



**MAIN RESULTS OF PERSONAL RESEARCH IN NEAR-SURFACE GEOPHYSICS
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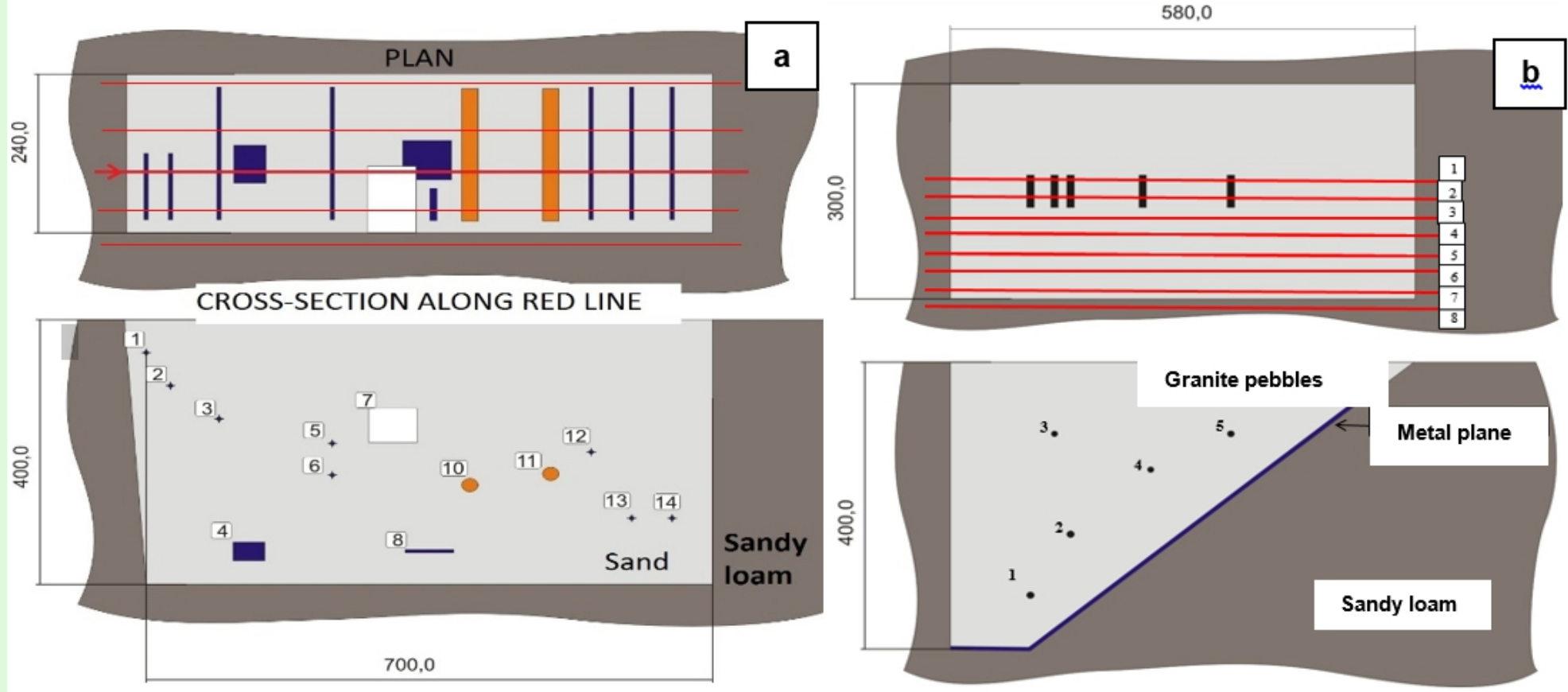


Figure 1 Sites "Trench" (a) and "Dump-body" (b). On the top, there are plans of sites with directions of survey and below – cross-sections:

- a - Objects: 1,2 – steel pipes, diameter 5 cm, length 1 m; 3, 13 – steel pipes diameter 5 cm, length 2 m with wire inside; 4 – metal box (0.5m x 0.8m x 0.4m, empty inside); 5, 6, 12, 14 – steel pipe diameter 5 cm, length 2 m; 7 – styrofoam (1m x 0.5m x 0.5m); 8 – metal plane (0.8 x 0.8m); 10, 11 – plastic pipe diameter 20 cm, length 220 cm;
- b - Objects: 5 metal pipes (1-5) with a diameter of 10 cm are marked with black dots on cross-section and with thick black lines on the plan.

