Revised research article egusphere-2025-2325

Dear Dr. Veldkamp,

we have now revised our manuscript according to your and the reviewer's suggestions.
As recommended, we removed the global perspective of our findings and changed the title of the manuscript accordingly. In addition, we have changed the structure of the manuscript combining the results and discussion sections. We discussed the influence of possible physiological processes such as radial translocation on Hg concentrations in tree rings as well as climate adaption strategies of trees now in more detail. However, the data base for tree-ring Hg concentration records in deciduous trees, specifically for oaks, is rather small and often not comparable and related interpretations are sometimes speculative, so that we were unable to state if and to which extent our data contradicts or supports findings of other studies. For example, the often mentioned assumption that radial translocation of Hg in deciduous trees occurs has never been proven.
In principal, we agree with the conclusions drawn from some of those previous studies, that tree-ring Hg records derived from oak are not reliable archives for atmospheric Hg concentrations. In fact, we believe that our data shows that they are not and that changes in tree-ring Hg concentrations in oaks are rather determined by changes in climate than in atmospheric Hg loads. This probably seems to be at least to some extent also true for other tree species.
One of the reviewers argued that our data set is rather small. It is clear, that a larger data set would make conclusions drawn more robust; as always. However, the data sets in many other published studies are even smaller than ours. We used 10 oak trees, which is more than what have been sampled by Gustin et al. (2022) (four trees), Scanlon et al. (2020) (three trees) and Siwik et al. (2010) (three trees). We don't believe that our data set is too small to classify the data and the conclusions insignificant. Moreover, the intention of our study is to suggest more studies on Hg tree-ring records of deciduous trees and to include climate components in the interpretation of tree-ring Hg studies in general to decipher what tree-ring Hg records actually show.

Best regards

Harald Biester and Alexander Land

on behalf of all authors