

Interactive comment on “High diversity of nitrogen-fixing bacteria in upper reaches of Heihe River, Northwestern China” by X. S. Tai et al.

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Received and published: 1 May 2013

I hope the following comments could improve the current manuscript:

1. Gene symbols, e.g. "nifH", should be italicized throughout the text.
2. Spelling of scientific names should be checked carefully. E.g. it should be "Pseudomonas" instead of "Peseudomonas".
3. P.5019, lines 6-8: a reference should be given to the primer set used here.
4. It is strange and cumbersome to devise a new section with only one single sentence. So section 2.3 in the M&M should be combined with section 2.4, and section 2.10 combined with section 2.6. The same also holds for section 2.8.

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5. P.5019, line 17: as there are many varieties of the "heat shock method", a reference should be given here for clarification.
6. It should be "GenBank" instead of "Gen Bank" throughout the whole text.
7. P.5020, lines 7-8: More details about the phylogenetic analysis should be given here. E.g. What's the model of nucleotide substitution chosen? How many bootstrapping replicates are performed?
8. P.5021, line 10: the unabbreviated term is no longer required here as it's not the 1st time it's being abbreviated.
9. The conclusion is too long, with so many raw data/results repeated. A more concise conclusion, preferably with insights into future directions, is expected.
10. Figures 4 & 5: Additional details should be given in the legend. E.g. What do the numbers at the modes represent? Also, coloring the figure according to e.g. the type of Proteobacteria, should facilitate the readability of the figures.

Interactive comment on Biogeosciences Discuss., 10, 5015, 2013.

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