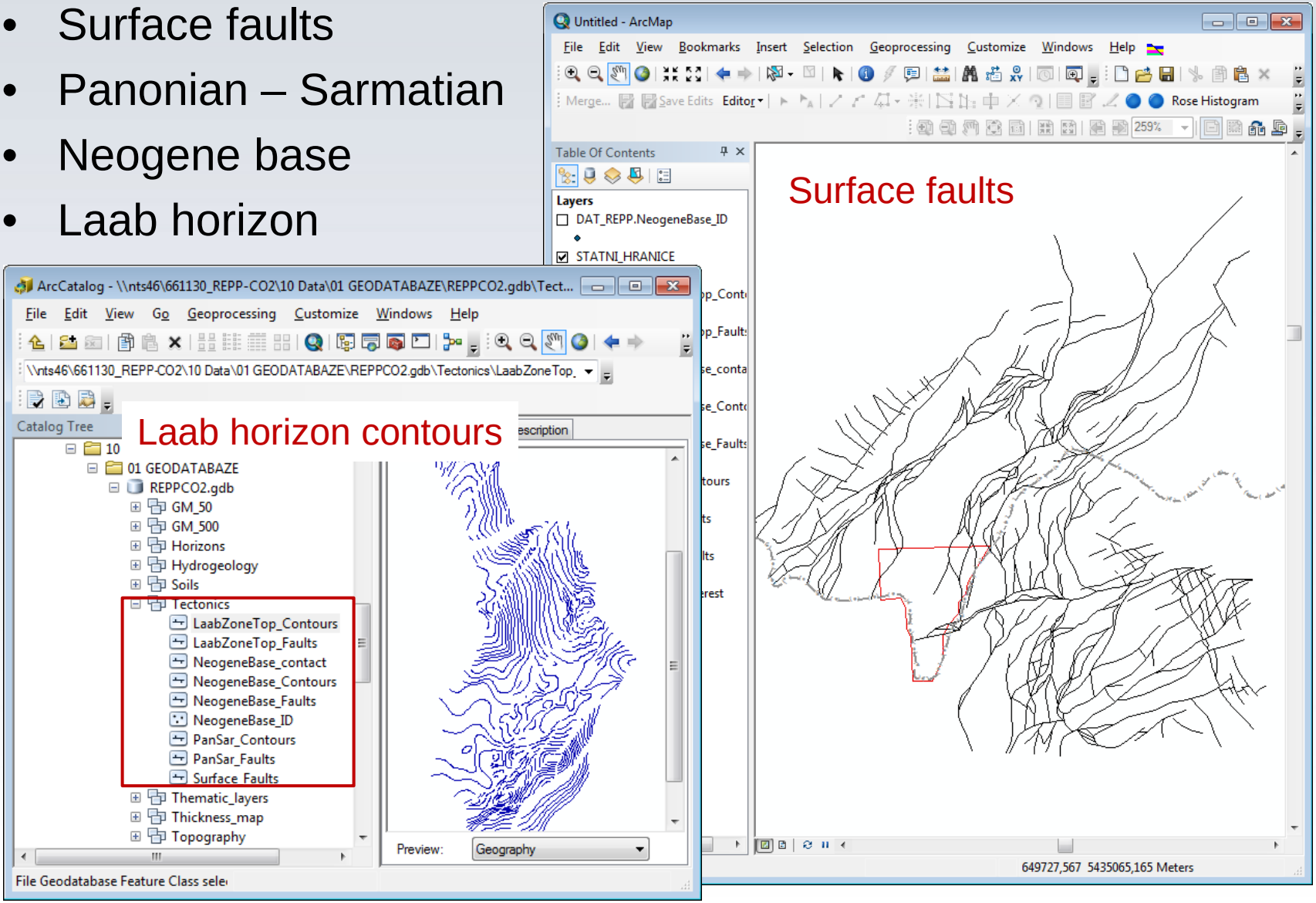


1 : 50 000

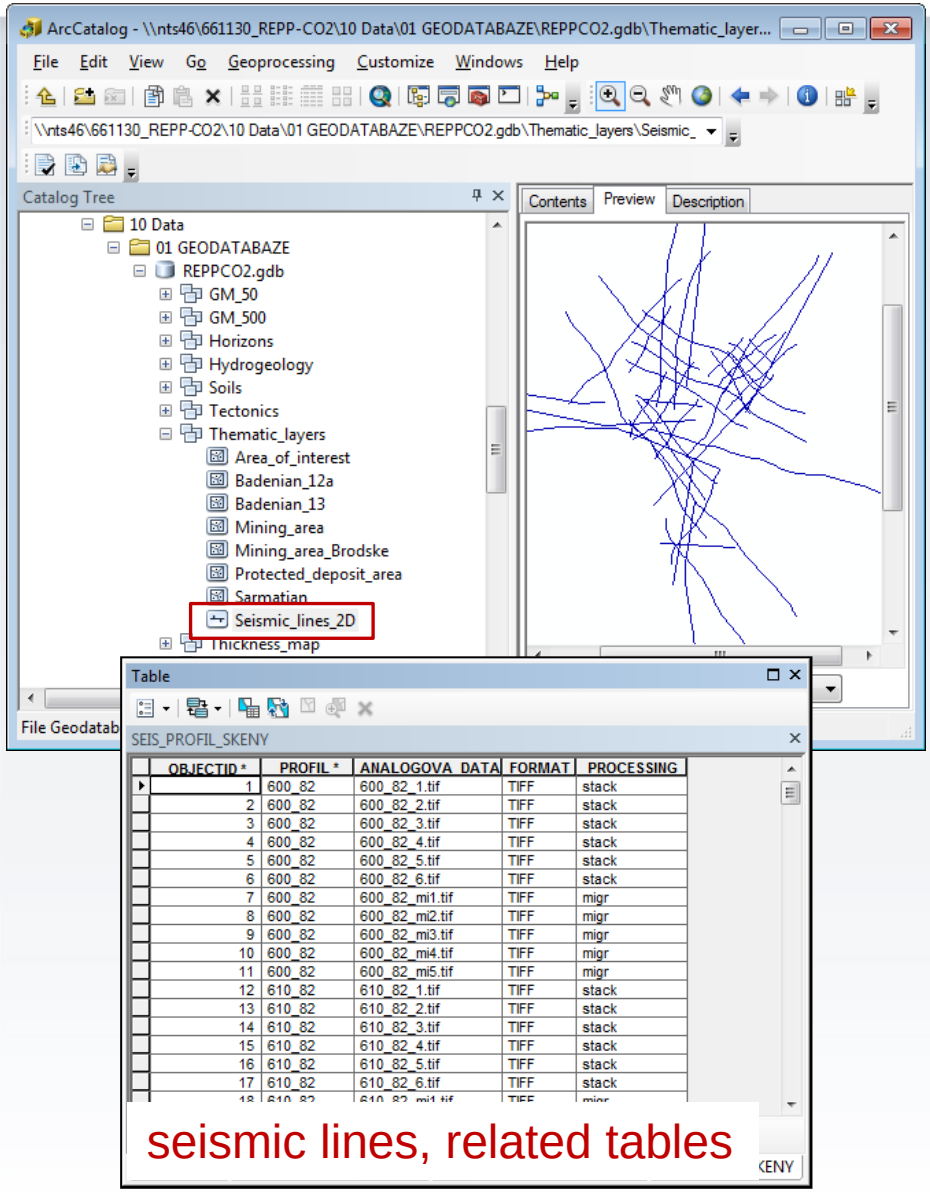
1 : 10 000

Tectonics

- Surface faults
- Panonian – Sarmatian
- Neogene base
- Laab horizon

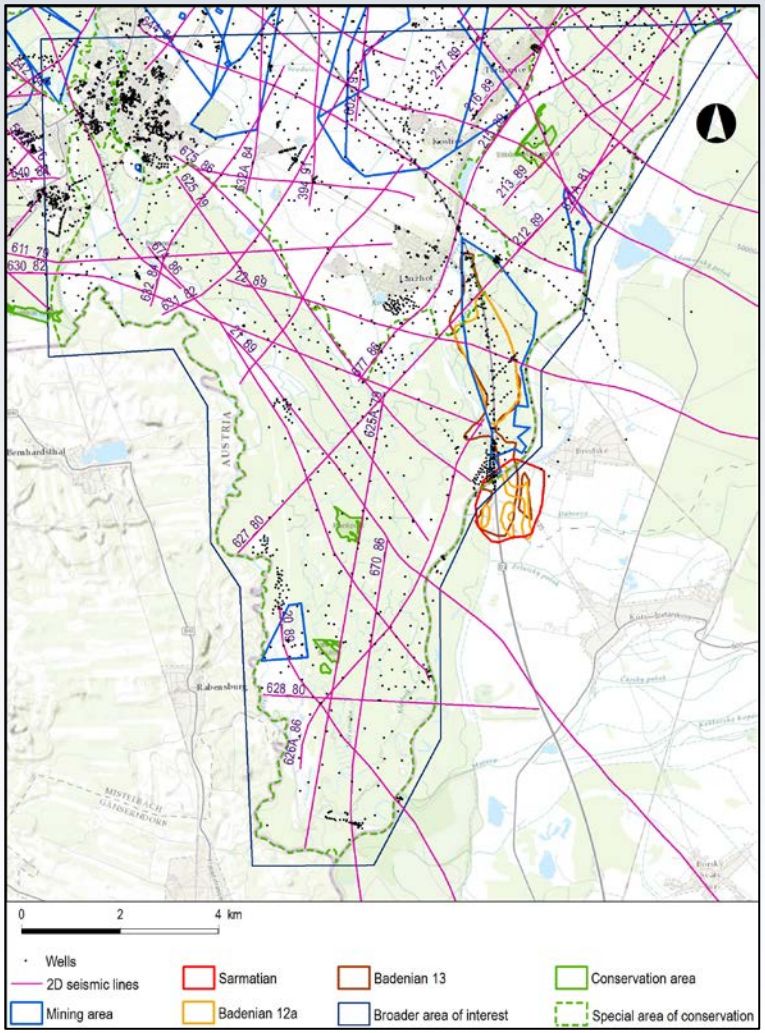


