



Bioaerosols in the Eastern Mediterranean: abundance, speciation, seasonality, impact on nutrient cycles and role of airmass and meteorology

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Primary biological aerosol particles (PBAPs) are a ubiquitous component of the atmosphere. They are studied in part to understand their unique role in cloud formation by acting as cloud condensation nuclei (CCN) and ice nuclei (IN) [1, 2], impacts on health and their role as nutrient supply for ocean ecosystems [3]. Little is known about the seasonal variability, lifecycle and survival mechanism in the atmosphere of PBAPs, in part due to challenges in available techniques for their detection. Our study aims to quantify the concentration of supermicron PBAPs at a remote marine ground site in the Eastern Mediterranean to help understand their potential impacts on cloud formation, and contribution to nutrient deposition to the surface ocean. Sampling took place in the Finokalia Station and in the city of Heraklion. Eight hour samples were collected using a Spincon II wet-walled cyclone sampler every two days over a 9-month period (May, 2016 – January 2017) and were subsequently analyzed using flow cytometry and epifluorescence microscopy protocols developed by Negron et al., 2017 [4]. Preliminary results show low biomass samples over Finokalia site and concentrations around 103 – 105 m⁻³, depending on the origin of the airmass. Further analysis of the samples focus on the influence of meteorological conditions on the relative abundance of bacteria, fungi, pollen, associated viruses and biological debris. Estimates of the nutrient fluxes and the seasonality thereof are also provided, and compared against existing modeling estimates [3].

References:

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