



Particulate matter in terrestrial solutions: insights from a European beech forest in Germany

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Particulate matter (PM) can affect the functional ecology and health of forest ecosystems. Nonetheless, the cycling of particulate matter is usually neglected in studies examining the biogeochemistry of forest ecosystems. The size and shape of PM has been documented to influence both its impact on forest canopies and its biogeochemical reactivity. So what is the size and shape of PM in bulk precipitation, throughfall, stemflow, and Oa solution? An answer to this question is of prime importance to those wishing to better model the biogeochemistry of forests. This presentation examines the nature of PM in terrestrial solutions from a European beech (*Fagus sylvatica* L.) in east-central Germany during the leafed and leafless periods. Scanning electron microscopy, image processing, and data analysis permitted quantification of the size and shape of PM in forest solutions. Building upon the work of Levia et al. [2013]* who quantified the diameter distributions of 43,278 individual particulates in bulk precipitation, throughfall, stemflow, and Oa soil solution, this work delves into surface area, roundness, and perimeter of PM in terrestrial solutions. Initial analyses have revealed that there are marked differences in the geometry of PM in bulk precipitation, throughfall, stemflow, and Oa solutions with implications for biogeochemical modeling of PM flux in forests.

* Levia, D.F., Michalzik, B., Bischoff, S., Nätke, K., Legates, D.R., Gruselle, M.C. and Richter, S. 2013. Measurement and modeling of diameter distributions of particulate matter in terrestrial solutions. *Geophysical Research Letters* 40(7): 1317-1321. [DOI: 10.1002/grl.50305]

Funding note: This work was funded by the Alexander von Humboldt Foundation.