Seismic profiles

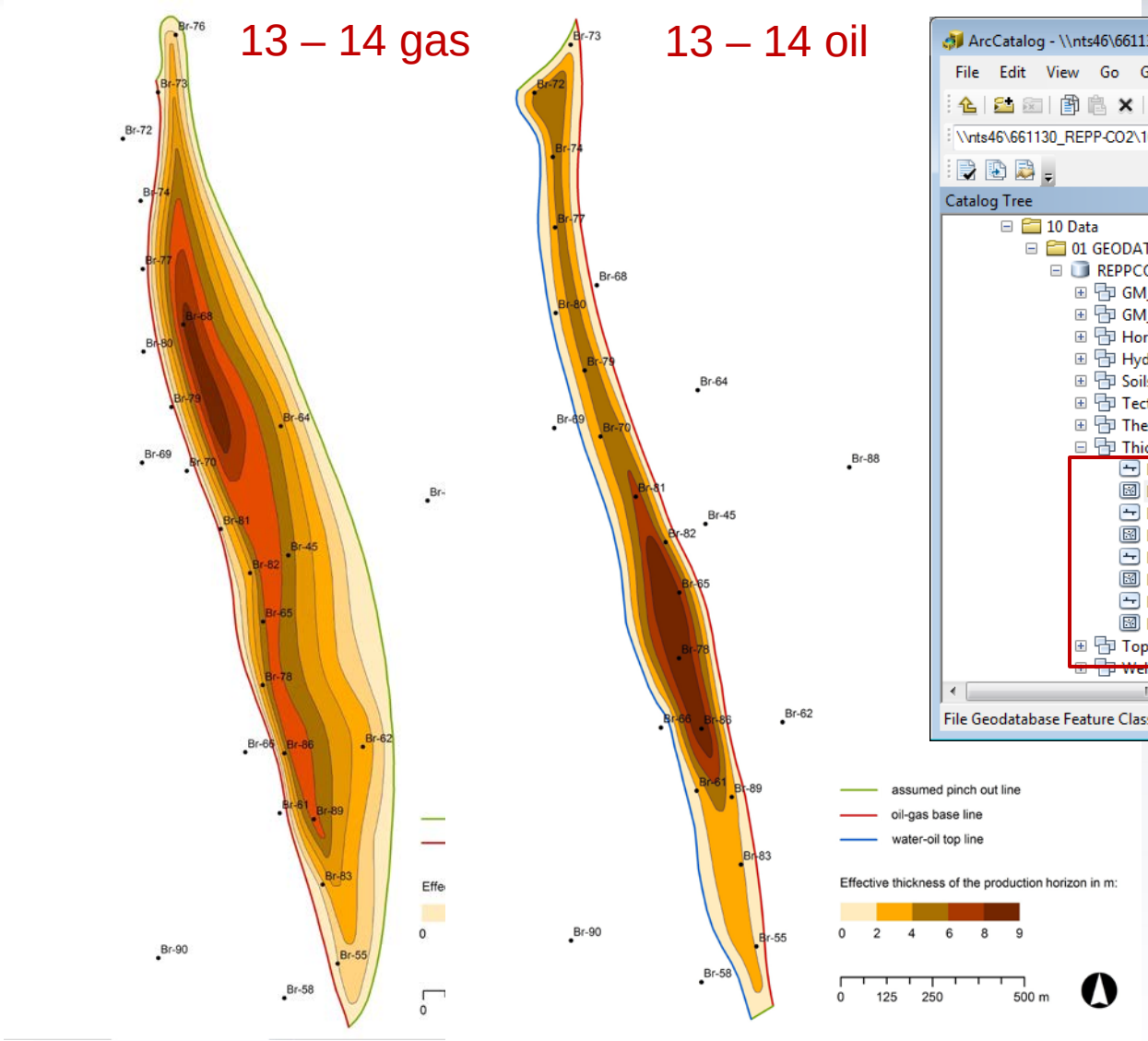


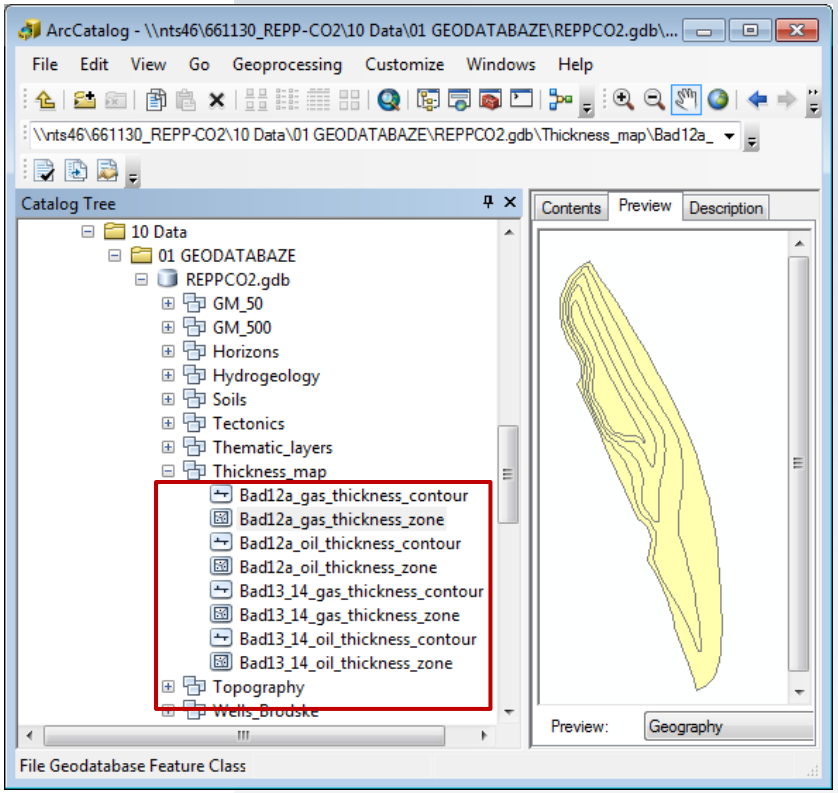
OBJECTID *	PROFIL *	ANALOGOVA_DATA	FORMAT	PROCESSING
1	600_82	600_82_1.tif	TIFF	stack
2	600_82	600_82_2.tif	TIFF	stack
3	600_82	600_82_3.tif	TIFF	stack
4	600_82	600_82_4.tif	TIFF	stack
5	600_82	600_82_5.tif	TIFF	stack
6	600_82	600_82_6.tif	TIFF	stack
7	600_82	600_82_mi1.tif	TIFF	migr
8	600_82	600_82_mi2.tif	TIFF	migr
9	600_82	600_82_mi3.tif	TIFF	migr
10	600_82	600_82_mi4.tif	TIFF	migr
11	600_82	600_82_mi5.tif	TIFF	migr
12	610_82	610_82_1.tif	TIFF	stack
13	610_82	610_82_2.tif	TIFF	stack
14	610_82	610_82_3.tif	TIFF	stack
15	610_82	610_82_4.tif	TIFF	stack
16	610_82	610_82_5.tif	TIFF	stack
17	610_82	610_82_6.tif	TIFF	stack

