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Santiago, may 06, 2020

To the Editor
Climate of the Past

Enclosed please find the revised version of our manuscript entitled “Volcanism and climate change as drivers in Holocene depositional dynamic of Laguna del Maule (Andes of central Chile – 36° S)”.

I write this letter on my behalf and that of my coauthors. First of all, we appreciate the opportunity to review our manuscript and want to thank the exhaustive work carried out by the three reviewers. Their comments helped to greatly improve the manuscript. We have addressed all comments and concerns of all reviewers and we have agreed with them in all cases. In our reply, you will find a point-by-point detailed response of the last individual questions and suggestions raised by reviewers. We are confident that we have addressed all the issues in detail and that the overall quality and novelty of the manuscript has improved and is now suitable for publication in *Climate of the Past*.

Sincerely,

Dr. Matías Frugone-Álvarez on behalf of all authors

Departamento de Ecología Pontificia Universidad Católica de Chile,
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Response to reviewer's comments

1) Reviewer 1

Comment “*How certain are the authors that the ash layer suggested to be the Quizapú tephra is indeed so? Are there other possible eruptions that could be correlated with this layer as well, especially since major (or trace) elemental analysis was not performed?*”

The authors did respond to the comment – and the rationale is very reasonable; however, an extra sentence in the text saying (something like) that trace/elemental analysis would be required to definitively establish the provenance... but (and then fill in the rationale that its the only reasonable conclusion, which is in the response to reviewer). ADD ONE SENTENCE TO TEXT”

Reply 1: First, we would like to thank our reviewer for devoting his time to study our work and preparing a high quality assessment of its merit. We have modified the paragraph to:

...“Although the top ash layer has not been geochemically fingerprinted, its estimated age according to ²¹⁰Pb techniques coincides with the Quizapú Volcano eruption (CE 1932) and it can be used as a chrono-stratigraphic marker in the sequence (Carrevedo et al., 2015). Trace/elemental analysis would be required to definitively establish the provenance of this tephra layer the available compositional data (XRF, DRX and microscope smear slides observations) and the age mode, support our assumption that this layer is the younger Quizapú pinion eruption.”

2) Reviewers 1&2

Comments: “*Comments wrt age model uncertainty. The authors' responses are adequate – however, simply labeling the figures more explicitly (i.e., figure 8e, state shading indicates age model uncertainty etc.) would eliminate this concern; particularly since this shading was understood to be uncertainty by reviewer 2 but not reviewer 1. ADD LABELS IN FIGURES FOR UNCERTAINTY SHADING”*

Reply 2: We agree with the reviewers, we have added a footnote of each figure (7 and 8) as follows: “Shading indicates age model uncertainty.”