

Interactive comment on “Air pockets and secondary habits in ice from lateral-type growth” by Jon Nelson and Brian Swanson

Anonymous Referee #2

Received and published: 30 April 2019

The paper “Air pockets and secondary habits in ice from lateral-type growth” presents extensive collection of micrographs of growing ice. I am very pleased by its esthetical beauty. I think it should be published for its experimental value, regardless the theoretical explanations. The explanation of air packets formation is elegant. I cannot judge on its correctness. Nevertheless, I have some suggestions steaming mostly from the fact that I am not an expert in the field of ice grow from the vapor phase and thus I would welcome some introduction and generalizations. That may be a case for most of the readers, though. I suggest the paper be published after considerations the comments.

I would think that such extensive work deserves broader introductions and connections to what “general ice knowledge” may cover. I started form Hobbs: Physics of ice Ch. 8: I found the description of the growth in the direction of c and a-axis easier to understand

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then to consider the basal face and prismatic face in presented manuscript. Can both description be shown in the pictures?

In Hobbs (ch. 8.3) the linear growth (here named normal) is defined as normal to crystallographic face. Is the here discussed lateral growth perpendicular to both c-axis and a-axis? Would not that be more exact definition than that given on the line 5 of page 2?

I think, that schema in Figuer 1a suggests that the droxtal has 8 prismatic phases –should not there be only 6 of them?

I had some previous knowledge of “snow morphology diagram”, where temperature and humidity is decisive for the shape of snowflakes. Thus I was surprised that the current paper does not describe the humidity in details or does not attempt systematic study of the influence of temperature and humidity. Is reasonable to suppose the dependence? Is AST necessarily needed for the observations or would the vapor deposition normal to a-axis be sufficient?

It would be nice to shortly connect current observations to those of “classical” snowflakes formations. Is there AST mechanism needed there?

I would appreciate if some discussed term are more explained and/or shown in the pictures (droxtal, adjoining facets, basal and prismatic facets in Figure 2).

I think the abstract should be modified according the final content. Currently, I find some disagreement between it and the content of the manuscript. Also the name of prof. Yamashita in the abstract does not seem appropriate to me.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2019-280>, 2019.

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