

## ***Interactive comment on “Improving the Strength of Sandy Soils via Ureolytic CaCO<sub>3</sub> Solidification by *Sporosarcina ureae*” by Justin Michael Whitaker et al.***

**Anonymous Referee #2**

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The manuscript describes a study of *Sporosarcina ureae* and this organism's ability to catalyze MICP in sand test beds. *S. ureae* was compared to the model MICP bacterium, *S. pasteurii*, in bacterial growth, ureolytic activity and shear strength of MICP treated sand. Tests were performed to investigate the effect of flooding, freeze-thaw cycles and acid rain exposure, where only acid rain reduced the shear strength significantly. The authors conclude the *S. ureae* can be utilized as a model MICP bacterium and is competitive with *S. pasteurii* in the tests performed in this study. The manuscript presents a concise study with appropriate methods and analyses to show the applicability of *S. ureae* in MICP. While not completely transformative, it is a worthy contribution and the results presented will be quite interesting and useful for scientists

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and engineers in the field of MICP research and applications.

Below are a few small technical comments:

Abstract line 30: This sentence is not entirely clear to an unfamiliar reader, suggested changes: “However, shear strength of samples following acid-rain simulations fell to 29.2% of control MICP samples.”

Line 274 and Figure 2 a,b: Suggestion regarding the confusion around U/mL units is to simply express the rates as mol/(min-mL) throughout the MS instead of designating the parameter U. If U is used, please redefine it in Fig 2 caption, as the explanation in text was easy to miss.

Figure 6: Were the same tests performed on *S. pasteurii* treated samples? This data would be interesting to see alongside the *S. ureae* treated sands.

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