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## Using plaxis software for the forecasting of karst-suffusion failures in carbonate eluvium

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### Abstract

© SGEM2017. All Rights Reserved. Carbonate eluvium is suffusion unstable soil, where voids and cavities can be formed. This can lead to adverse effects and disasters in the constructions of buildings and structures. This article presents the results of using the Plaxis Software for the determination of the critical depth and critical diameter of the cavities in which the possible collapse. The total thickness of the carbonate eluvium exceeds twenty meters in the study area. The calculation model of the cavity growth included the geometric model of engineering and geological section, complete with physical and mechanical properties (density, internal friction angle, cohesion, modulus of deformation). The cavity was modeled in the form of two nested cylinders. Internal is a cavity, external - weakened soil zone. This approach revealed that in the studied area the dangerous depth is up to seven-eight meter, and the average value of the critical diameter is about two meter. And the most dangerous for the construction of the building will be the appearance of the cavity under a corner of the building. The research results showed good agreement with the actual observed failures in the study are.

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### Keywords

Carbonate eluvium, Karst, Plaxis software, Suffusion

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