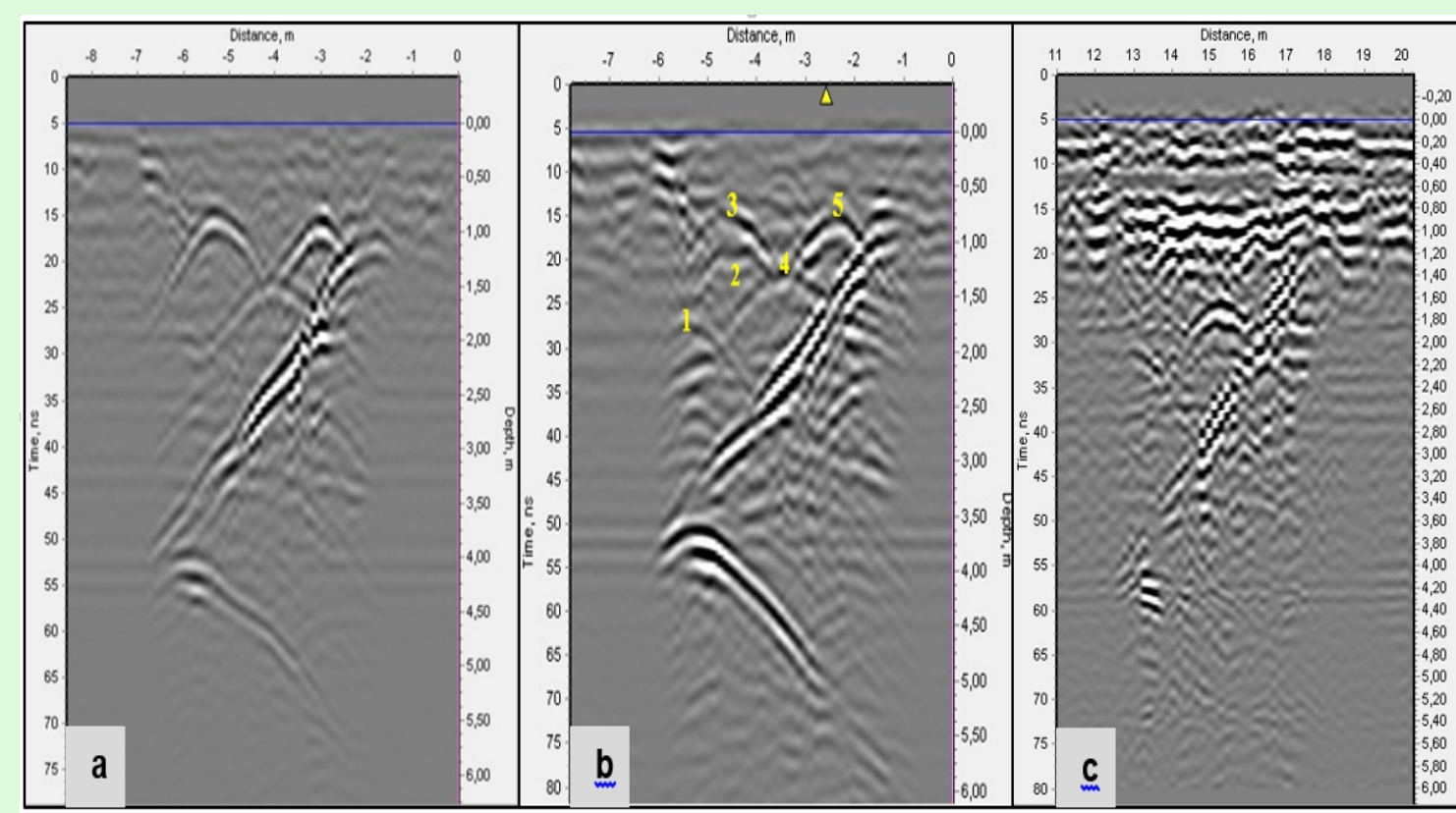


Figure 2. GPR profiles (2 on the plan on fig.1b), recorded on the site "Dump-body" in different seasons and with different GPRs:
– VIY3-500, September 2015 ; b – VIY3-300, September 2015 (numbers for anomalies according to numbers for objects on fig 1b);
c – VIY3-500, December 2015

