



EGUsphere, referee comment RC1
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Comment on egusphere-2022-1290

Anonymous Referee #1

Referee comment on "Effects of Warming and Increased Precipitation on Soil Amino Sugars on the Qinghai–Tibet Alpine Meadows" by Baisha Weng et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-1290-RC1>, 2022

Weng et al. studied the warming and increased precipitation effects on soil microbial necromass, they found the different response of residue to warming and increased precipitation. The research topic is very relevant especially under the multiple global change scenarios. However, there exists some flaws to prevent the current version to publish. Specific comments are as follows:

Abstract:

L 10-15: "The results showed warming stimulated the accumulation of microbial residues, while increased precipitation led to their decline." This contradicts the contents of Table 3. From Table 3, I can see that warming slightly decrease amino sugars concentrate but increased precipitation increase their concentrate. Please check which one is correct.

L 15: the contribution of fungal residue to what. SOC or microbial residue?

L 15-20: "The increased precipitation had no significant effect on soil extracellular enzyme activities and amino sugar concentrations". Authors wrote that 'increased precipitation led to their decline' (L 10-15). However, increased precipitation do not affect amino sugar in here. It is very confused. Is there a different "accumulation of microbial residues" between "amino sugar concentrations"?

Introduction:

L 30-35: "Indicators of bacterial and fungal biomass." It should be necromass or residue rather living biomass.

L 30-35: "amino sugars can be effective indicators for studying the different mechanisms of soils" Which mechanisms you mean here, please clarify.

L 40: "aboveground and underground biomass" it is should be "aboveground and underground plant biomass"

L 40-45: "Existing research on how the soil responds to climate change has primarily been based

on transect data, including soil respiration, carbon, nitrogen pools, and pH" This sentence makes no sense here.

L 60: The hypothesis is too general, it should be more specific and given the correspond explanation.

Second paragraph of Introduction Section: the key point of this paragraph is unclear, author should not give many statements about enzymes. The objective of this paper is global change effects on amino sugars, these should be strengthened. The last few sentences of the second paragraph are pretty weak, it doesn't make any sense to me.

L 60-65: "soil extracellular enzyme activity, biomass, and C and N concentrations for 4 scenarios in 4 fields." The C and N content of what? soil or microbe?

Material and methods:

The duration of the experiment is not introduced. Please clarify that why increasing rainfall only in July and August.

L75-80: Please move the relevant content about "Soil moisture and temperatures

measurement" to Section 2.2.

L 85-90: I wonder what biomass is this, microbial biomass? Soil faunal biomass? Please clarify that "Biomass" is actually plant biomass.

L 120-125: I am not sure why author use glucose as the internal standard 2. As far as know, it should be N-methylglucamine.

Section 2.3 : The other analysis such as correlation analysis and variance analysis should be added.

Results:

L 140-145: 3 Material and methods. It should be results.

"3.2.2 Soil extracellular enzyme and amino sugars" I can not find anything about the enzymes in this section.

Discussion:

L 200-205: I am not sure why decline in GalN will decrease the proportion of GluN in ASs.

L 215-220: If "fungal residues are more difficult to decompose than bacterial". Bacterial necromass will be degraded faster, and the fungal necromass will be persisted longer. The more fungal necromass and less bacterial necromass should increase GluN/MurN ratio.

L 235-250: Discussion about mechanisms of warming effects on amino sugars is pretty weak, please add more related content.

L 260-265: Why TC inhibit the synthesis of GluN, and TN inhibit GalN but increase MurA?

Can authors please explain these phenomenon. "It may be since increased nitrogen input can attenuate soil respiration (Xing et al., 2022), affecting different microbiota evolution." This is oversimplify for me.

L 275-280: It's pH, not PH.

Table 1 and 3: I can not see the significance between treatments. Also, is there any interaction effects of warming and increased precipitation on amino sugars?

Figures 4-6: Authors should combine all amino sugars (GluN, MurN, GalN) into one SEM, rather than measuring the global change effects on GluN, MurN, and GalN separately.