ONE YEAR OF BIOAEROSOLS MEASUREMENTS WITH A WIDEBAND INTEGRATED BIOAEROSOL SENSOR (WIBS-4A/WIBS-3M) AT CEA ATMOSPHERIC SUPER SITE, FRANCE.

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The Detection and the quantification of bioaerosols has become a hot topic in climate research. This is essentially due to the ability of these microorganisms to act as Giga Cloud Condensation Nuclei (G-CCN) or as Ice Nuclei Initiators (INI). These properties may allow bioaerosols to play an important role in climate feedback mechanisms mainly via the aerosol-cloud indirect effect contribution to precipitation and the water cycle. The importance of the role of bioaerosols in cloud formation is still under debate and to address various hypotheses involving them requires fast and reliable measurements. In this context, and in the frame of the Bio Chemical Collectors (BCC) research project from the French Atomic Energy Commission (CEA) a Wide Band Bioaerosol model 4A and WIBS-3M have been deployed during one year at the CEA Atmospheric Super site in the region of Paris. The objective of this experiment was to investigate the variability of the Primary Biological Aerosols (PBAP) in the atmosphere and to study the possible interferences due to pollution events. This long term measurement covers both summer and winter periods. Measurements were combined with collocated particulate matter and gas phase measurements to track and assign aerosol sources. To constrain more efficiently the fluorescence of biological material, we used a spore trap to collect and identify the bioaerosols. Optical identification and counting have been done by microscopy at the Network of Survey for Airborne contaminants (RNSA) to identify pollens and fungal spores. We present here our results of one year of aerosol fluorescence measurements in a complex environment. The final objective is to give a robust understanding on the real time measurement of primary biological particles in the atmosphere and provide some tools to refine the clustering approach and or find new algorithms.

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