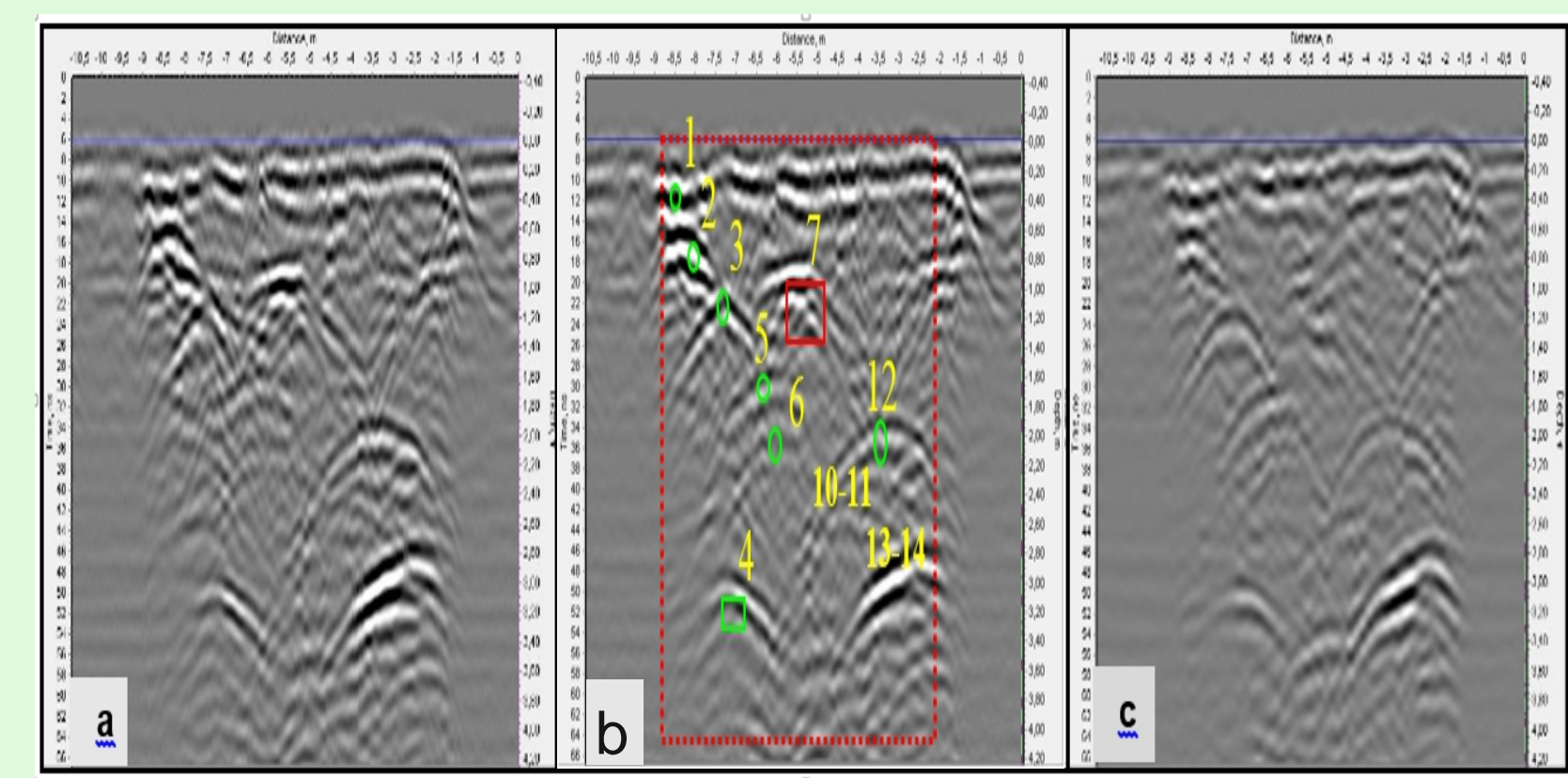


Figure 3. GPR profiles recorded with VIY3-300 GPR on the site "Trench" (direction 3, in the center on the plan on fig. 1a) with depth of sounding 65 ns or 4.2 m and with different steps on profile: a) =30,94 mm; b) =123 mm (numbers for anomalies according to numbers for objects on fig 1a); c) =154 mm.

Depth of measurement	Step of measurement, mm	Number of object, for which the quality of reflection is evaluated					Total sum of points
		1	2	5	6	10-11	
67, 4.2	30.94	3	1	3	2	2	11
	61.8	3	1	3	3	3	13
	92	3	1	3	2	3	12
	123	3	2	3	3	2	13
	154	3	1	3	2	1	10
100, 7	216	3	0	3	1	1	8
	30.94	3	1	3	3	1	11
	61.8	3	1	3	2	3	12
	92	3	1	3	3	3	13
	123	3	1	3	3	2	12
120, 9	154	3	1	3	3	1	11
	216	3	0	2	0	1	6
	30.94	2	1	2	1	0	6
	61.8	3	1	3	3	3	13
	92	3	1	2	2	3	11
165, 12	123	3	2	3	1	1	10
	154	2	0	3	2	2	9
	30.94	3	1	3	2	2	11
	61.8	3	1	3	2	2	11
	92	3	1	3	2	2	11
123	3	1	1	2	2	9	
	154	3	1	1	2	2	9

Figure 5. Evaluation and comparison of the GPR profiles, recorded with VIY2-300 GPR on the site "Trench"

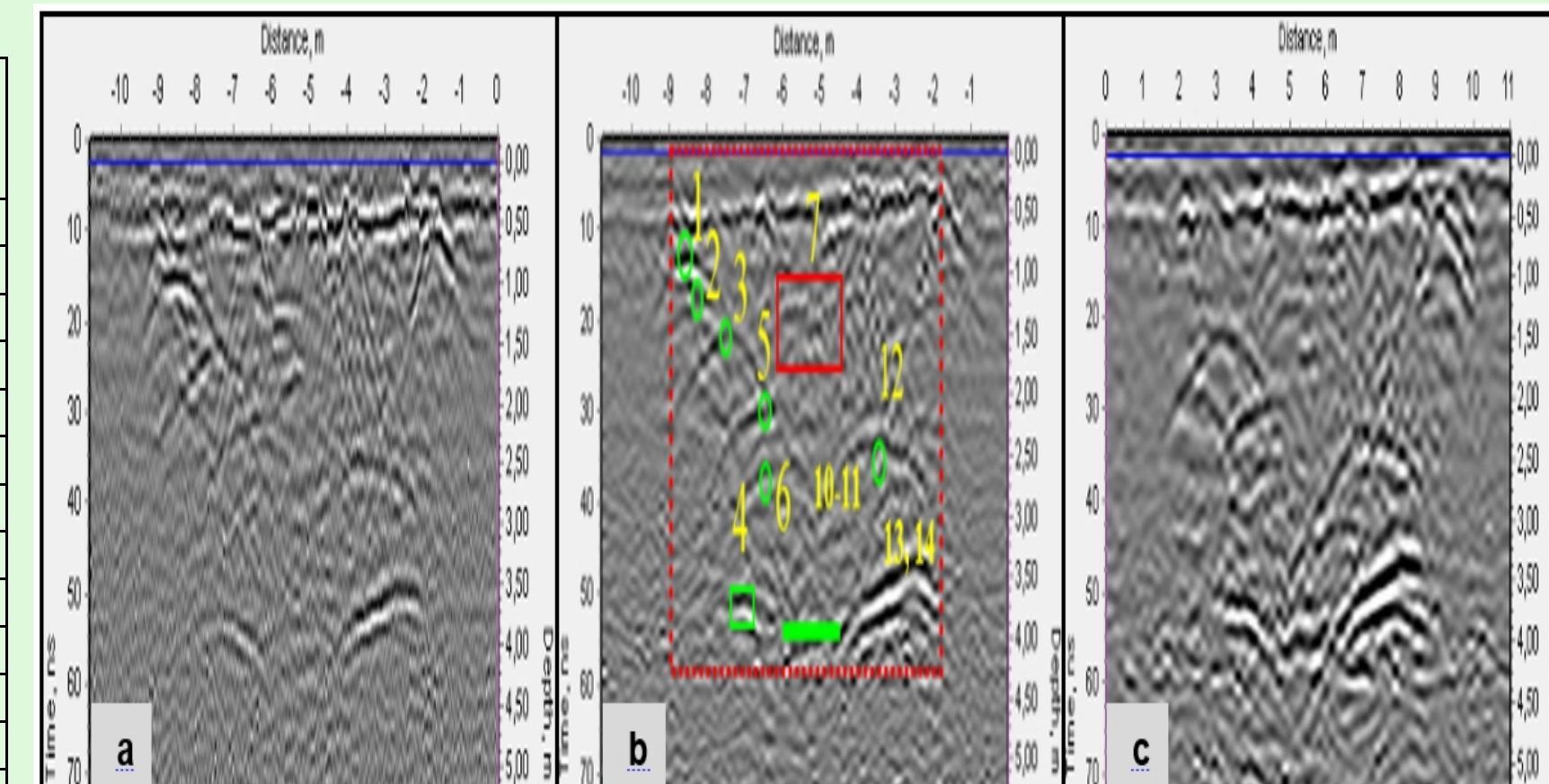


Figure 4. GPR profiles recorded with VIY3-300 GPR on the site "Trench" (direction 3, in the center on the plan on fig. 1 a) with depth of sounding 140 ns or 9.1 m and with different steps on profile: a) =30,94 mm; b) =123 mm (numbers for anomalies according to numbers

