

Interactive comment on “Detection and origin of different types of annual laminae in recent stalagmites from Zoolithencave, southern Germany: Evaluation of the potential for quantitative reconstruction of past precipitation variability” by D. F. C. Riechelmann et al.

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The reviewer considers the paper interesting, undoubtedly important and relevant to various climate studies highlighting the general quality of the manuscript. We agree with the reviewer that a high resolution cave monitoring would be very useful to obtain additional information about the processes affecting the formation of different lamina types as well as speleothem climate proxies. Unfortunately, such data are not available. In the revised manuscript, we will discuss the potential problems and uncertain-

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ties in our interpretation in more detail. The reviewer is also correct that the presented chronology is not very robust yet. We will improve this with five additional ^{14}C ages in order to better detect the shape of the bomb peak. In addition, we will discuss the uncertainties of the chronology in more detail in the revised manuscript. We will also better explain the different statistical approaches, in particular the methods conventionally applied in dendrochronology, and motivate why we use these methods. The discussion will be extended and will include all potential interpretations of the formation of the laminae. The suggestion to determine more $^{230}\text{Th}/\text{U}$ ages on Zoo-rez-2 is generally good. However, we know from other stalagmites from this cave containing less detrital material, that even samples older than 1000 years are difficult to date due to the very low U-content. The reviewer is also correct with his/her comment on Figure 4 that is not the best example. We will replaced this figure by another picture better showing the laminae. We agree that a direct comparison of petrographic and elemental laminae would be better. Unfortunately, speleothem Zoo-rez was already sampled and analysed prior to this study, and we had to use the existing thin sections. The elemental measurements were performed on the opposite site. Therefore, a direct comparison is not possible and made the wiggle matching approach necessary. This will be explained in more detail in the revised manuscript. Thank you for your constructive feedback.

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