



UAV sensor package for trace gas emission rate estimation and black Carbon characterization



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Abstract

Techniques for wind estimation, trace gas concentration measurement, such as CO₂ and CH₄, and miniaturized thermophoretic sampler, being developed for a UAV platform, will be presented. These techniques include use of UAV pre-existing onboard sensors to estimate wind vector, wavelength modulation spectroscopy (WMS) for trace gas concentration measurement, 3D printed thermophoretic sampler, for black carbon characterization, and a custom communication system developed to relay information between the UAV sensor package and ground station. In addition, a simple method for estimating trace gas emission rates from flares will be discussed. Finally, some preliminary results for WMS gas sensing will be presented.