Scheme: 2D seismic lines, conflicts of interests

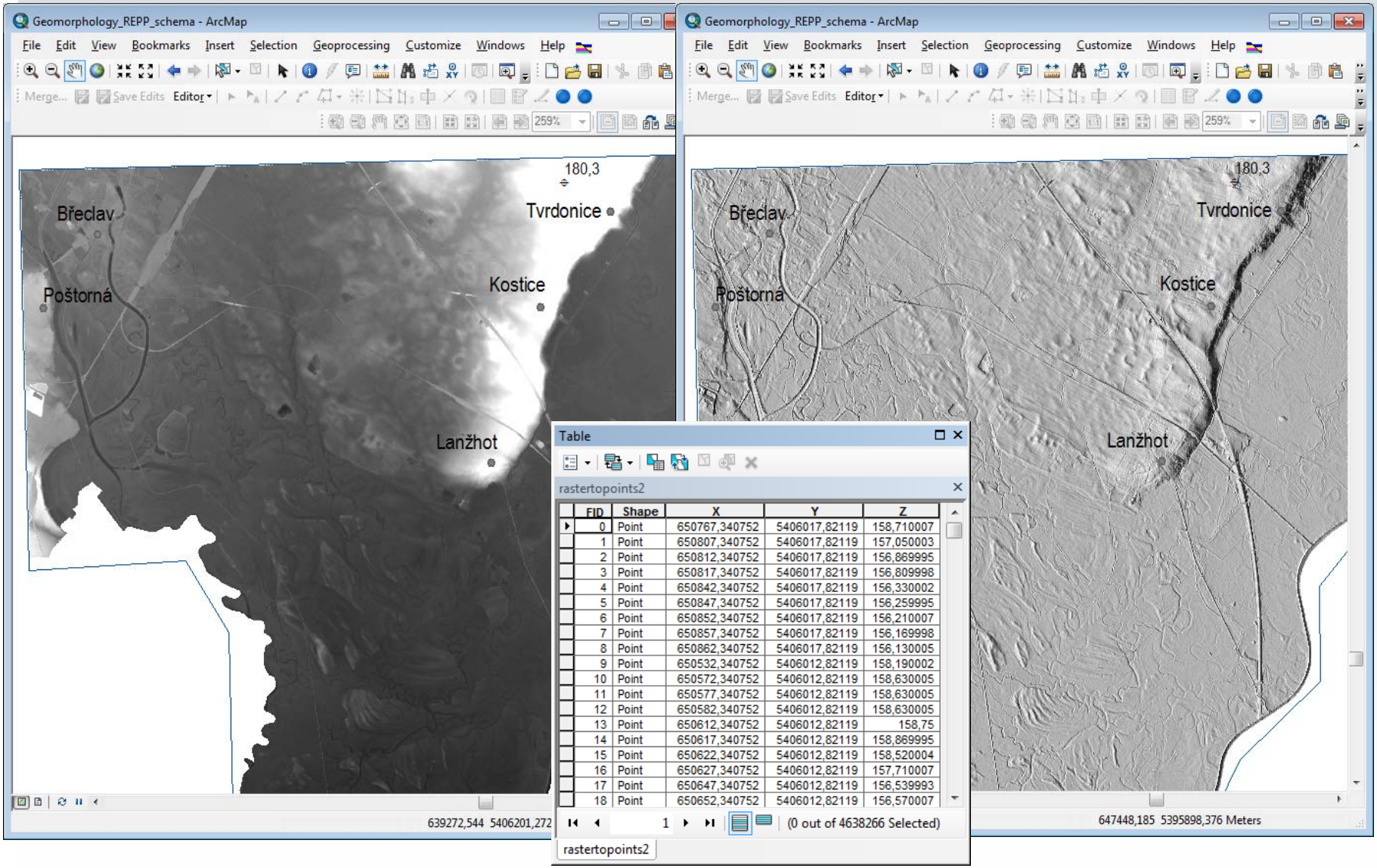


Thickness maps





Digital Elevation Model (DEM)

