

## ***Interactive comment on “From leaf to soil: $n$ -alkane signal preservation, despite degradation along an environmental gradient in the tropical Andes” by Milan L. Teunissen van Manen et al.***

### **Anonymous Referee #1**

Received and published: 3 February 2020

The draft untitled “From leaf to soil:  $n$ -alkane signal preservation, despite degradation along an environmental gradient in the tropical Andes” reports the evolution of  $n$ -alkane signature in leaves, litter and soil organic matter along an environmental gradient. The study has been properly conducted and represents an extensive amount of work. The draft is clear and well-written. However, I have several comments which may greatly diminish the implications of this work regarding the potential utilization of  $n$ -alkane biomarkers for the reconstruction of past environmental changes.

1° Several papers reported that soil organic carbon is mostly derived from roots (e.g. Rasse et al., 2005). It would have been more sounded to analyze  $n$ -alkane in roots

Printer-friendly version

Discussion paper



instead of leaves.

2° On top of that, n-alkanes in soil organic matter derive from actual vegetation but also from past vegetation. We therefore do not know which plants these alkanes come from and in which climate the plants which produced these alkanes have grown. To this respect, I do not see the rationale for comparing alkanes in soil organic matter and leaves, especially in the context of reconstructing past environmental changes.

3° We can see on Figure 5, that if n-alkane signature in soil organic matter is sometime significantly related to actual climate conditions, the slopes are low and the relationships are scattered. It means that the predictions that can be made from these relationships would likely be very uncertain. I don't know if it would be informative for paleoclimatologists to know that the MAT 15°C +/- 15°C (95% confidence interval).

I suggest that the authors take my comment into account to discuss their nice dataset and tune down the implications that their study can have for reconstructing past environmental conditions.

Reference cited : Rasse DP, Rumpel C, Dignac MF (2005) Is soil carbon mostly root carbon? Plant & Soil, 269:341-356.

---

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2019-456>, 2020.

BGD

Interactive  
comment

Printer-friendly version

Discussion paper

