

Editors Comment (Richard Gloaguen):

After careful review of the reviewers' comments and the answers provided by the authors I tend to lean accepting this manuscript at the condition that the authors add a paragraph in their discussion in which they acknowledge the issues / alternative interpretations raised by the reviewers.

I think that, at this stage, it is more a matter of interpretation than methodological or analytical problems.

My point is, this submission should be published as it triggers discussion and the points mentioned by the reviewers will be available online. Nonetheless to make it clear that there is matter of contention, the authors should add a short discussion indicating that some interpretations need further validation/ additional data.

Authors answer:

Dear editor.

We are pleased that, pending the above-mentioned required modifications, you have accepted to publish this manuscript. We thank you for this decision and we hope our answer is satisfactory. The discussions and important interrogations regarding the interpretations that arose during the review, does indeed call for further investigations in order to try to refute, following Karl Popper, the different opinions and paradigms that were expressed relatively to the karst structuration and relationship with the ghost-rock phenomenon. In this way, we thank the reviewers for their remarks that helped us to take into consideration other points of views and we hope our contribution provides original data and advances regarding the knowledge of the karst morphology and dynamic.

We added at the end of the discussion:

“As pointed out by Dubois et al. (2022) karst morphologies are used by scientists to speculate on processes that induce speleogenesis. It leads to a tremendous number of different processes to form caves (see for example Figure 3 of Harmand et al., 2017). Here we choose to follow an approach driven by the principle of parsimony also termed as Ockham’s razor and propose a continuum process where cave geometry complexity is only driven by the primary phase of alteration. We are not the first authors to do so (e.g. Dubois et al, 2014, 2022), but acknowledge that this is an ongoing debate as attested by the discussions with the reviewers triggered by the first drafts of this study. Quinif (2010) suggested the need for a new paradigm about karstogenesis implying ghost-rock processes. We know from the history of sciences that shifting from one paradigm to another is a complex journey (Kuhn, 1962). More studies and debates will be needed to overcome the present matter of contention about how ghost-rock processes should be considered in karstogenesis, that is to say, rather as a secondary process (e.g., Schmidt, 1974, Klimchouk, 2012) or the primary process (e.g., Rodet, 2014, Dubois et al., 2014 and this present study).”