Geochronology Discuss., author comment AC1
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Reply on RC1

Norbert Mercier et al.

Author comment on "Luminescence age calculation through Bayesian convolution of equivalent dose and dose-rate distributions: the D_e_D_r model" by Norbert Mercier et al., Geochronology Discuss., https://doi.org/10.5194/gchron-2021-38-AC1, 2022

We thank the reviewer for the comments and advice. We will consider all in a revised version of our manuscript.

One specific point concerns the lack of errors associated with the dose rate. In fact, as mentioned on page 7, this error,
as well as the error associated with the source used to convert luminescence signals into dose is a systematic error that
can be taken into account once the age and its random error are obtained.

The dose rate error combines errors associated with gamma and cosmic rays, potentially also with alpha particles, and the one caused by beta particles.
Commonly, the error associated with each of these sources is either deduced from experimental measurements (e.g., it can be derived from the errors associated with the U, Th, K concentrations) or from estimates that are computational (e.g., the cosmic dose error can be evaluated by considering several scenarios of sediment accumulation above the sample that is being dated). For the distribution of the beta dose rate, which represents the spatial variations of this parameter, these two possibilities (experimental and calculation/modelling) exist. However, they are not (yet) often used.