

### Editor's suggestion

Dear Wang et al,

I have reviewed your revision of the manuscript "Advancing studies on global biocrusts distribution" submitted to SOIL. I appreciate the extensive revisions made to Figure 2 and the addition of Figure 4, both bring important context and synthesis to the work.

However, all three reviewers mentioned the need for the manuscript to be reorganized and include more synthesis and perspective on the work reviewed. The edits on this front have been minimal, consisting primarily of relabeling Section 3.3 as Section 4 and adding a Conclusion paragraph. I believe the reviewers, and myself, intended to recommend extensive reorganization, with text grouped in new logical ways that might improve the reader experience. Perhaps bring stronger emphasis to how results from the various research approaches may differ and how that in turn may influence global biogeographic patterns? Rather than emphasizing the technicalities of the research methods. Reconsidering the way this information builds could help generate more synthesis with clear take-home messages. The revised concluding paragraph primarily outlines the paper structure, without iterating clear synthesis of the literature. What did you learn from reviewing these studies? Do they provide new insights when taken together that none could achieve individually? What are the major knowledge gaps, and how can the field move forward? The final sentence does not provide any insight into actional next steps for this research team or others in the field.

As such, I recommend another revision of the manuscript with greater attention to larger ideas, synthesis, and flow of the information presented.

Elizabeth Bach

---

### Response

Dear Elizabeth,

**Many thanks for your efforts to process this manuscript and valuable suggestions for improving it.** We are pleased to see your positive feedback on Figure 2 and Figure 4 added in the previous version. After carefully checking your suggestions, we have made the following changes:

#### **Structural reorganization:**

We agree with you that it's essential to emphasize differences in biocrust distribution resulting from various research approaches. To that end, in the revised manuscript, we split the original Chapter 3, "Current State of Knowledge" into two parts:

- a) The bibliometric section has been moved to the "Introduction" chapter to link past research hotspots with an overview of our work.
- b) The regional and global biocrust distribution sections have been integrated into the current Chapter 2, "Research Methods." In this new chapter, three research approaches were introduced but were not the focus. In contrast, biocrust distribution was given more attention. Meanwhile, we also included more case studies to compare biocrust distribution results under different methods.

Chapter 3, "Influencing Factors of Biocrust Distribution," aims to help researchers and readers fully understand the basis for selecting environmental data sources in biocrust distribution studies. We added transitional segments to this chapter in the revised manuscript.

Chapter 4, "Challenges and Perspectives", aims to expand the topic beyond comparing methods and current understandings, offering a broader perspective to advance studies on biocrust.

**Conclusion Revisions:**

In the new manuscript, the recapitulation of the article structure has been removed. Instead, we have reorganized the discussion around the issue of global biocrust distribution itself, highlighting the current research limitations and the necessity of this paper. The concluding section, based on Chapter 4, "Challenges and Perspectives", now provides a more systematic synthesis and clearer action guidelines.

Once again, thank you for your insightful suggestions. We hope these revisions meet your expectations and stimulate readers' thinking about biocrust distribution prediction.

Best regards,  
Siqing Wang