

Answers to comments of reviewer no. 1

1) Terminology subrosion vs. piping: Indeed in literature, the terms are used interchangeably, which is not correct. Piping described a purely mechanical process driven by seepage. Subrosion, as, e.g. defined in Wadas et al. 2016 (see revised manuscript), describes both mechanical and chemical (leaching) process. In this study we cannot distinguish which process is the dominant one, as it would depend in nature on the materials involved. Therefore, we prefer to use the term “subrosion” which includes both mechanical and chemical erosion and is especially appropriate when considering the materials involved at the Dead Sea sinkholes. We now clarified this in the introduction sec. 1.1. pp. 3, l. 7-10 but keep the term subrosion throughout the manuscript.

2) Erroneous points in the manuscript: Thanks to the reviewing effort, the typos, references and mistakes have been corrected. This includes the following parts and lines (referring to the previous version of the document):

Abstract l. 16; pp.2 l.7; pp. 3, l. 7-10; Done

PP 3 l 27: Interleaved - in this context it means embedded with thin intermediate sheets (of evaporites), the term is kept.

PP 6 l 14; Done

PP 8 l 3 – This depth & radius combination is an assumed realistic subrosion zone depth and dimension. This has been mentioned. Similarly shallower or deeper cavities could have been tested, but this was not the purpose of this test, but rather in the sinkhole models further below.

PP 11 l 12 and 19; PP 14 l 7; PP 15 l 12; PP 18 l 2; PP 20 l 5; PP 29 l 8 & 11; Done

PP 30 l 24: This paragraph has been edited according also to reviewer no. 2.

PP 36 l 14: Reference actualised to Watson et al. 2018.

Additional changes:

Section 3 has been moved to section 2.3.

In Appendix B.5 pp 52 l 29 the term annealing has been added to describe the bond installation procedure for mud material.

Some minor word rephrasing (yellow paragraphs) and figure adjustments (Using differential stress in Figs. 6 and 23, stress/strain labels)