

Interactive comment on “Development of a multi-method chronology spanning the Last Glacial Interval from Orakei maar lake, Auckland, New Zealand” by Leonie Peti et al.

Anonymous Referee #1

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General comments

The manuscript presents a very detailed and thorough discussion of the multi-method chronology applied to the Orakei maar lake sequence. Each chronological method is described, and individual results presented, before integrating them using a BACON age model. The manuscript is well structured and well-written. The graphs and figures are all of exceptional quality, clearly labelled and with descriptive legends.

Specific comments

The abstract is very long (spanning two paragraphs). I would suggest to remove the discussion of the Be-10 from the abstract - better to focus on the chronological methods

that were incorporated into the final age model.

With SHCal20 now out I leave it up to the authors whether they choose to update their chronology. I would certainly encourage this, since presumably the next step will be palaeoclimate interpretations.

Discussion of reservoir corrections for radiocarbon dating is brief, and slightly conflates the 'hardwater effect' with the marine reservoir effect, which arise due to separate processes. I wouldn't have thought that there would be much of a hardwater effect as the catchment is presumably basaltic rather than carbonate?

For the tuning of the palaeomagnetic RPI curve, why were the tuning points selected randomly? It would seem better to select parts where there is more confidence in the alignment? Or, perhaps at least explain why a random approach is used for the DTW algorithm.

Is the geomagnetic excursion at ~62 ka the Greenland-Norwegian Sea excursion? Was this considered to be used in the chronology development? It seems quite well defined in the Orakei RPI (though perhaps the trough is not clear).

Technical corrections

Line 50-52: 'Orakei maar paleolake is of unprecedented quality...' Please quantify this statement.

Line 85: 'improve temporal constraints on regional of palaeoclimatic...' Please rephrase.

Fig 6 and 7: I believe these will need to be reformatted into a portrait format.

Line 151: There is no section 3.6.1?

Interactive comment on Geochronology Discuss., <https://doi.org/10.5194/gchron-2020-23>, 2020.

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Discussion paper

