

## ***Interactive comment on “Distinct microbial composition and functions in an underground high-temperature hot spring at different depths” by Shijie Bai and Xiaotong Peng***

### **Anonymous Referee #1**

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This manuscript mainly reported the microbial diversity and functions of three hot springs water samples collected from different depths. The authors found that both bacterial and archaeal community compositions were different along depth, and distinct microbial functions may occur at different depths of hot springs. This study has some merit, because few study focused on surveying the microbial diversity and functions in the subsurface of geothermal systems, which deserves publication. But the authors may need to revise the manuscript thoroughly on its grammar and structure before the ms is acceptable. Some examples were listed below but they are not exhaustive.

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Detail comments below: Page 7 line 135-138: please cite refs for these cutoff. Page 8 line 171-173: awkward grammar issue, please rephrase. Please provide the exact number of reads for normalization. Page 9 line 187-190: please specify the PCoA analysis. Page 10 line 211-212: please remove this sentence. Page 10 line 208: Any other parameters were measured in this study? Page 11 line 216-218: please remove these sentences. Page 11 line 219: “The Shannon and Inverse Simpson indexes indicated...” so weird. Page 11 line 222-214: please remove these sentences. Page 11 line 227: “Gamma-proteobacteria” is not a phylum. Page 12 line 236: “twelve samples”? How many samples did you use? Page 12 line 238-240: why archaeal communities at 0 m and 58m depths were similar? Page 12 line 238-242: Thaumarchaeota was the most abundant phylum across all samples. You mean uncultured Desulfurococcales archaea are Thaumarchaeota? Please rephrase those sentences. These sentences would mislead the readers. Page 20-21 line 345-369: almost no discussion. This paragraph is too long, please split. Page 22 line 399: too speculative. Page 24 line 429-445: Meaningless. Current discussion is too lengthy and meandering. The authors should re-organize the discussion without too much repeating results. To do so, the authors may follow the following rationale: what finding is notable and why is it notable? Is such a finding consistent or inconsistent with previous related literature and why so?

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