

## ***Interactive comment on “The mutually antagonistic effect of drought and sand burial enables the biocrust moss *Bryum argenteum* Hedw. to survive the two co-occurring stressors in an arid sandy desert” by Rongliang Jia et al.***

**Rongliang Jia et al.**

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Referee's comment: I found the manuscript by Rongliang Jia et al., interesting and fall within the scope of Biogeoscience Journal - under the sub-title "Plant– soil interactions", although its results, related to the combined effects of drought and sand burial on moss crust, are particular interest to areas such as southeastern fringe of the Tengger Desert. I have only minor comments: I found their results sufficient to support the interpretations and conclusions. The title is too long and should be shortened.

C1

Authors' response: Because *Bryum argenteum* is widely distributed throughout the world, our findings could also be extended to ecosystem restoration and management in deserts beyond China. The title was shortened to “The mutually antagonistic effect of drought and sand burial enables the biocrust moss *Bryum argenteum* Hedw. to survive in an arid sandy desert”

Referee's comment: Where are the Key words?

Authors' response: We have added “antagonistic effect, drought, sand burial, *Bryum argenteum*” as Key words in the new version of the manuscript.

Referee's comment: Moss not always represents the highest successional stage of the biocrust development. In most cases lichens as a slow growers are representing this stage, especially under dry conditions. However, climate with high rainfall may encourage moss growth in some areas such as the located in the southeastern fringe of the Tengger Desert.

Authors' response: It is true that a moss crust is not always the highest successional stage of biocrust development throughout arid and semiarid regions. We revised the introductory sentences to, “It can represent the highest succession stage among the diverse range of surface-dwelling cryptogams (e.g., cyanobacteria, green algae, and lichen, which are also referred to as biocrusts) and it can make a major contribution to soil stability and fertility in many arid sandy desert ecosystems.” in L8-11 in the Abstract and “It can represent the highest succession stage among the diverse range of surface-dwelling cryptogams (e.g., cyanobacteria, green algae, and lichen, which are also referred to as bio crusts) and make a major contribution to soil stability and fertility in many arid and semiarid sandy desert ecosystems (Weber et al., 2016)” in L46-49 in the Introduction.

Referee's comment: Line 214 - the chlorophyll a content of *argenteum* was found should be *B. argenteum*.

C2

Authors' response: We replaced "argenteum" with "B. argenteum" in L215.

Referee's comment: Table 1. "Changes in the percentage cover of a biocrust dominated by Bryum. argenteum in response to sand burial depth in spring and autumn" should be " Table 1. Changes in the percentage cover of the soil surface, a biocrust dominated by Bryum argenteum in response to sand burial depth in spring and autumn".

Authors' response: To avoid misunderstanding, we have revised the heading of Table 1 as you suggested: "Table 1. Changes in the percentage cover of Bryum argenteum Hedw. within a biocrust in response to sand burial depth in spring and autumn.".

Please also note the supplement to this comment:

<https://www.biogeosciences-discuss.net/bg-2017-402/bg-2017-402-AC1-supplement.pdf>

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