<div style="text-align: center">**Authors Response to Referee#2**</div>

Comments Referee#2: The study "Last Glacial loess in Europe: luminescence database and chronology of deposition" by Bosq et al., aims to create a unique database of European loess osl dated chronologies and accumulation rates during MIS 1-MIS 3 period. The data appears robust, and the methods used are sound and appropriately applied.

In my opinion this is a comprehensive study which will be a significant contribution to the loess, geochronological and palaeoclimatological community. The manuscript itself is well-structured, language is appropriate, the methods ant data are well presented and the conclusions are sound. The figures are also well designed and complement the data accurately. I would like to highlight that the authors did an excellent job with the manuscript and I very much enjoyed reading it.

Thank you very much for your positive and very supportive comments; we appreciate it.

I recommend publication, however, I would only like for the authors to take into account a few of my questions.

- Have you considered the dating resolution as a parameter when calculating MARs? In my experience, dating resolution can have a significant impact on the accurate calculation of MAR distribution over the investigated time period. Maybe you should mention that.

Response: Indeed, the dating resolution has an impact on the calculation of MARs. Notably, this is the case for extreme MARs, i.e., the highest values for a given sequence. Long intervals between dates mean the MAR is averaged over the period. For instance, high resolution (as is possible using radiocarbon on molluscan shells and earthworm granules) tends to provide high extreme MARs over short periods.

In our case, where possible, we used both OSL ages and radiocarbon ages for each sequence analyzed to obtain the most accurate age-depth model. With this, the obtained values are close to those published by other authors, e.g., Ujvari et al. (2017). This is likely caused by the number of dates available for the most significant dust accumulation periods. For example, nine levels have been dated for the Balta Alba Kurgan LPS between 35 ka b2k and 24 ka b2k, and up to 13 levels for the Bialy Kosciól LPS between 28 ka b2k and 20 ka b2k.

On the other hand, it should be kept in mind that while the individual sampling strategy is always a trade between what is economically feasible and what is required to answer the research question, study authors usually sampled at spots where changes were visible in the stratigraphy. This, in turn, means that some short extreme MARs might have been overlooked. Still, since the sampling usually bases on field observations, sampling was also not unjustified, reflecting the actual situation on site.

We added the following sentence in subsection 2.2.3:

"*The dating resolution has an impact on the calculated MARs. This is particularly true for extreme MARS, i.e. the highest values for a given sequence. Long intervals between dates necessarily result in averaging MARs over the considered period. In this study, the chronological models consider the recalculated luminescence ages (extracted from the CHRONOLOESS database) and AMS ^{14}C ages where available. Since many dates are available for the periods of greatest dust accumulation in most sequences, for example, nine levels have been dated for the Balta Alba Kurgan LPS between 35 ka b2k and 24 ka b2k and up to 13 levels for the Bialy Kosciól LPS between 28 ka b2k and 20 ka b2k. We consider the extreme MAR values obtained representative, although we acknowledge that we cannot exclude their exact timing might partly suffer from a dating resolution-related inaccuracy.*"

- Have you thought on maybe applying an additional age-depth modelling method and compare the results? I acknowledge that this would be a large amount of additional work, but often different modelling software produces different results. It would be interesting to see the discrepancies. This is just a thought, not a critique point.

We did not use different methods for calculating age-depth models. Nevertheless, we could compare our results with other authors' results, at least for some LPS. The comparisons showed good agreement between the data outlined in the text; therefore, we do not expect to see much different results from this comparison. However, it might be an exciting follow-up study, perhaps with an updated CHRONOLOESS dataset.

- Have you thought of expanding the investigation beyond MIS 3? I do know that these chronologies are very scares, but there are some studies from the Carpathian Basin where LPS were dated beyond MIS 5.

We had restricted ourselves to the period younger than 60 ka b2k for three reasons: (1) Most of the data are available for this period and (2) considered more reliable given the limits of luminescence dating than for earlier periods, and (3) it would have taken a considerable amount of extra time to extend our database at this time beyond the MIS 3. Given the technical difficulties involved with the different luminescence dating methods, we would have ended up debating the accuracy of specific dated sites. At this stage, this was simply beyond the scope of our approach. Nevertheless, as written in the manuscript, we are planning to gradually extend the CHRONOLOESS database and add new and more ages as they become available, and this will also include dates older than 60 ka.

- I think it would have been interesting to compare these results with MARs from LPS outside of Europe (e.g. Chinese Loess Plateau). We might get a better insight into the atmospheric dust activity on an intercontinental scale. However, I do recognize that this might be beyond the scope of this paper. Please take this just as an idea and/or a suggestion.

We agree, but it would first require a similar dataset for other sites, and then that information can be combined. Perhaps this becomes possible if others pick up the chosen approach for different regions so that, at some point, that information can be combined and compared. Unfortunately, at the current state, this goes well beyond our study's scope, but we are very thankful for the suggestions.