

## Dear Editors:

Thank you for your comments concerning our manuscript entitled “Fluxes, patterns and sources of phosphorus deposition in an urban-rural transition region in Southwest China” (acp-2022-388).

Those comments are all valuable and helpful for revising and improving our paper, as well as the important guiding significance to our research. Based on the comments, we made minor revisions, please see the marked parts in the marked-up version. The main corrections in the paper are as flowing:

**Q1: In Eq. (1) (lines 145-150), you used the number of non-rainy days per month for  $N$  to calculate the total dry deposition. Please note that in reality dry deposition happens all the time, even during precipitation. And If fact, dry deposition velocity is larger (for most chemical species) on rainy than dry days due to the stronger turbulence on rain days. Even though in the field measurement of dry deposition rainy days are typically excluded, in theoretical calculation rainy days should be included in dry deposition calculation. Please make necessary changes and revise the deposition numbers accordingly.**

**A:** Thank you very much for finding this mistake in our manuscript. In general, the total days per month were used to calculate total dry depositions. We checked our original data and ensured that the total number of days per month for  $N$  was used, but not “non-rainy” days per month. There is a certification that July 2015, which was the least “non-rainy” month (around 7 days), showed high values of dry deposition. We corrected this mistake in the new manuscript, on page 8, in Line 149 as follows. Thanks again for pointing out this mistake.

*“ $N$  is the total number of days per month,  $d$ ,”*

**Q2: Line 394-395 (and the paragraph starting on line 147): In theory dry deposition is mainly controlled by ambient concentration and dry deposition velocity, with the latter being more affected by meteorological factors. RH may**

**play a factor in this, but is it the dominant factor? You should first state if seasonal variations in ambient concentration is large or not. You should first identify dominating factors, rather than just stating one parameter is related to this process.**

A: Thank you very much for your comments. We agreed that RH indirectly affects dry deposition by increasing the particle deposition rate. And we cannot sure that RH is the dominant factor of dry deposition, given that dry deposition also depends on ambient concentration. Therefore, we added these sentences on page 13, in Lines 248-253 as follows:

*“In theory, the seasonal variation of dry deposition is mainly controlled by ambient concentration and dry deposition velocity. On one hand, high ambient concentrations could be caused by high ambient emissions. In this study, the application of P fertilizer was conducted in Autumn, causing higher ambient emissions than in other seasons. Another hand, dry deposition velocity was more affected by meteorological factors.”*

In addition, we rewrote the last sentence of this section and the related conclusion, as follows:

*“In contrast, dry deposition was influenced by relative humidity and ambient concentration.”* on page 14, in Lines 263-264.

*“While dry deposition was affected by relative humidity and ambient concentration and was significantly higher in autumn ( $P < 0.05$ ).”* on page 20, in Lines 399-401.