

general comments

The paper “Metagenomic analyses of the late Pleistocene permafrost – additional tools for reconstruction of environmental conditions” by Rivkina [et.al.](#) discusses that a comparative analysis of the metagenomes and physicochemical data from permafrost samples could provide insight on the conditions these deposits were formed under. The proposed approach reflects the modern scientific achievements at the crossroads of biology and geology, which quite justifies, in my opinion, the choice of journal for publication of the article. The paper is clearly written and presents interesting and very important data.

specific comments

The authors mentioned that they deposited the sequencing data to the MG-RAST, but authors did not provide MG-RAST ID number. These numbers should be provided.

P12097, L4-7 What data sets were used to get the input into the STAMP analyses? Please clarify.

Authors used both styles: P12099, L19 – α -Proteobacteria and L13 Alphaproteobacteria and L19 Gammaproteobacteria – the first style is preferable, please correct throughout the text.

P.12101, L5. In the text, *Geobacter* genus is classified as sulfate-reducing bacteria, whereas they are metal-reducing bacteria, and they are not considered to reduce sulfate.

P. 12101, L. 14. It is not obvious to include the *Desulfitobacterium* genus to sulfate-reducing bacteria, since they are able reduce only sulfite and thiosulfate.

P12102, L6 – Additionally to suggestions of the first reviewer to spell out SEED and KEGG, please explain what does the EC number mean?

P. 12103, L. 5-6 *Alkaliphilus metalliredigens* is not valid bacterial name and should be written as '*Alkaliphilus metalliredigens*'

technical corrections

References in the text must be listed in chronological order.

For example, P. 12093, L. 16 Anthony et al., 2014; Walter et al., 2007; Zimov et al., 2006 should be written as Zimov et al., 2006; Walter et al., 2007; Anthony et al., 2014 etc.

Please check the List of References – not all references are correctly abbreviated in accordance with the [ISI Journal Title Abbreviations Index](#). For example, PLoS Computational Biology should be PLoSComput. Biol.; Genome Announcements should be abbreviated as Genome Announc.;

Genome. Biol. – remove dot after Genome

P.12111, L. 7 desulfitobacterium should be written as *Desulfitobacterium*