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Tectonic stresses as the cause of asymmetry and shape deviation of subsidence profiles: a numerical study

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Wprowadź dowolną treść, którą chcesz powtórzyć, w tym inne kontrolki zawartości. Można również wstawić tę kontrolkę wokół wierszy tabeli, aby powtórzyć części tabeli.

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The accurate prediction of ground movement resulting from mining activities is of utmost importance to prevent damage to civilian properties and ensure fair compensation. However, current methods for predicting subsidence often suffer from uncertainties. Existing literature indicates that these methods overlook the significant influence of the stress field, a crucial characteristic of rock masses. Through numerical experiments using FLAC 3D 7.0 and the advanced Hoek-Brown constitutive model, this study examines the asymmetry effect of tectonic stress on subsidence profiles, considering a range of rock mass properties. The findings shed light on the complex nature of subsidence behavior, encompassing magnitude, shape, and the impact of stress conditions and rock mass properties. Notably, the explicit analysis of asymmetry resulting from higher horizontal stress underscores the necessity of carefully accounting for stress conditions in subsidence prediction. Furthermore, the study offers an estimation of the influence angle based on rock mass properties, contributing to a deeper understanding and prediction of subsidence behavior in practical scenarios.