

## ***Interactive comment on “A penetrator for making thermal measurements in a gas-filled planetary regolith” by M. D. Paton et al.***

**M. D. Paton et al.**

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Dear referee #2,

Thank you for your comments. We have responded to them as listed below (your comment followed by our response etc)

I have similar doubts about the conclusions as referee #1. I also cannot see a significant difference in the temperature profiles shown in Fig. 11 and 12 to a usual equilibrium curve between heat flow and heat production for this kind of probes. More information if there is a substantial deviation from an exponential heating curve to confirm the data interpretation of the author would be of interest. Since referee #1 has already discussed the in my mind relevant points concerning the interpretation of the

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data like the influence of the surrounding material and the measurements.

We acknowledge that you have similar concerns regarding the interpretation and conclusion of the results.

With regard to the equilibrium curve, we agree it looks like such for these types of curves. It is an exponential curve (see included figure 1). We will update the text accordingly to explain the results more clearly. The included figure (Fig. 1) shows heating curves in limestone (chalk powder). This is the same as figure 12 in the paper but shown here with the x-axis on a logarithmic scale.

P117/L16: the porosity is denoted as  $\Phi$  whereas in Eq1 it is denoted as  $\bar{\Gamma}$ . This should be unified. Further the variable CF in Eq1 is not explained in the text.

Updated text (P7 L15) with the correct symbol Updated text with explanation of cF (P8 L6) Numbers in brackets in this document are just reference to a working document of the paper.

P125/L8: At the end of the sentence the word be is not necessary, the sentence should end with: .the acceleration due to gravity is lower than on earth.

Updated text (P13 L30)

P126/L5: The sentence is incomplete. I guess the author means: To investigate the effects of the penetrator impact on the thermal properties of the target measurements were made in two different ways as shown in Fig. 8.

Yes, corrected text (P14 L24)

P172/L23: I guess in this context the author means Fig. 11 not Fig. 15

Yes, corrected

The author should check the references. Some of the articles listed in the section References could not be found in the text and vice versa.

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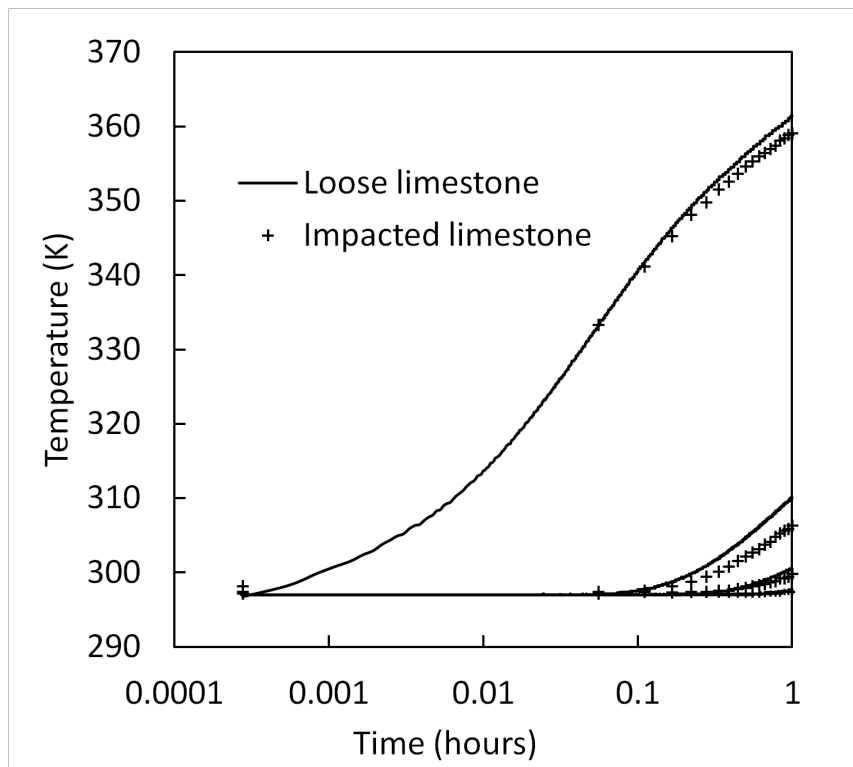


Fig. 1.

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