



EGUsphere, referee comment RC1
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Comment on egusphere-2022-281

Anonymous Referee #1

Referee comment on "Oil-palm management alters the spatial distribution of amorphous silica and mobile silicon in topsoils" by Britta Greenshields et al., EGU Sphere, <https://doi.org/10.5194/egusphere-2022-281-RC1>, 2022

Greenshields et al. have completed a study regarding the effects of oil-palm plantation management on the spatial distribution of silica in soil. Topsoil samples in different "management zones" were taken from four well-drained and four riparian sites of smallholder oil-palm plantations. Additionally, sediment traps were installed and monitored for one year at the well-drained sites. The authors found that there were significant differences in the topsoil concentrations of both mobile silicon and amorphous silica across the different management zones, with the highest concentrations occurring under frond piles (e.g., plant litter). Furthermore, the data from the sediment traps indicated that biogenic amorphous silica may be preferentially eroded from topsoil. As biogenic amorphous silica was found to be an important source of mobile silicon, preventing soil erosion would increase the pool of mobile silicon available to the oil-palms.

General comments: I recommend that the manuscript be accepted with some revision. The topic clearly fits into the scope of SOIL and is of multidisciplinary interest as it aims to increase the sustainability of oil-palm plantations. The study design and methods are clear and could be reproduced. The results are fully explained and the discussion references relevant literature. Based on the results, the conclusions are warranted.

However, there could be some discussion about how the soil type and characteristics might affect Si cycling in these systems. And while pedogenic Si might be a less substantial source in topsoils, the mineralogy of the underlying geology could be expanded upon in Lines 112-114.

To reinforce the interdisciplinary nature of the work, the discussion/conclusion might include reference to any planned outreach and whether the recommendations listed would be likely to be adopted by small plantations in the area.

Finally, in the interest of completeness, all of the data from the topsoil samples should be reported in the Appendix, not just the means.

Specific comments:

Line 70: Should be "contribute to a lesser extent"

Line 200: Provide the citations for the R packages.

Figure 2: Indicate specifically what an a and b mean regarding the significant differences.