

## ***Interactive comment on* “Technical Note: Rapid image-based field methods improve the quantification of termite mound structures and greenhouse-gas fluxes” by Philipp A. Nauer et al.**

### **Anonymous Referee #4**

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General comments: I think that this technical note is well written, and the theme is also acceptable in this journal. I listed some questions and comments for this manuscript (see below), which I hope the authors will consider and respond to in revising the paper.

Specific comments:

In PG method, the authors used photo images to estimate structure of TM successfully. I feel that if photo image can provide us other biotic/abiotic information of TM such as termite species, material, age and wetness of TM via color analysis, advantage of the presented method will be increased. One of the presented method, cross-section is destructive method. Does PG have potential to estimate TM internal structure? For

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example, if endoscope images can be used for PG (SfM), we may measure internal structure with (relatively) small damage of TM. In addition, the authors analyzed the painted cross-section color images by using 2D image analysis software. This method is very simple and I can agree it. However, if micro- and micro-pores can be also calculated by SfM technique using multiple cross-section images, it may also become interesting application.

P1 L13 Please clarify (mention the name of) two novel field methods and established method in the first part. Because results of four methods (PG, CT, water displacement method and conventional approach using simple geometric shapes) were introduced in this abstract, the readers may be confused.

P2 L8 (Figure 1) This figure is good for readers to understand morphological parameters of TM.

P2 L9 termite mound (TM)

P3, L20 Please add the explanation of backgrounds (outline, expected merit) of (1) PG and (2) image analysis method.

P6 L21 If water content of TM affects the image analyses in the cross-sectioning method and CT scan method, please mention the predicted points to be noted for accurate measurement. The photo image of CT scanning would be good for understanding the measurement protocol.

Table S1 Explanation of abbreviations (Mn, Ms, Tp, rB, V etc.) in table would be help for readers to understand the datasheet easily.

P8 L16 Are these relationships significant in each termite species?

P15 L16-20 Application in various scales is very important. If we can use this method commonly in long-term monitoring of TM by using UAV images, ecological knowledge about spatial/temporal distribution and growth rate of TM will be discussed.

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