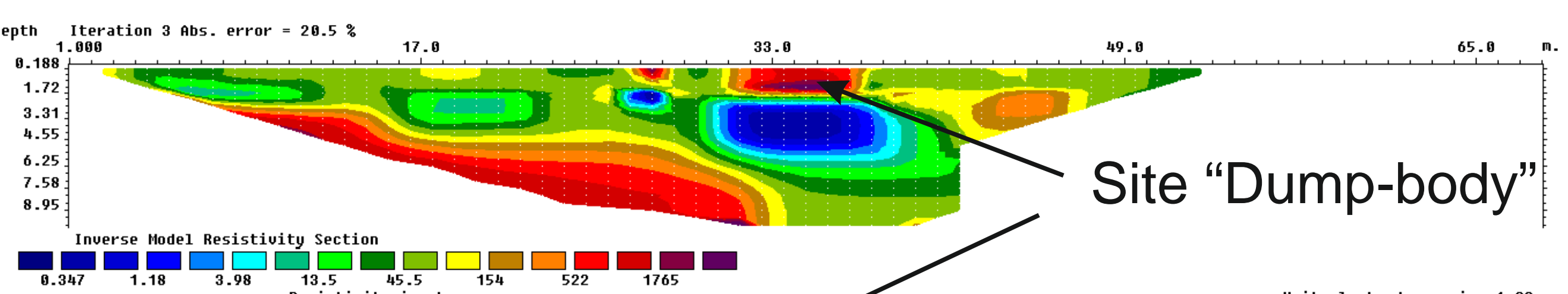


Figure 6. Results of ERT

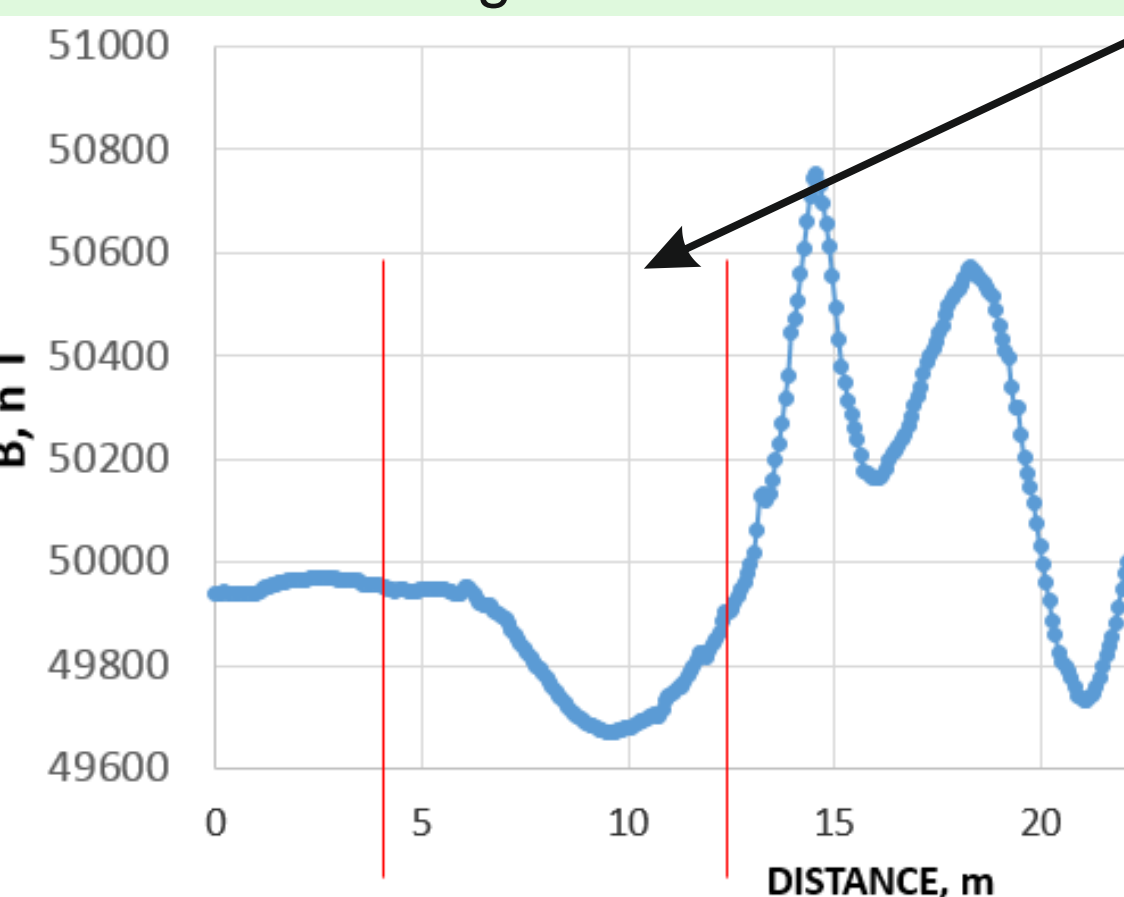


Figure 7. Results of magnetic survey

The aim of research was to investigate dependence of informativeness of the survey from settings of measurement, frequency of the antenna and seasoning. Assessment was done with 4 point-scale (from 0 - reflection clearly indicated). Evaluation of informativeness was done as a result of comparison of the total amount of points for different settings of surveying (figure 5). Also it was confirmed that GPR surveying is more informative than magnetic survey and ERT, as it helps to identify more precise location of objects along the vertical and horizontal axis.

