

Egusphere-2022-499: **DMS cycling in the Sea Surface Microlayer in the South West Pacific: 1. Enrichment potential determined using a novel sampler**

Answers to reviewer 2

The authors would like to thank reviewer 2 for the time and effort put into the manuscript review. We apologize for the incorrect line numbers in the authors' response.

Reviewer's comment: Line 139 (145 of revised manuscript): I am questioning the validity of this equation. **Reproducibility is usually measured as the standard deviation of the difference between multiple measurements. Please provide source for equation 3.**

Also, the term "reproducibility" is commonly used when comparing the difference in measurements from different laboratories using the same technique whereas "repeatability" is more commonly used to describe the difference in measurements between different techniques within the same laboratory.

Also, it would be good here to give the level of replication, which I believe is 5-6 based on paragraph 211-221 (220-230 of revised manuscript).

Initial authors' answer: The reviewer is correct that "repeatability" is a more correct term for our estimate of method precision, which describes the relative percentage difference between a pair of repeated measurements, and so we have corrected this throughout.

L145 now say "the repeatability, estimated as the relative percentage difference between a pair of repeated measurements, for the gas-permeable tube....."

Complementary authors' answer: We describe the repeat application of the same technique by the same operator with minor temporal difference in sampling time; therefore, this is not repeat measurement of a single discrete water sample under identical conditions, and so does not meet the criteria for reproducibility.

Furthermore, this differs from the reproducibility criteria (identified by the reviewer) in that there were only two samples, and it is not repeated by different laboratories/operators.

Instead, we use repeatability as described in Equation 3, which is more appropriate based on the definition of the Association for Computing Machinery, 2016, "*Same team, same experimental setup: The measurement can be obtained with stated precision by the same team using the same measurement procedure, the same measuring system, under the same operating conditions, in the same location on multiple trials.*" The reference was added L143 of the revised manuscript with tracked changes on.

Association for Computing Machinery (2016). *Artifact Review and Badging*. Available online at <https://www.acm.org/publications/policies/artifact-review-badging> (accessed October 21, 2022)