

## ***Interactive comment on “Water adsorption and hygroscopic growth of six anemophilous pollen species: the effect of temperature” by Mingjin Tang et al.***

### **Anonymous Referee #1**

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Tang et al. investigated the hygroscopic growth of six pollen species and its temperature dependence. This study measured water uptake and growth factor by pollen grains using a vapor sorption analyzer and characterize pollen grains using FTIR. A hygroscopic parameter ( $k$ ) was calculated from the measurements. The subject of this manuscript is within the scope of this journal. There are some minor issues that the authors may want to address before it can be accepted for publication.

1, P5, L98-100, are these pollen species atmospheric relevant? Justification of using these pollen species needs further discussion.

2, P6, L114, what is the uncertainty of this moisture meter?

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3, P6, L130-132, which kind of temperature and humidity sensors that can achieve such high accuracy ( $\pm 0.1$  K and 1% RH) at this temperature and RH range?

4, P7, L137-138, Although it may be fine, I do not think this is an excuse that left the other temperature out. One can simply conduct a few more experiments for the missing points.

5, P8, L157-165, it is suggested to list these peak assignments in a table.

6, P9, L169-173, please justify the use of such ratio as a qualitative representation of OH groups. Have any other studies been using such proxy?

7, P11, L201-203, It only indicates that there is a correlation between water adsorption and OH groups in pollen samples. As discussed in L302-316, there may be other factors contribute to the water uptake. It is suggested to revise these related statements.

8, P12, L215,  $k$  parameter is just a fitting from the data. As for now there is no physical meaning for such equation. It is not really a theory.

9, P16, L279-L284, As mentioned above, the  $k$  value is obtained from the fitting of these data points, of course, this should fit it well, otherwise  $k$  value is wrong. As for Freundlich approach, what are the  $A$  and  $B$  values? To compare these two different approaches, further discuss is needed.

10, P17, L286-289, If use density of  $1 \text{ g/cm}^3$ , that means  $k$  values may be 2 times higher or lower when considering range of  $0.5 - 2 \text{ g/cm}^3$ . This is a huge uncertainty. That mean you cannot really compare  $k$  values for different species unless they have very similar density.

11, P18, L298, It is not clear what does “All the errors are statistical only.” mean.

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Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-1118, 2018.

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