INVESTIGATIONS OF GRANITE, ZHYTOMYR REGION, UKRAINE

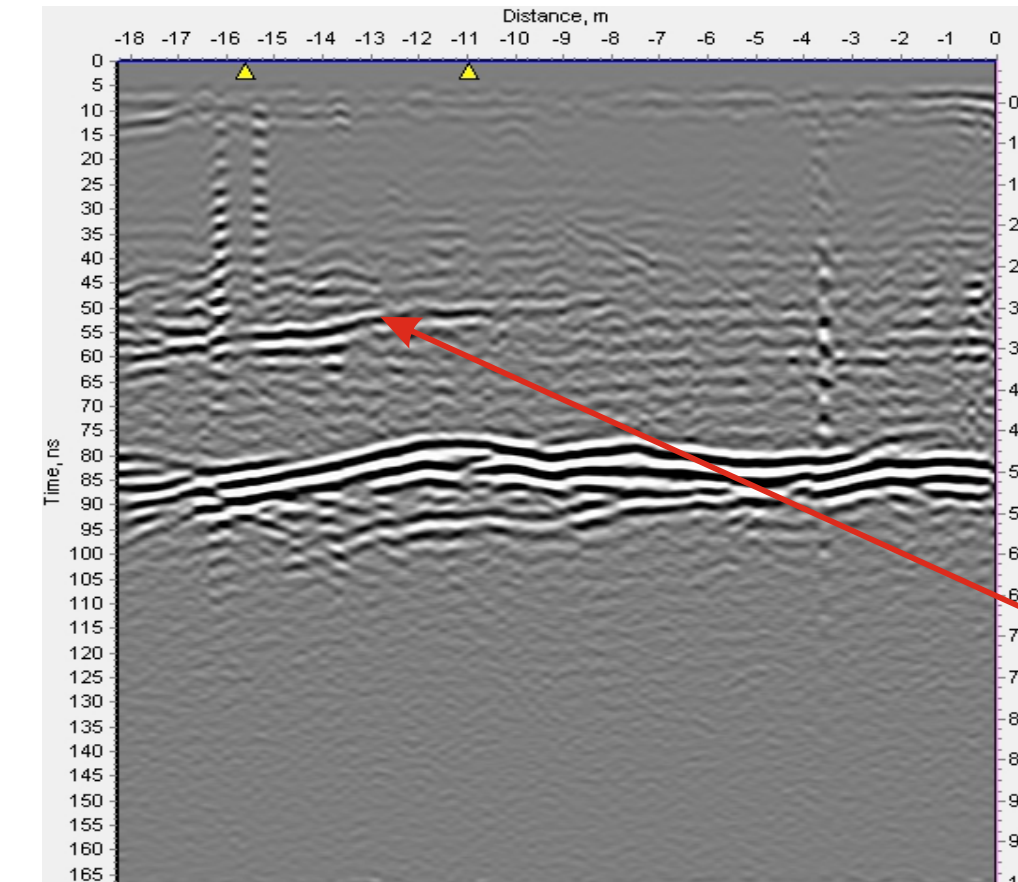


Figure 8. Reflection from fissure filled with water (bright reflection on 3 m,) and between granite blocks (5 m) [1]



Figure 9. Granite quarry [1]

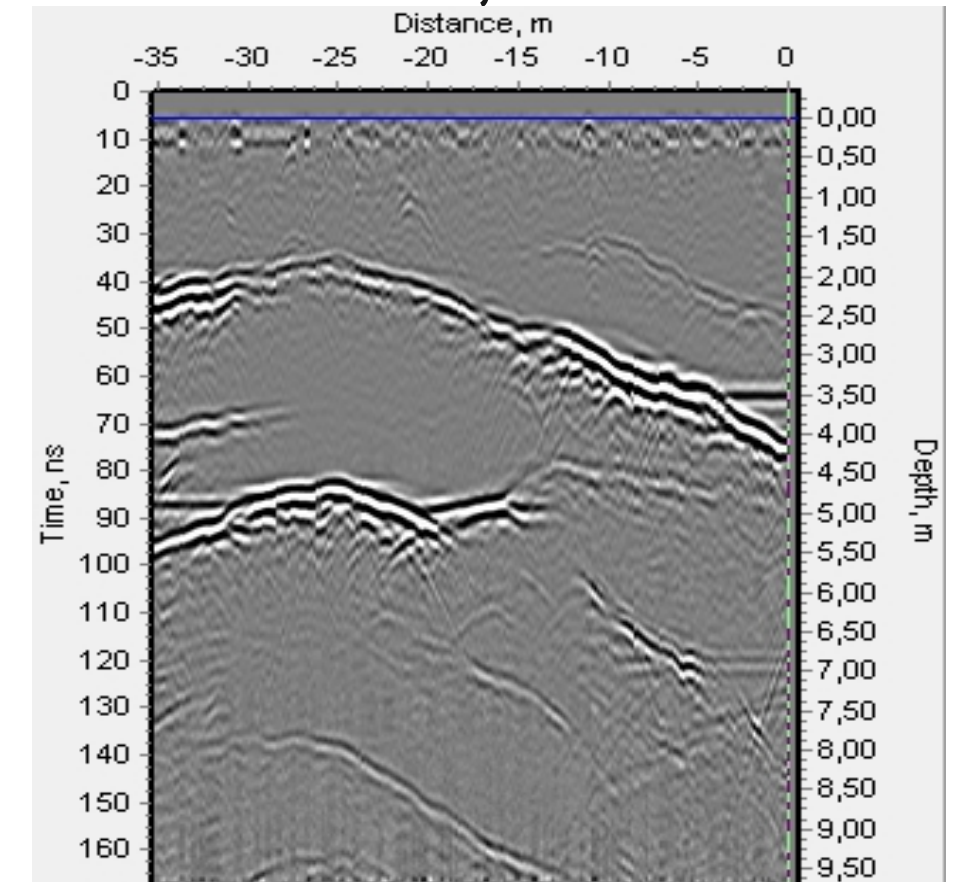


Figure 10. Reflection from top of granite (reflection on 2-4 m) and other layers of heterogeneity in granite (deeper)[1]

