

Comments on the first version of the manuscript:

I. General comments

The manuscript is intended to be an illustration of the value of kymography to analyse Taylor bubbles flows, which are extensively studied in volcanology, in transparent pipes. As such, this work is clearly in the scope of Geoscientific Instrumentation, Methods and Data Systems. Although the first section of the text (1.1) discusses mainly the importance of characterising the dynamics of bubbles ascending volcanic conduits for understanding the transition from effusive to effusive volcanic activity, the dimensionless parameters of the flows studied in the article are not all comparable with volcanic conditions ; the paragraph 2.1 addresses this issue, explaining that water was included in the study because of its prevalence in the literature, which seems relevant. The methodology used to generate the kymographs is thoroughly detailed, as well as the computations done to extract the key flow parameters from the kymographs. The errors caused by the manual pixel selection and by the distortion induced by the camera lens are quantified, and the correction of the refraction at the tube boundaries is well-explained in Appendix 5. It should be stressed that the raw kymographs as well as the scripts mentioned in the Appendix 4 and 6 are provided by the authors, which constitutes good research practice.

As a conclusion, i find the study interesting and serious enough to be accepted, even though i have a few remarks and suggestions.

II. Specific comments

- On figure 4 : the differences between manual evaluation and kymograph measurements are more important with water than with glycerol-water, which is not really mentioned in the paragraph 2.4. The same remarks applies to figures 5 and 6.
- In 2.4 (l 291), it would be better to express the margin as a relative error rather than an absolute one.

III. Technical corrections

- Appendix 4 : Should the angle on the left-hand member of equation 4 not be θ_{PVC} rather than θ_{air} ?
- Figure 3 : The kymographs in (A) are a bit overloaded with captions, which hinders readability. For instance, it may not be necessary to draw all the dashed lines in the first kymograph.
- Appendix figure 2 Different names should be given to figures B (theoretical) and B (experimental) for the sake of clarity.

Comments on the second version of the manuscript:

- Some details regarding the flow dynamics inside volcanic conduits and the importance of experimental studies to understand such flows have been added to the first section, which is commendable.

- The text of section 2.1 (Experimental setup) is more precise about the difference between the experimental and volcanic conditions, which clarifies the position of this study.
- The remarks and suggestions that have been expressed concerning the first manuscript have been taken into account, and the adjustments that have been made are satisfying.