

LITERATURE REVIEW ON SINKHOLE PREDICTION FOR BUILDING A GEODATABASE WITH THE USE OF TERRESTRIAL LASER SCANNING FOR SINKHOLE MONITORING

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Sinkholes are one of many forms of ground collapse, or subsidence. They're holes in the ground caused by the collapse of a surface layer, leading to a void or cavity below. There are several factors responsible for formation of sinkholes, one of them is underground mining. Tunnels left after abandoned mines create a hazard and facilitate the formation of sinkholes. Environmental damage caused by sinkhole subsidence can be catastrophic, destroying property and even resulting in death.

Predicting sinkholes is a complex process that involves geological, hydrological, and geophysical techniques. Old abandoned mines tend not to have up-to-date maps or data on the state of the rock mass and the geology of the deposit. Available maps are usually in 2D format and do not describe the current situation. Mapping old and abandoned mine sites is crucial to understanding where potential sinkholes could occur. Therefore, laser scanning of abandoned mines can be a practical solution.

This paper aims to highlight existing methods for predicting sinkholes and assessing risk of their formation. The review of methods will be helpful to develop an in-depth understanding of various parameters influencing the sinkhole occurrence, which are required in creating a comprehensive database. Data such as historical mining maps, information on geology and geomechanical properties from boreholes or geological exposures present in underground mine with models created by laser scanning will be used as a foundation for creating a geodatabase intended to predict sinkholes.