GRAVE SITE OF WORLD WAR II, LVIV REGION, UKRAINE

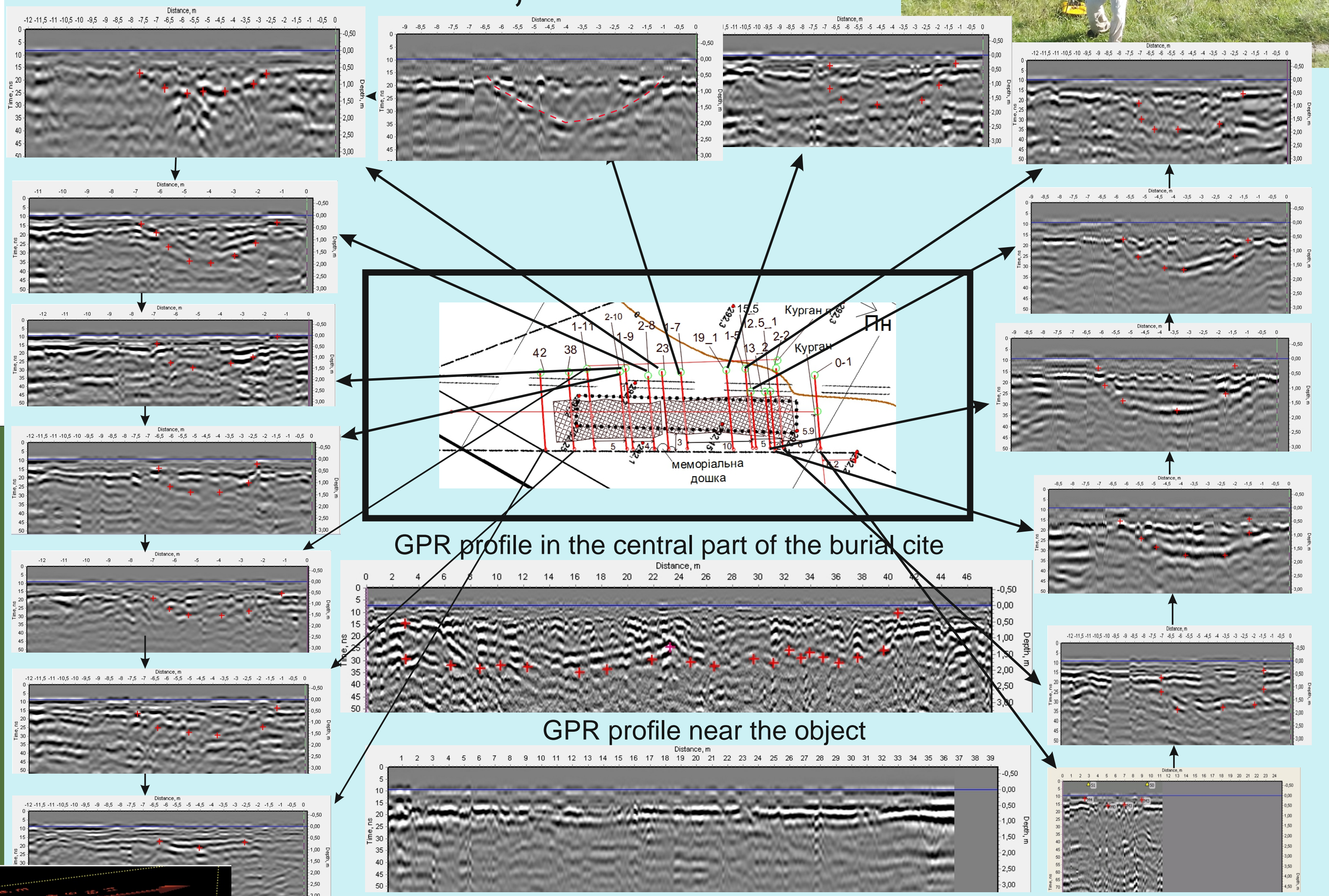


Figure 15. GPR profiles after processing recorded along and cross burial site

IDENTIFICATION OF A PIPELINE, Kyiv, Ukraine

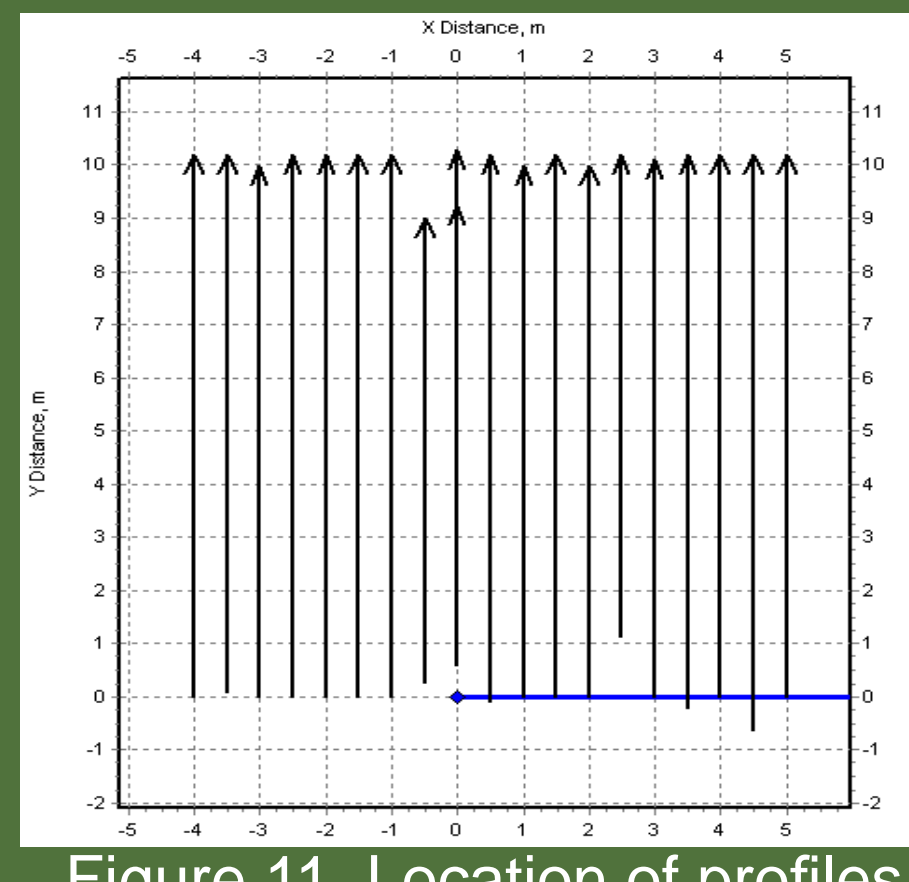


Figure 11. Location of profiles



Figure 12. Equipment

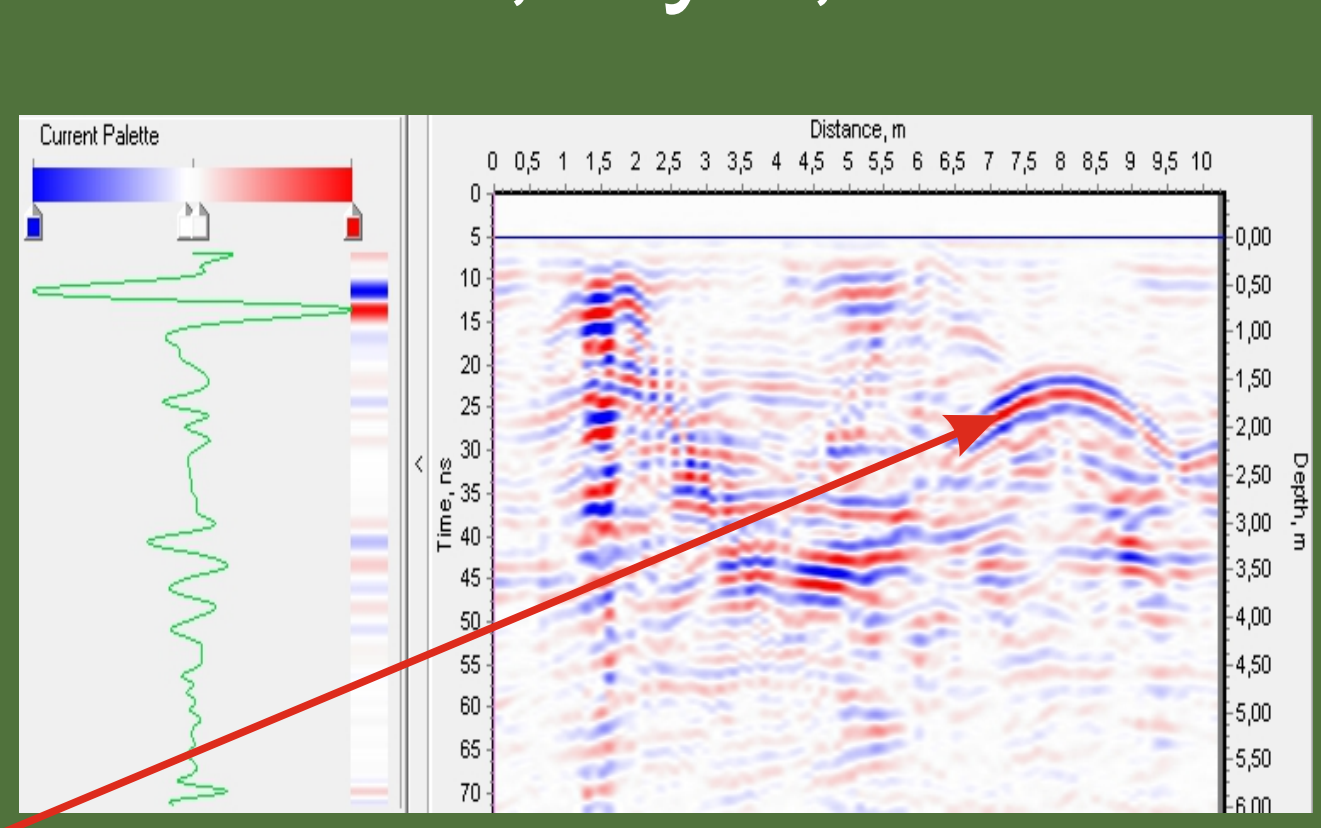


Figure 13. GPR profile

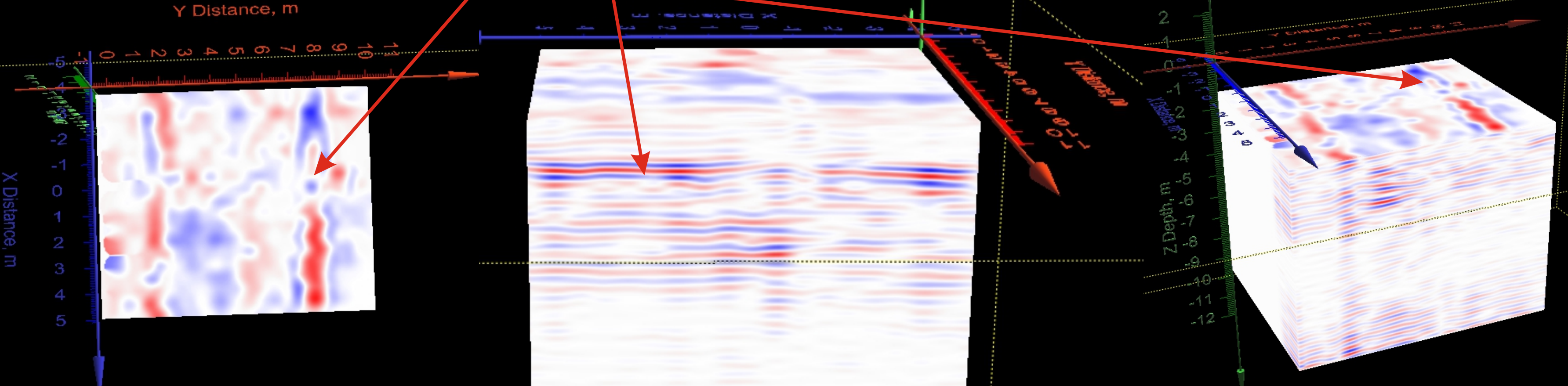


Figure 14. Results of 3D modeling of recorded GPR data

Summary

On this poster results of my personal investigations are represented. During last two years I am mostly specialized on GPR surveying and near-surface methods. Researches with GPR (figures 1 - 15) were conducted during 2015-2016 years and I am still working on selection of proper settings