

VISUALIZATION OF 3D GPR SURVEYS: APPLICATION OF VIRTUAL REALITY IN GEOSCIENCES

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Ground penetrating radar is increasingly applied to determine 3D-structures in the shallow subsurface. A GPR survey is often carried out along two orthogonal sets of parallel lines. Spacings of the resulting data are very dense along profile lines and rather wide between adjacent lines. Hence the use of methods which exist for 3D-seismic datasets like automatic surface extraction and volume visualization is difficult. To exploit the 3D character of the data, we experiment with a combination of virtual reality and "pseudo-volume-visualization". Radar sections are placed as in 3D-space and, with the help of a colortable, only strong positive and negative peaks are rendered. Accordingly, the course of a prominent reflector in space becomes visible.

As the projection on a 2D-screen would provide a confusing image we use virtual reality. Radargrams are calculated for the left and right eyes of the interpreter and are displayed on large projection screens (e.g. Workbench, Cave). Shutter glasses make each radargram only visible for the eye it is generated for.

This technology allows to visualize the data in 3D-space without prior interpretation which is necessarily subjective. It is also suitable for visual integration of data from different geophysical methods, like e.g. GPR, borehole and electric measurements, and for discussion of a dataset with several people.