

## ***Interactive comment on “Leaf wax $n$ -alkanes in modern plants and topsoils from eastern Georgia (Caucasus) – implications for reconstructing regional paleovegetation” by Marcel Bliedtner et al.***

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Dear Referee,

we would like to thank you for reviewing our manuscript and your comments/suggestions. We will revise the manuscript according to your suggestions. Please find below our detailed response:

1. »A more detailed dataset of environmental and climatic parameters, such as temperature, humidity (aridity), precipitation, etc., along the sampling transect, or even

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for each sampling site, is needed. These data should be examined to see whether and how they influence the  $n$ -alkane compositions in general. Authors are encouraged to discuss separate roles of vegetation and environment in modulating  $n$ -alkane distributions. For example, as noted in the text, samples 3p, 9p, 25p, 29p, 34p do not show composition patterns as expected. The authors think that these samples may have been influenced by climate. However, the interpretation is rather qualitative and unclear. I guess some plant samples of the same species may have been distributed along climatic gradients. If so, data of these samples are valuable and should be sorted out to see their possible responses to climatic change.«

We agree that climate can play an important role in the leaf wax distribution. To address those issues, we will correlate environmental data, namely mean monthly temperatures and precipitation from the vegetation period, with our  $n$ -alkane distribution from the investigated sites. As no climate stations are available along our investigated transect and for each sampling site at all, we will use the WorldClim – Global Climate Data (Fick and Hijmans, 2017) that provides interpolated average monthly climate data with a spatial resolution of 1 km<sup>2</sup>. A more comprehensive discussion about the different roles of vegetation and environmental influences on the  $n$ -alkane distribution will then be included.

2. »The degradation lines in figure 5 are interesting. But it is obvious that the data are much scattering. I would like to see more discussion on the causes of the scattering, including, e.g., climatic factors, disproportional input of leaf waxes to soils from different plants. Also, if the causes are significant, the authors should admit the weakness of the end-member model.«

Based on our correlation with environmental factors, we will include a more comprehensive discussion about possible climate-induced causes of end-member scattering, as well as species-specific causes and degradation effects.

3. »As the authors stated in the text, this study is region specific and results appear

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different from other regions and the globe. It is expected that a comparison of this work with others, and hence a more comprehensive study may improve this paper and is greatly helpful for readers. I suggest the authors give a try.«

A more detailed comparison of our results with other regions will be included.

References:

Fick, Stephen E.; Hijmans, Robert J. (2017): WorldClim 2. New 1-km spatial resolution climate surfaces for global land areas. In: *Int. J. Climatol* 37 (12), S. 4302–4315. DOI: 10.1002/joc.5086.

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