

Interactive comment on “Preliminary results from the FARCE 2015 campaign: multidisciplinary study of the forests–gases–aerosols–clouds system on the tropical island of La Réunion” by Valentin Duflot et al.

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Received and published: 19 July 2019

Dear Editor,

We first wish to thank the reviewers for their constructive comments, which helped us to improve the article. Please find below answers to reviewer #2's comments and changes made in the manuscript "Preliminary results from the FARCE 2015 campaign: multidisciplinary study of the forests–gases–aerosols–clouds system on the tropical island of La Réunion" by V. Duflot et al.

C1

- The article by Duflot et al. describes some results from a field campaign conducted on the island of La Réunion. It provides a set of useful information to better understand the interactions in the forest-gases-aerosols-clouds system, and such measurements are needed and potentially important. However, these results are preliminary in this manuscript and will be further discussed in future. The main concern here is that the FARCE campaign is only an exploratory campaign to the other two ongoing/pending campaigns, which makes the importance of publishing the current “preliminary” results questionable as a scientific paper.

It is true that this article is not a “traditional scientific paper”, and we especially thank the reviewer for addressing this point and helping us to clarify the “scientific positioning” of this work. This paper aims to complete the work of Baray et al. (AMT 2013), which gives an overview of the scientific potentiality of the Maïdo facility but focusing especially on remote sensing instruments and free tropospheric, UTLS and stratospheric matters. Our work intends to promote the Maïdo observatory's scientific specificities and potentialities for studies dealing with PBL processes occurring in a tropical insular environment. It draws up an inventory of the in situ studies that could be performed in this recent atmospheric observatory using various observations and simulations to better characterize the site. It has also vocation to develop scientific collaborations and to support future scientific programs, such as OCTAVE and Biomaïdo, whose related papers will use the results presented in this work to build up their discussions and conclusions. It is now clarified in the text (Abstract, p. 2, l. 10-13; Introduction, p. 5, l. 11-19; Conclusion, p.22 l. 33-35 and p.23 , l. 1-11).

- There are also other issues need to be addressed, as listed below: Page 11, lines 31: Why UTC is used in this section and all the figures, but local time is used in Section 4.4 and after?

Good point. There is no reason for that. Local times have been changed into UTC times.

C2

- Page 15, line 10: The comparison between observation and model simulation does not show a “Remarkably well” agreement in Figure 6.

Section 4.3 states: “At both sites, the range of simulated isoprene concentrations agree remarkably well with the observations. [...] Taking into account error bars and standard deviations, one can see that there is an overall agreement between the measured and simulated time series of isoprene concentrations at both sites.” We agree this is a bit confusing as we intend to differentiate the comparison of concentrations between observations and simulations for, on one hand, the range (which agrees remarkably well) and, on the other hand, the times series (which exhibits an overall agreement). We therefore removed the sentence: “At both sites, the range of simulated isoprene concentrations agree remarkably well with the observations”.

- Page 16, lines 28-31: Case studies are needed to have a solid conclusion here, Figure 11 just contains too many data points. For instance, there are also high HCHO and significant ozone concentrations in the high NOx region shown in this figure.

That's right. Figure 11 only gives an first insight in the determination of the sources of HCHO at the Maïdo Observatory. A paper dedicated to this topic is in preparation. Figure 11 has been modified to better show the 2 kinds of situation: high O₃/low NO_x, and low ozone/high NO_x, and the text better states the fact that these conclusions are preliminary and need further studies (p. 16, l. 25-33).

- Figure 5: Axis labels are missing.

Right. Axis labels were added on Figure 5.

Please also note the supplement to this comment:

<https://www.atmos-chem-phys-discuss.net/acp-2019-341/acp-2019-341-AC2-supplement.pdf>

Interactive comment on *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2019-341>,

C3

2019.

C4