

Field Sampling and Chemical Analyses to support Beate Liepert's funded pilot project on Air Pollution and Climate

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Abstract

Funding is requested for additional measurements that would further enhance Beate Lieper's preliminary study on the relationship between optical measurements of air pollution and climate. I will compare the chemical make-up of particulate matter to the radiative measurements made by sunphotometer. I propose to characterize airborne particles through both real time particle counting and analyses of particulate matter collected onto filters (elemental carbon, reflectance, total sulfur, suite of metals). The samples will be collected in connection with commercial hot-air balloon flights organized by Beate Liepert, both from the balloon and simultaneously from the Oceanography rooftop. At both of these locations Beate Liepert will also be operating sunphotometers to obtain aerosol optical thickness. Two test campaigns are planned. We propose to select the time of flight of the two balloon campaigns based upon expected endmembers for the ratio of sulfate (dominant mid-western source) to black carbon (dominant urban source), based upon weather patterns and earlier data collected at LDEO rooftop and Manhattan rooftop.