

Interactive comment on “Extant shore-platform stromatolite (SPS) assemblage” by Alan Smith et al.

Anonymous Referee #2

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In this manuscript the authors compare different stromatolite assemblages along the south-east African shoreline, compare in situ factors under which they form, and evaluate their potential to gain further understanding of Precambrian stromatolite formation as well as their potential as an indicator of previous life on Mars. While the topic in general is interesting and a comparison of recent and ancient stromatolite formation across different geological settings may make an important contribution to our knowledge of this field, the paper appears rather descriptive and lengthy and may benefit from some restructuring and focusing. In the first place, I would suggest to modify the title in a way that it at least contains more specific information about this study or reflects the major outcome. Similarly, the abstract appears as a listing of findings of this study. Here, a clear statement of the motivation of this study and highlighting the major outcome in

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one concluding sentence should be added. The motivation of this work is stated rather clearly at the end of the introduction section. However, especially in the results section, a stronger structuring along the original research objectives would help the reader find their way through this large amount of detailed site information which is provided in the results section. Although some of the site-related information is already presented in tables, comparison of key features across sites would benefit from a more condensed presentation in tables rather than in text. This way it would be easier for the reader to recognize in which key aspects the different study sites differ and what might be the most important regulating factors for stromatolite formation. This would also help the authors to check carefully if really all the aspects that they provide in the results section are needed for the discussion. The discussion is already written quite concisely, however, a more direct reference to the objectives stated in the introduction would be helpful. For example, the discussion of the potential of SPS as Precambrian analogues remains rather superficial. In addition, I have two concerns regarding the integration of aspects of microbiology. The authors integrated a longer section about the role of prokaryotes in stromatolite formation and the importance of the competition between prokaryotes and metazoans. However, this aspect is not targeted at all in the results section and only occasionally addressed in the discussion, and I was wondering why it was introduced so thoroughly in the introduction. In addition, some of the statements in this paragraph of the introduction (p. 2, l. 5-14) are not correct or are not sufficiently explained. What is meant by the statement that "Prokaryotes, however, do not react well to Metazoan competition"? (p. 2, l. 6). In line 10-11 "...but under contemporary conditions they can only thrive in extreme environments that limit Metazoan competition". Given the fact that you find about 10¹⁰ bacteria per gram forest or grassland soil, this statement does not hold or its meaning in this context here should be clarified.

Specific comments: p. 2, l. 4: "more plausible Precambrian stromatolite analog" - more plausible compared to what? p. 3, l. 25-27: What does it mean that prokaryotes dominate? What about unicellular eukaryotes in such environments? p. 4, l. 9: Which coastline, please specify. p. 4, l. 26-35: It is not clear which sites this information refers

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to. p. 8, l. 31-32: This is a rather vague statement: Why should these factors then be considered?

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