

## Review for MS:

Title: Abiotic CO<sub>2</sub> sources confound interpretation of temperature responses of in situ respiration in geothermally warmed forest soils of Iceland

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MS No.: bg-2019-213

MS Type: Research article

Principal criteria	Excellent (1)	Good (2)	Fair (3)	Poor (4)
<b>Scientific significance:</b> Does the manuscript represent a substantial contribution to scientific progress within the scope of Biogeosciences (substantial new concepts, ideas, methods, or data)?			X	
<b>Scientific quality:</b> Are the scientific approach and applied methods valid? Are the results discussed in an appropriate and balanced way (consideration of related work, including appropriate references)?		X		
<b>Presentation quality:</b> Are the scientific results and conclusions presented in a clear, concise, and well-structured way (number and quality of figures/tables, appropriate use of English language)?		X		

This manuscript describes the contribution of abiotic (geothermal) CO<sub>2</sub> source to the total CO<sub>2</sub> emission from geothermally warmed forest soils of Iceland. The topic is relevant to BGD, the MS is well written and the techniques employed are appropriate.

Some moments should be taken into account before final publication of MS:

1. I advise to use in the title 'biotic CO<sub>2</sub> efflux' instead of 'respiration'
2. There are 3 weak methodological points in the work.
  - The first is a very small repetition of CO<sub>2</sub> emission measurements, which is insufficient for obtaining truthful results due to the very high spatial and high variability of soil CO<sub>2</sub> fluxes;
  - The second is the difference in vegetation and its density in the study plots where the CO<sub>2</sub> fluxes were measured. Since the authors did not remove the vegetation, this is a significant moment that could affect the CO fluxes from soils. The comparison between plots in this case cannot be considered legitimate. The convincing explanations on these issues are required;
  - The third is the absence of any statistical analyses of soil and CO<sub>2</sub>-flux data.
3. Due to the region studied is very exotic it would be nice to include more information on relevance of this study for other regions. It may be analysis of the temperature sensitivity (e.g. Q<sub>10</sub> values) of biotic components of total CO<sub>2</sub> emission using the data for plots FN+0, FN+1, FN+2, FN+6, and FN+10 plots.
4. Some specific comments:
  - in Fig. 1, the lines for designating total and geo- CO<sub>2</sub>-fluxes are very similar. Use, please, more contrasting symbols for lines;

- Table 1 in Supplement: Include, please, mean and SE in this table instead of the individual measurements;
- Fig 1 (Supplements): Change please the scale (1/concentration), using the  $10^{-3}$  for scaling. The Figure will be more readable.