

Non-invasive method of determining salt cavern convergence

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Abstract

The presentation summarises a solution to the problem of determining the convergence of underground caverns in a salt rock mass based on the results of measurements of land surface subsidence using the Gauss-Markov equalization algorithm. The method makes it possible to control the convergence of cavern volumes on an ongoing basis after each measurement of subsidence on the ground surface and to determine the actual impact of the frequency of use (injection - medium consumption) on the course of convergence in time. The presented methodology is universal and tested on a real object, which is a field of caverns located in the salt rock mass. The Gauss-Markov inversion model has not been used in this area so far, hence its successful implementation is a significant novelty in this area.

Key words: underground storage, salt cavern, convergence, subsidence, surface deformation