

Interactive comment on “Isotopic fractionation corrections for the radiocarbon composition of CO₂ in the soil gas environment must include diffusion and mixing” by Jocelyn E. Egan et al.

Anonymous Referee #2

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The paper proposes new corrections for the radiocarbon composition of CO₂ in the soil gas environment. The paper describes in detail how the authors have derived these new corrections to include diffusion and mixing in their approach. The paper should revive and encourage further discussions on this important but somewhat under explored topic. The topic therefore up to now has remained only partly resolved. Even the new corrections proposed by in the current papers have certain limitations, which the authors rightly highlight in the discussion of the paper. Whereas, the isotope corrections are described in great detail, the field profile study is somewhat lacking in such details, especially the description of the site and soil used is rather scant. Please enhance this section. Furthermore, as the topic of the paper is rather specific, e.g. how and

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if the way the various formula's relate to each other is correct, some specific detailed isotope/radiocarbon expertise is needed to verify this. In a more general sense sense the paper can be published with minor revision also in light in the perception that it creates a focal point for further discussion around this paper on such isotope fractionation correction for radiocarbon (^{14}C) measurements.

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