

General comments:

This study by Leriche et al investigated the gas-phase mixing ratio of VOCs and the physical, chemical, and biological properties of aerosols and cloud water in the tropical Réunion areas. Additionally, the authors also presented many auxiliary data, including the turbulent parameters of the boundary layer, radiative fluxes, and emission fluxes of BVOCs from the surrounding vegetation. However, although the manuscript presents some potentially valuable field data, these complex data have not been effectively explained and the manuscript is filled with a large number of inferential expressions. In particular, the lack of necessary connections in the data measured at five different observation sites may confuse readers. Generally, this work may present important and reference field data for future research, and thus is likely of interest to the readership of Atmospheric Chemistry and Physics. I recommend this manuscript for publication after major revisions.

Specific comments.

1. Abstract section.

Line 45: For volatile organic compounds (VOC), the abbreviation of VOCs seems more common.

Line 50: ...These air masses likely encountered cloud processing during transport along the slope... How was this inference proposed? as there is no necessary connection between the preceding and following text.

...Chemical composition of particles during the daytime shows a higher concentration of oxalic acid and a more oxidized organic aerosol at MO than at other sites along the slope... What is the indicative significance of this? In addition, what is the situation during the nighttime?

...Despite an in-depth analysis of organic compounds in cloud water, around 80% on average of dissolved organic compounds is undefined highlighting the complexity of the cloud organic matter... This does not seem to be an important conclusion, as the determination of organic matter in cloud water using ultra-high resolution mass spectrometry will inevitably reflect the complexity of cloud water organic matter. I suggest that it is necessary to directly present the molecular composition characteristics of organic compounds.

In particular, it seems better to have a corresponding line number for each line.

2. Introduction section.

Lines 105-110: The BIO-MAÏDO project has been overly described, and in contrast,

the relevant content of this study (line 115) has been oversimplified.

3. Figure 1. I recommend the author to briefly summarize the characteristics of figure 1-5 in the figure caption.

4. Main result section.

It seems that five observation sites showed different data types. Please clarify the connection between the data measured at these observation sites or whether these data can be combined to illustrate several scientific issues?

5. 3.4 Aerosol measurement section.

The authors presented the chemical composition results of PM1 and PM10, but there was more discussion about the chemical compositions in PM10. I am very confused about these discussions. May I ask what is the connection between the chemical composition results of PM1 and PM10, and what atmospheric chemistry issues can be explained?

Lines 465-470: For positive mass factorization (PMF), ... Three factors were resolved using PMF analysis...

How did the model run? The author needs to provide at least a detailed explanation of this in the supplementary information.

Lines 485, 495 and 500:...These differences could be related to the...the average concentrations of the sites...

...suggesting that environmental conditions (such as temperature and humidity) can have a role in the emission processes of these compounds by natural sources (e.g., soils, bioaerosols, plants and fungal spores)...

...However, levoglucosan concentrations observed in our study are more likely to be due to domestic biomass burning (e.g. cooking emissions) rather than forest fires (not reported in the area during the campaign)...

There is no evidence or reference for these inferences.

Line 505: ...Thus, our results show a strong contribution of biogenic sources on PM10 samples such as fungi spores, soils, and microorganisms and to a lesser extent the contribution from biomass burning aerosols...

Based on the previous discussion (lines 490-550), there seems to be insufficient evidence to support this conclusion.

Lines 610-615: ...The detailed presentation of FT-ICR MS results will be reported (work in progress)...

The authors did not present detailed mass spectrometry data but concluded that organic matter in cloud water is complex. I think this is very unreasonable. In addition, for the

conclusion that around 80% on average of dissolved organic compounds is undefined highlighting the complexity of the cloud organic matter. FT-ICR MS analysis about cloud water or rainwater water soluble organic matter has been widely reported. Thus, the fact that organic matter in cloud water is complex does not seem to be an important conclusion of this manuscript in the absence of specific data.