We sincerely thank the reviewer for the very positive assessment and the helpful comments, which improved the clarity of the manuscript.

In addition to addressing the specific reviewer comments, we have incorporated new $PI^{14}C$ measurements from the Rhône River (Appendix A) and sediment core GEN22-04 (now included in the Results, Section 3.3, and discussed in Section 4.2). These data provide further constraints on long-term PIC preservation and complement the trap-based flux observations.

Below we address each point in turn and indicate the corresponding changes made to the manuscript.

L138. Should this be C2?

We thank the reviewer for catching this and corrected C" to C2.

L164. Is there an advantage to using a flat distribution for the source end member (DIC) and a normal distribution (PIC) for the samples in the Monte Carlo simulation? If not, a sentence on the justification of this approach here would be useful.

For the DIC endmember, we applied a flat distribution to reflect the observed range across multiple measurements and depths. Because the values span a range without a clear justification for representing them as a mean with standard deviation, we chose to sample uniformly across the entire observed range. This avoids imposing an artificial Gaussian structure that is not evident. In contrast, a normal distribution was applied for PIC samples, as these are based on single measurements with well-defined, normally distributed analytical uncertainties. We have adjusted line 164 to read:

"Monte Carlo simulations (n = 100,000) were performed, drawing $DI^{14}C$ from a flat distribution within the observed range, **as these values bound an interval without clear justification for a Gaussian distribution**, and $PI^{14}C$ from a normal distribution centered on the observed values with their measurement uncertainties."

Section 4.3. Are the values calculated here just scaled based on the surface area of the lake? I appreciate that this is delineated as a first order estimate, but is a simple areal scaling of these values appropriate? Some clarification/justification here would be appreciated to add a bit more veracity to this section, which is important to clarify the importance of the study's findings.

We thank the reviewer for pointing out the need to clarify the assumptions of our lake-wide upscaling. We have now emphasized that the extrapolations made are based on areal scaling and should be regarded as order-of-magnitude estimates. We further highlight that the lower bound is conservative, since calcite burial tends to be higher in shallower areas. Lastly, we note that the proximal trap appears representative for the delta region because the upscaled allo. POC flux agrees well with independently measured Rhone input estimates. These clarifications have been added to Section 4.3.