

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2022-388

Anonymous Referee #2

Referee comment on "Fluxes, patterns and sources of phosphorus deposition in an urban–rural transition region in Southwest China" by Yuanyuan Chen et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-388-RC2>, 2022

By measuring P deposition across an urban-rural transition in China, this work found that i) the fluxes of atmospheric total P deposition ranged from 0.50 to 1.06 kg P hm⁻² yr⁻¹, and the primary form was atmospheric dry P deposition (76.13%); ii) the monthly variations of P deposition were strongly influenced by meteorological factors, including precipitation, temperature, and relative humidity; iv) the fluxes of dry P deposition and total P deposition were more affected by land use, which increased with the agro-facility, town, and paddy field areas, but decreased with the forest and country road areas. These results improved our understanding of the spatial and seasonal variations in P deposition. Although some results were not correctly interpreted, the manuscript is generally well-written and pleasant to read. The manuscript can be accepted for publication after a minor revision.

Specific comments

L20-21: This is incorrect. Correlation doesn't mean causality. Temperature and precipitation doesn't affect total P deposition! P emissions do!

L24-25: It is well-known that dry P deposition is the primary form of total P deposition.

L62-66: The correlations depend on whether total or wet deposition is analyzed. For instance, wet deposition correlates strongly with precipitation but total deposition doesn't.

L79-80: Bulk deposition of P is likely very close to total P deposition.

L119-121 & 125: I don't believe you can do this manually for two years!

L157-158: Why a radius of 5 kilometers?

L193-197 & Section 4.1: Correlation doesn't mean causality. See comments above.

L215-216: Define agro-facility areas first.

L258-261: Reference?

L301: Bulk deposition is measured using consistently open sampler. For P, I think bulk deposition includes wet deposition and a major proportion of dry deposition.

L308-309: Any details and evidences?

L350-351: Incorrect statement! Forest canopy strengthens deposition!

L370-374: References?

Finally, the ecological effects of P deposition are mediated by N deposition. What about N deposition in this region? This should be discussed somewhere.