

## ***Interactive comment on “FEM-based stability charts for underground cavities in soft carbonate rocks: validation through case-study applications” by Michele Perrotti et al.***

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Thank you for appreciating our work and for suggestions given to improve it. Taking in account your revisions, a new version of paper will be submitted. The second part of abstract and the part 1 have been revised in order to provide a better understanding (especially authors' thesis). The part 2 was rewritten in a clearer way trying to better explain parameters and assumptions of stability charts; a table with adopted values of Hoek&Brown failure criterion has been added with a detailed exposition on the choice of these parameters. Equations (of curves) are missing because the curves represent the result of a parametric study for a large number of ideal cavities with varying ge-

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ometric and mechanical parameters (adopted equation of failure criterion of Hoek & Brown is omitted because widely explained in Perrotti et al. (2018)). Figure 2,3,4 have not been merged to avoid difficulty to interpret a single graph with 12 curves (note that, based on  $m_i$  parameter, the values on the y-axis of three graphs are very different from each other). However, the resolution of the figures has been improved. The part 3 was rewritten in a clearer way: an introductory paragraph has been added in order to explain the choice of presented case studies. Each study case is now presented in a similar way and tables of measured and adopted parameters have been added as requested (vertical logs and values tables are provided). The figures of instability evidences, especially for three case of sinkhole, are necessary to better understand the causes that lead the collapse of quarries (i.e. crushing of pillars that lead an enlargement of L dimension). The part 4 highlights that presented real cases are well suited to verification through stability charts; however, in order to provide a validation index, other study cases, together with those here presented, will be considered in a future paper. The revised version of paper is now available and we look forward to receiving your feedback. Thank you.

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