**Precipitation stable isotopic signatures of tropical cyclones in Metropolitan Manila, Philippines show significant negative isotopic excursions**

Dominik Jackisch, Bi Xuan Yeo, Adam D. Switzer, Shaoneng He, Danica Linda M. Cantarero, Fernando P. Siringan, and Nathalie F. Goodkin

**Reply to reviewer's comments:**

**General Comments:**

**In this manuscript, daily measurements of the isotopic composition of precipitation in Manila are presented that have been performed over a period of about 19 months. Events with strong isotopic depletion are linked to passages of tropical cyclones. Unfortunately, in my opinion, the paper is very limited in terms of scientific content (data analysis and interpretation). I have a hard time identifying novel results or conclusions that may merit publication in a peer-reviewed paper. I thus cannot recommend this study for publication in NHESS.**

**The only conclusion that really follows from the analyses presented in this manuscript is that the precipitation associated with tropical cyclones, in particular those passing relatively close to measurement site, is isotopically more depleted than precipitation from other cloud systems. However, this conclusion is not novel. Already in the late1990ies, Lawrence and others obtained similar results based on more detailed measurements and analyses. I cannot think of any reason why this very general result should be particularly different or noteworthy for TCs in the Philippines. Moreover, this conclusion and the analyses in the manuscript correspond well with the isotopic amount effect (see next point), which has been widely discussed in the literature since Dansgaard's work in the 1960ies.**

**A characteristic property of tropical precipitation is that larger precipitation amounts are associated with more depleted isotope ratios (amount effect). This is mentioned in passing in the introduction of this manuscript, but not discussed in detail. Nevertheless, it can explain the results presented here: As TCs typically lead to large precipitation amounts, it is to be expected that they are also associated with lower isotope ratios. This is hinted at in the manuscript, but not shown explicitly (e.g., by plotting precipitation amount against isotope ratio). Along the same line, precipitation amount typically declines with distance from the TC center (beyond the eyewall), as does isotopic depletion. As mentioned before, the fact that the results and interpretation do not go beyond this variant of the well-known amount effect strongly compromises the novelty of the study.**

**A major motivation for the authors appears to come from potential applications of isotope data from proxy archives for paleoclimate reconstructions. However, I don't see how their data could add to the present practice of using tropical data for reconstructions of precipitation amount, based on the amount effect described above. There are many vague statements in the manuscript that, at least for me, are difficult to follow. For example, how could changes in TC intensity, frequency or distance from the proxy site be distinguished from single isotope time series? Why should an isotope time series only represent changes in TC precipitation and not, for instance, changes in the precipitation amount in non-TC time periods? If the idea should be to learn something about such more detailed atmospheric processes (related, e.g., to TCs) by combining proxy records from different locations, then this approach should**

**also be demonstrated with the help of a contemporary study combining data distributed in space, and not just from a single location.**

Response: Dear reviewer, we appreciate your feedback regarding our manuscript. We would like to maintain our position that our study provides novel results in the understanding of typhoons and its effect on precipitation's isotopic composition in the Southeast Asian region. It is true that isotopic depletion related to tropical cyclones has been shown previously in other parts of the world. However, our study is the first of this kind in Southeast Asia, where there is still very limited data available, and provides insight into the magnitude of influence of typhoon events can have on precipitation isotopes.

However, you mention the amount effect and how it might explain our data. We do not agree and did not intend to focus on the amount effect, nor to investigate it further using our daily isotope measurements affected by typhoon activities. This is because the amount effect is not observed in daily precipitation isotope measurements, but rather on longer timescales such as months and years (please refer to Belgaman et al., 2016; He at al., 2018; Kurita et al., 2009; Marryanna et al., 2017; Permana et al., 2016). We introduce the amount effect (line 85) and provide the reasons for the isotopic depletion related to typhoons seen at our study site (lines 83 to 87). Yet, we believe that our daily precipitation isotope data is helpful for better understanding certain tropical cyclone characteristics in the Philippines, such as its rainfall intensity, strength, distance and track, and this may have implications for future studies in paleotempestology in the region.

Although there truly are prior studies investigating precipitation isotopes from typhoons in North and South America, to base analyses for other parts of the world such as Southeast Asia using the data from North/South America may result in inaccurate conclusions. Our manuscript presents in-situ data of precipitation isotopes affected by TC activities in the Philippines, providing an important baseline for other studies such as paleotempestological investigations in Southeast Asia. Thus, we believe that our paper would add value to the study of paleotempestology in the Southeast Asian region, which can also help to draw conclusions for prospective mitigation measures in the long run. The results and discussion parts of the manuscript show the capabilities of an isotope time series of 19 months. For instance, we explain how distance (figure 4, figure 5) or TC frequency (figure 2) can be derived from an isotope time series. In addition, further analysis in our manuscript provides insights and caveats in the usage of precipitation isotopes for studies - such as potential "false alarms" for depleted isotope values, resulting from precipitation from other rainfall events rather than TC precipitation (lines 318, 365, 413, 458), as well as opportunity to improve future data quality for such studies by setting up several new stations covering a spatial gradient (line 432). The significance of our study is acknowledged by the second reviewer and the suggested changes have been made by us in order to improve the manuscript (for example presenting all the isotope values in the results or adding more information about the study site in Metropolitan Manila).