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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Nutrients Dissolution Kinetics of Aerosols at Qianliyan Island, the Yellow Sea by a High Time-resolution Nutrient Dissolution Experiment, Potential Linkages with Inorganic Compositions and P solubility controlled factors" *by* Ke Zhang et al.

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As the author stated in the response, the polycarbonate filter and cellulose filter have different pore size, which were 0.4 μm and 20 μm, respectively. Obviously, these two kinds of filters have a very big difference in the pore size. This means that the aerosol samples collected using the polycarbonate filters contained a higher proportion of fine particles whereas those collected using the cellulose filters contained a higher propor-

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Discussion paper

tion of coarse particles due to missing 0.4-20 μm particulates (this part of fine particles is very important). Please note that the composition and ratio of nutrients in fine particles are absolutely different from those in coarse particles. Therefore, data obtained using two kinds of different filters have no comparability. Once again, using two different kinds of filters in collecting TSP samples in this work is a serious methodological deficiency and thus there is no sense in making further argument.

"However, our results focused more on the relative amount. For example, the comparison of nutrients between water-soluble and acid-soluble ratio in the ultra-sound extraction and high time-resolution dissolution experiment."

The relative amount will be changed owing to missing 0.4-20 μm particulates.

"Also, dynamic dissolution parameters, such as the dissolution equilibrium time, dissolution constant and the order of the dissolution reaction were not affected by the change of filter."

That is wrong. The results will be significantly altered by the change of filter, because dynamic dissolution parameters differs largely between the fine and coarse particles.

"As for dissolution rate comparsion with P and Si minerals, the absolute amount was used. P and Si mainly exist in coarse particles and both filters can capture the coarse particles. Hence, the flaw in aerosol collection did not affect the main conclusions."

That is not correct. The absolute amount was also affected owing to missing 0.4-20 μm particulates. P and Si also exist in fines particles, and hence the main conclusions will be influenced by this methodological deficiency.

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