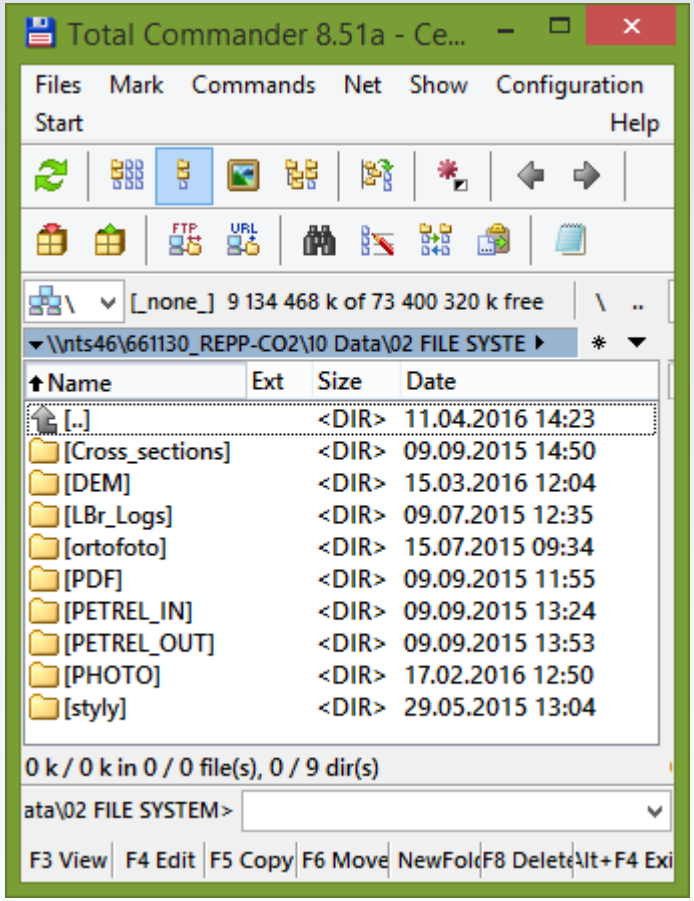


FID	Shape	X	Y	Z
0	Point	650767,340752	5406017,82119	158,710007
1	Point	650807,340752	5406017,82119	157,050003
2	Point	650812,340752	5406017,82119	156,869995
3	Point	650817,340752	5406017,82119	156,809998
4	Point	650842,340752	5406017,82119	156,330002
5	Point	650847,340752	5406017,82119	156,259995
6	Point	650852,340752	5406017,82119	156,210007
7	Point	650857,340752	5406017,82119	156,169998
8	Point	650862,340752	5406017,82119	156,130005
9	Point	650532,340752	5406012,82119	158,190002
10	Point	650572,340752	5406012,82119	158,630005
11	Point	650577,340752	5406012,82119	158,630005
12	Point	650582,340752	5406012,82119	158,630005
13	Point	650612,340752	5406012,82119	158,75
14	Point	650617,340752	5406012,82119	158,869995
15	Point	650622,340752	5406012,82119	158,520004
16	Point	650627,340752	5406012,82119	157,710007
17	Point	650647,340752	5406012,82119	156,539993
18	Point	650652,340752	5406012,82119	156,570007

File system

File system - Part of the Central data storage

- non-geographic data
  - graphics
  - tables
- original data
- data backup



Conclusions

- Use of IT is a key factor for the project success
  - Communication support (website, file system, email directory, …)
  - Data sharing between project partners
    - Central management of digital spatial data – project geodatabase (single coordinate system, use of codelists, …) containing archive data and new data, interpretations and results
    - Structured file system for non-spatial data
    - Processing of outputs from the project information system (map or data outputs)

Thank you for your attention!

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zuzana.krejci@geology.cz