Title:	High concentrations of biological aerosol particles and ice nuclei during and after rain
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Abstract:	Bioaerosols are relevant for public health and may play an important role in the climate system, but their atmospheric abundance, properties, and sources are not well understood. Here we show that the concentration of airborne biological particles in a North American forest ecosystem increases significantly during rain and that bioparticles are closely correlated with atmospheric ice nuclei (IN). The greatest increase of bioparticles and IN occurred in the size range of 2–6 µm, which is characteristic for bacterial aggregates and fungal spores. By DNA analysis we found high diversities of airborne bacteria and fungi, including groups containing human and plant pathogens (mildew, smut and rust fungi, molds, Enterobacteriaceae, Pseudomonadaceae). In addition to detecting known bacterial and fungal IN (Pseudomonas sp., Fusarium sporotrichioides), we discovered two species of IN-active fungi that were not previously known as biological ice nucleators (Isaria farinosa and Acremonium implicatum). Our findings suggest that atmospheric bioaerosols, IN, and rainfall are more tightly coupled than previously assumed.
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