



Comment on soil-2020-107

Anonymous Referee #1

Referee comment on "Transformation of n-alkanes from plant to soil: a review" by Carrie L. Thomas et al., SOIL Discuss., <https://doi.org/10.5194/soil-2020-107-RC1>, 2021

This straightforward paper reviews the available information on plant-derived n-alkanes and their transformation in soil. The major findings reported are known general trends such are *n*-alkane total content decrease, with ageing or with soil depth, a decrease in either Carbon Preference Index (CPI) or Odd-over-Even Predominance (OEP) with depth and the shifts in odd chain length and shorter chain length. The authors suggest the need for a more uniform and systematic reporting of biomarker data and the need to focus on underrepresented areas as well as in quantifying the transformation of n-alkanes through the complete continuum of plant to soil.

This is a very interesting work, well within the scope of SOIL journal. The review is pertinent and appropriately compiles the main findings described in the most relevant publications dealing with alkane biomarker distribution in soils. To the best of my knowledge, the review is novel and not previously published.

The paper is well structured, easy to read and follow, is written in good English. The references cited are adequate, update and pertinent.

I have no substantive concerns and therefore will recommend this work to be published in SOIL.

Only a few comments and minor corrections:

Write impersonal, mainly when this is a review paper

Check and Italicize the "n" for "normal" e.g. "*n*-alkanes" in the Abstract section

Paragraph 35. Apart from Kolattukudy et al., 1976, I think that the pioneering works of Eglinton et al., 1961a and b should be cited:

Eglinton et al (1962a) Nature DOI: 10.1038 / 193739a0

Eglinton et al (1962b) Phytochemistry DOI: 10.1016 / S0031-9422 (00) 88006-1

Paragraphs 55-65. Please, check the formulas (CPI, OEP & ACL) and normalize notation i.e. all in summation using the appropriate indexes (n, m)

Paragraphs 65-70. Here I missed some other relevant and general citations related to n-alkanes and other biomarkers diagenesis in soils and sediments.

Bourbonniere & Meyers (1996). DOI: 10.4319 / lo.1996.41.2.0352

Wiesenberg et al (2003). DOI: 10.1016 / j.orggeochem.2004.03.009

Meyers & Ishiwatari (1993). DOI: 10.1016 / 0146-6380 (93) 90100-P

Zhang et al (2006). DOI: 10.1016 / j.quascirev.2005.03.009

In addition, although the following references are cited in other parts of the MS, I will also recommend its inclusion in this introductory paragraph.

Bull et al (2000). DOI: 10.1016 / S0146-6380 (00) 00008-5

Otto & Simpson (2005). DOI: 10.1007 / s10533-004-5834-8

Paragraph 330. Maybe it is worth to briefly mention other environmental aspects known to exert shifts in *n*-alkanes e.g. forest fires.

Almendros et al (1988). DOI: 10.1016 / 0016-7061 (88) 90028-6

González-Pérez et al (2008). DOI: 10.1016 / j.orggeochem.2008.03.014