RESPONSE LETTER

Prof. Dr. Didier Gastmans
Environmental Studies Center – São Paulo State University
Av. 24A, 1515 – Rio Claro (SP) – Brazil

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Dear Prof. Thijs Heus

The reviewers' comments were excellent and helped us to improve our work. Thus, we agree with the two reviewers' main questions regarding the sampling interval, structure of the article, rainout history and the below cloud processes. For this reason, we decided to radically change the result presentation and discussion section. In the previous version, we decided to group the rain events together to form a more robust dataset, however this grouping ended the explanation of the dataset as complicated and therefore caused the many doubts mentioned by both reviewers in their comments.

The proposed reorganization of the manuscript in an intra-event and inter-event separated evaluation, explaining how regional processes (mainly those related to moisture transport) and local processes (day and night differences, local evaporation) govern the isotopic variability observed in the 8 convective rainfall events evaluated in this study. The new manuscript structure is detailed below, and the main modifications were:

1. Title: We decided to modify the title in order to fit better with the changes made in the manuscript, and not only regarding the day-night differences observed. The new title is “Isotopic composition of convective rainfall in the inland tropics of Brazil”.

2. Structure of the article: Introduction and methods have preserved the same structure of the previous version, only localized modifications were made according reviewers comments, however we have modified results and discussion sections, that were combined and presented together divided into 5 sub-sections: i) presentation of the general events and meteorological parameters associated; ii) seasonal variation in isotopic composition and meteorological parameters, that helps to illustrate convective activity in the study area; iii) temporal evaluation of intra-events iv) inter-event evaluation related to regional processes v) isotopic fractionation model for evaluating the impact of local evaporation processes. The sub-sections (i) and (ii) were modified to meet the reviewers' comments. Sections (iii), (iv) and (v) are completely new. We believe that this new manuscript structure will bring more clarity and objectivity to the work.

3. Present and explanation of the database

The methods section was rewritten to better explain how the sampling was conducted, it is now explicitly mentioned that periods without information correspond to either those in which rainfall events did not occur or periods in which manual sampling was not possible, including the impact of the Covid-19 restrictions to access the sampling premises. We included the information of the hours used for the day-night time separation of the samples and data.

The result and discussion section was rewritten to better explain the intra-event variability. We included the temporal evolution of isotope characteristics ($\delta^{18}O$, *d*-excess) and selected meteorological parameters (brightness temperature, MRR reflectivity and rainfall amount) of 8 convective rainfall events sampled.

4. HYSPLIT analysis

As suggested by one of the reviewers, we have modified the methodology for evaluating the Hysplit trajectories. In this new version, we have estimated the average trajectory based on 27 trajectories calculated using the ensembles module. This modification was detailed in the methods section. Despite the moisture origin and transport has not changed much from the previous version, a new map was generated and presented in a figure.

In result and discussion section, the Hysplit trajectories were related to the inter-event variability of the isotope and meteorological parameters. In addition, the estimated vertical integral eastward vapor fluxes using data from ERA-5 were combined with Hysplit to improve the analysis of moisture origin, recycling and transport.

5. Below-cloud evaporation processes: This section is prepared to replace the conceptual model presented in the previous version and improve the reviewer's suggestions about local evaporation processes. In the result and discussion section, an assessment of the semi-quantitative impact of below-cloud processes was computed on the isotope data. The assessment was made on two rainfall events sampled in summer (2020/02/10-night and 2021/02/24-day) to characterize the differences between day and night situations. The modeling assessment was based on previous relevant isotope works (e. g. Craig and Gordon, 1965; Steward, 1975; Gonfiantini, 1986; Horita and Wesolowski (1994); Horita et al., 2008) and revealed the degree of partial evaporation of raindrops below the cloud base.

6. Minor comments

As a large part of the article has been modified, it was not necessary to respond to some of the reviewers' minor comments. Nevertheless, all the changes to the text and new references suggested for addition to the article were accepted.

7. Tables and Figures

Tables 1 and 2 are new. Table 1 summarizes the sampling of convective rainfall events, and shows for each event the corresponding season, period of daytime, date, number of samples, duration and median values of isotope and meteorological parameters. Table 2 shows the results of the semi-quantitative assessment of the impact of below-cloud processes on the isotope characteristics of convective precipitation.

Figure 1 is the same as the previous version, except the HYSPLIT map was removed. Figure 2 is the same as the previous version. Figures 4 to 6 are new. Figure 4 shows the intra-event variability of all convective rainfall. The temporal evolution of 18O, d-excess, rain rates, brightness temperature (GOES-16 image) and Micro Rain Radar reflectivity plotted in a vertical profile. Figure 5 is a map of ten-day backward trajectories separated into seasons, showing the mean trajectory for each rainfall event. Figure 6 is the ERA-5 vertical integral of eastward water vapor flux for the days when rainfall events occurred.