

Public justification (visible to the public if the article is accepted and published):

I thank the authors for addressing the comments listed by the four referees; however, I invite you to address the following minor and technical comments before I can accept the manuscript for its publication.

We thank Referee 2 and the editor for their valuable feedback. Please see their comments in black, our response in blue and changes to the manuscript in red.

Reviewer #2 comments:

I am satisfied that the authors have responded appropriately to my queries and have updated the manuscript appropriately.

The only other question I have is whether the new Table 1 that shows the WIBS channels and types could be extended to include comments on the types of aerosol that each "type" might represent (including appropriate references that the authors have already largely provided in the main text), e.g. black carbon, fungal spores, bacteria, dust....

I understand that there may be many caveats to this and so the authors may choose to ignore it, but if possible it would be helpful to the reader. Aside from this minor comment, I am happy for the article to be published.

We thank Referee 2 for this suggestion. We have added aerosol classes that have been associated with the particle types to the table. We chose to include only studies that used the WIBS-5, WIBS-NEO, or WIBS-5/NEO instruments (which are identical except for the name) and excluded earlier models due to differences in detector gain settings. Additionally, we indicated the fluorescence threshold used in each study next to the corresponding references. We also added the following sentence in line 132:

The particle types are listed in Tab. 1 along with representative aerosol classes.

And deleted the sentence in line 137 – 138, as this is now covered in the caption of Tab.1

Table 1. Description of WIBS particle types and their corresponding fluorescence channels, along with representative particle classes identifies using a WIBS-5, WIBS-NEO or WIBS-5/NEO. Earlier WIBS models operated with different detector gain settings. A comprehensive overview covering all WIBS models is provided in Gratzl et al. (2025). (a): Katsivela et al. (2025), 9σ threshold; (b): Gratzl et al. (2025), 3 and 9σ threshold (c): Beck et al. (2024); 9σ threshold; (d) Gao et al. (2024), 9σ threshold; (e): Stone et al. (2021), threshold not reported; (f): Mampage et al. (2022); $3 \times \overline{FT}$ threshold; (g): Hughes et al. (2020), $3 \times \overline{FT}$ threshold; (h): Clancy et al. (2025), 6 and 9σ threshold; (i): Sarangi et al. (2022), threshold after Perring et al. (2015). SPP refers to sub-pollen particles.

Type	Active channels	Representative aerosol classes
A	FL1 only	bacteria ^a , microplastics ^b
B	FL2 only	eBC ^{c,d} , pollen fragments/SPP ^{e,f,g}
C	FL3 only	fungal spores ^h
AB	FL1 and FL2 only	pollen fragments/SPP ^f , microplastics ^b
AC	FL1 and FL3 only	fungal spores ⁱ
BC	FL2 and FL3 only	eBC ^{c,d} , pollen ^h , fungal spores ^{f,h} , pollen fragments/SPP ^{e,f}
ABC	FL1, FL2 and FL3	fungal spores ^{f,h,i} , pollen ^b , pollen fragments/SPP ^f , microplastics ^b

Editor comments:

Line 82: Replace “latitudes could therefor enhance” by “latitudes could therefore enhance”

Done!

Line 95 and along the document: Replace “565 meters above sea level, approximately 100 meters” by “565 m above sea level, approximately 100 m” for consistency.

Done! We also changed “meters” to “m” in the Supplement

Line 103: Replace “shown in In Fig.1 (b).” by “shown in Fig.1 (b).”

Done!

Lines 106, 119, 146, 188, 207, 250 and along the document: Replace “l min⁻¹” by “L min⁻¹”

Done!

Line 152 and along the document: Replace “ml” by “mL”

Done!

Lines 153, 210 (twice), 213, 214, 218, 291 and along the document: Replace “μl” by “μL”

Done!

Line 161: Something is wrong here: “concentration per sampled air volume CINP,air, we us”

We changed it to we use.

Lines 172, 558 (twice) and along the document: Replace “l” by “L”

We changed it, including the axis of Fig. 10.

Line 186 and along the document: Replace “3 meters” by “3 m” for consistency.

Done!

Line 251 and along the document: Replace “20 hours” by “20 h” for consistency.

Done!

Line 363: eBC was defined as equivalent black carbon in line 263.

The definition in line 263 is correct. We deleted de definition in line 363.

Line 432: Something is wrong here: “although it is acknowledged that the number of data points above 400”

We thank the editor for spotting this mistake. Something went wrong with the formatting. The missing part reads:

although it is acknowledged that the number of data points above 400 m^{-3} is limited. Similarly, ABC_3 and total pollen concentration have an r-value of 0.90. The absolute concentrations of both ABC_3 and pine pollen are comparable ($\sim 45^\circ$ linear fit).

Line 461: Replace “definition of (Burkart et al., 2021),” by “definition of Burkart et al. (2021),”

Done!

Line 534: The sentence is confusing: “the measured m^{-3} of *Cladosporium* spores corresponds”

We thank the editor. The correct sentence is

the measured concentration of 30.5 m^{-3} of *Cladosporium* (...)

Line 546: Replace “relative humidity ” by “R.H.”

We now define R.H. as relative humidity in line 274 and then only use R.H. throughout the document.

Line 566: Replace “In (Fig. 10 (b)), the” by “In Fig. 10 (b), the”

Done!

Line 621: Replace “Furthermore, (Mignani et al., 2021) found” by “Furthermore, Mignani et al. (2021) found”

Done!

Figure 1: Replace “ l min^{-1} ” by “ L min^{-1} ”

Done!

Figure 3: How about if the color of the Snow depth y-axis is changed from black to light blue to improve the readability of the figure?

We thank the editor. We changed the axis to light blue.

Figure 5: Replace “($r = 0.82$).The transition” by “($r = 0.82$). The transition”

Done!

We furthermore deleted the reference to Brus et al., 2025 in line 101, as their preprint did not appear in time.