Interactive comment on “Improving the Strength of Sandy Soils via Ureolytic CaCO₃ Solidification by Sporosarcina ureae” by Justin Michael Whitaker et al.

Anonymous Referee #2

Received and published: 25 May 2018

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.
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.