Review of "A satellite chronology of plumes from the April 2021 eruption of La Soufrière, St Vincent"

The paper is interesting and offers a comprehensive picture of the eruption of La Soufriere of April 2021 regarding the volcanic clouds seen from satellite (IASI and ABI sensors). I have just some questions and some comments regarding the plume height retrieval from ABI images. It is in my opinion suitable for publication after minor revisions.

General comment about the position of figures and tables: it happens quite frequently within the manuscript that the figures and tables are positioned quite far from the text where they are explained and commented. Please, if possible, move them to improve readability. For example:

- Table 1 is positioned between lines 119-120, while it is explained at line 142
- Figure 2 is positioned in 2.2.1 section while it is described in 2.1.3 section
- Figure 3 is positioned in 2.2.1 section while it is described in 2.2.2 section
- Etc.

- Line 34: I think that coordinates are usually written with latitude first, followed by longitude. The same at line 361 for Sabancaya.

- Line 86-87: "three absorption features v1, v3 and v1+v3, centred at 8.7, 7.3 and 4 μm respectively". Please add a reference also for this.

- Line 209: instead of "Careful examination", I would prefer "Careful visual inspection" to enhance the presence of an operator looking at the maps

- Lines 215-126: "In general, the end time was determined when the plume moved away from the volcano". Please clarify this aspect: the end time was determined when there was almost one "clean" pixel between the volcano and the plume?

- Lines 219-220: I would rephrase the sentence in "the measurement time over La Soufrière has been precisely computed based on the latitude of the volcano adding 243 seconds to the sensing start time". This does not seem an "approximate" but a very precise correction. Anyway, there is a little discrepancy with the sentence below: "No such adjustment has been made to the mesoscale results, where the 1-minute temporal resolution ensures a higher accuracy". I totally agree with this (1 minute is a good accuracy) but then why you correct the fulldisc with 1 second of precision? A simpler 4-minute correction for fulldisc would be more consistent with the "no correction" applied to mesoscale images (producing a 1-minute precision time for all images).

- Line 224: please make explicit how many pixels correspond to the 0.1 deg box. 5x5 pixels around the volcano?

- Line 224: about the ERA-5 profiles: which is the temporal step you considered? 1 hour?

- Line 244 and fig. 4a and 4b: please clarify how you have computed these averages and standard deviations. Do you considered all the ERA-5 profiles between 9 and 22 April, 1 hour step, interpolated at the volcano position? Why you computed the standard deviations for wind direction and not for wind speed too? In fig.4a, I expected that, for each height level, the red lines (+/- standard deviations) would be equally spaced with respect to the averages (black lines). Why are not? The caption of fig. 4b is wrong.

- Line 251-252: the visually identification of the centre of the cloud seems a bit arbitrary and a not very accurate method. For future works, I suggest using something more objective, like the coldest pixel of the cloud or the centroid around the minimum, etc. Anyway, how do you choose between 1 hour or 30 minutes time ranges? Why do you choose these values and not, for example, 2 or 3 hours? Please give a justification for this choice.

- Fig.5: In my opinion, these figures are not so clear. As titles, instead of using “Eruption 1”, “Eruption 2” and “Eruption3”, I suggest putting the date and time of the ERA-5 profile considered. The use of both BT solutions (“optically thick” and “plume centre”) is not so relevant here and can create confusion. I suggest putting only the BT optically thick solutions.

- Table 3: “If there is no intersection with the temperature profile no result is reported.” I am not sure that this aspect can be considered a “mitigation” when the plume is not thermally balanced with the surrounding air. It may happen that the plume temperature is higher or lower than air temperature but still have a point of intersection with the profile.

- Table 3: “A single height is reported for each **event**, typically near the start of the **event** when the ash is not obscured by cloud.” Use “eruption” in place of “event” to avoid repetition.

- Table 5: I suggest modifying this table, which is not very significant at the moment:

1) What is the valuable contribution of considering the height deriving from the BT plume centre too? The heights values are generally very similar (a bit lower for troposphere, a bit greater for stratosphere) of that obtained from BT optically thick. The reason could be that after 1 hour, the plume is probably less opaque and the temperature is higher. Therefore, in my opinion the plume centre height solutions are not necessary.

2) The errors reported in table 5 are obtained considering only +/- 1 K, I suppose. This uncertainty is used to consider the instrument noise and gaseous absorption above the cloud (as you said at line 235). But, as you have optimally described in table 3, many others sources of error for BT method are possible. Errors of 100-200 m seem underestimated for this method. I suggest using at least +/- 2K or +/- 3K to give an estimate of the overall errors or, alternatively, clearly explain that the reported values do not take into account all other possible sources of error for this method.

3) In table 5 I suggest highlighting (with bold character for example) the more confident height value (tropospheric or stratospheric, based on the wind comparison), to help the reader in identifying the most probable height value more easily.