for each specific situation; research of burial site is also one of my active topics for today. Results of research on experimental polygon (figures 1-7) were used in my master thesis ("Informativeness of GPR surveying for solving problems of near-surface geology"). Also this results were shown on 2 all-Ukrainian conferences and on General Assembly of EGU in 2016. As a result of these investigations several practical recommendations for GPR surveying were written. I am still working on research for burial sites and on figure 15 preliminary results of successful identification of reflective border is shown. Figure 16 illustrates results of my research for bachelor thesis. Information for this research was provided by state enterprise Institute "Energooproekt".

The aim was to indicate stretching of lower density clays and on figure 16 side of this territory with the lowest density is shown. Other my active topic of research is evaluation of radiation doses while flight journeys. I have experience in rock's chemical composition modeling and in simulation of radiation conditions.

Acknowledgments

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References

- Chernov A. GPR survey, as one of the best geophysical methods for social and industrial needs // Conference proceedings of EGU General Assembly, poster session (Vienna, Austria, 2016)

MONITORING OF DENSITY ON THE TERRITORY OF NUCLEAR POWER PLANT results of well-logging data interpretation

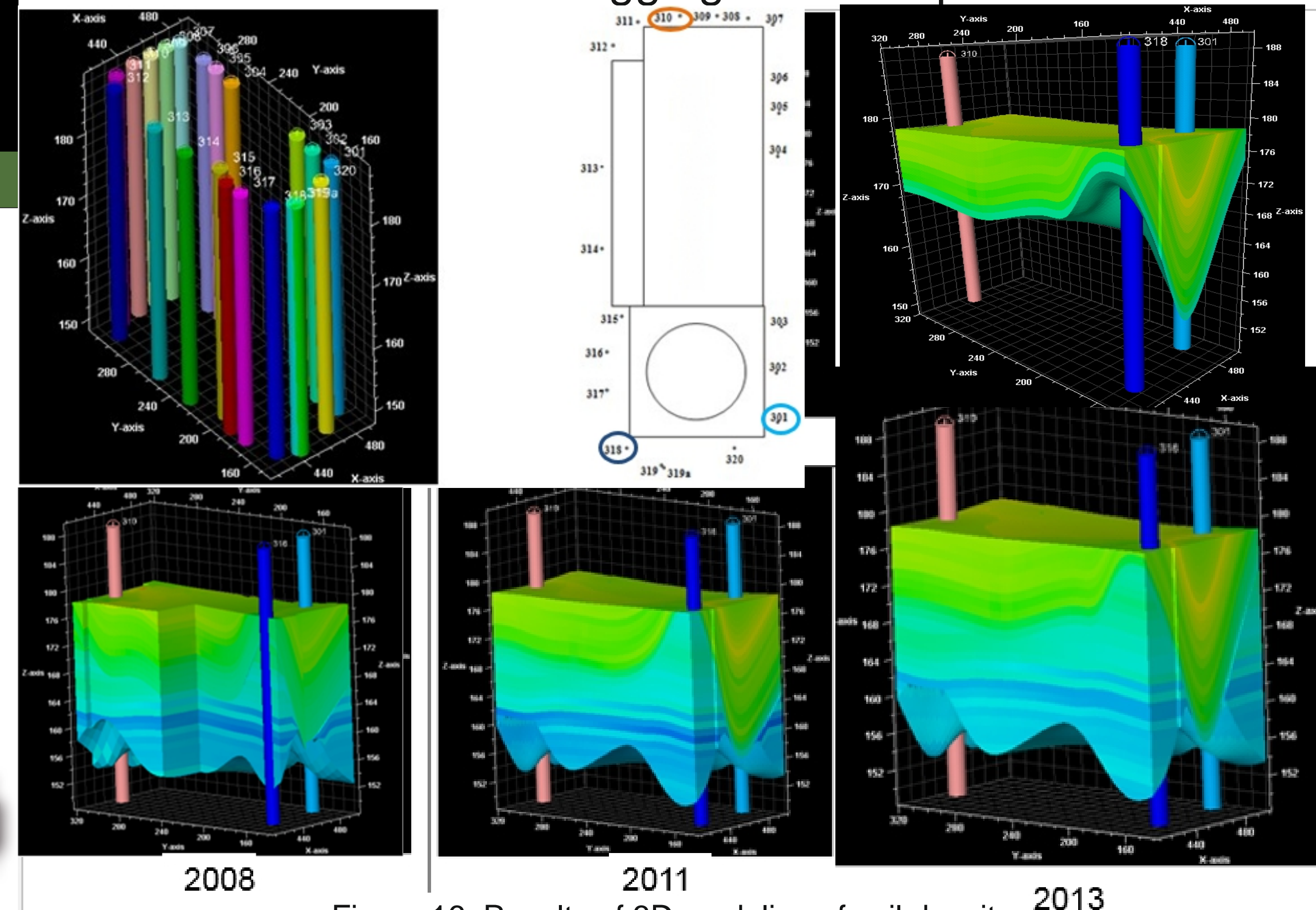


Figure 16. Results of 3D modeling of soil density 2013