

Multispectral Particle Absorption Monitor

[Aerodyne Research, Inc.](#)

Technical Abstract

This Small Business Innovation Research Phase II project concerns the development of a multi-wavelength monitor that will provide rapid, real-time measurement of the average aerosol absorption coefficient in a parcel of sample air. This monitor will employ Aerodyne's patented Cavity Attenuated Phase Shift (CAPS) technology in order to produce a far simpler, smaller, lower cost alternative to more traditional instruments with no loss in sensitivity or accuracy. A unique property of the proposed instrument is that it requires little or no calibration. The Phase II project entails construction a field-ready prototype and deploying the sensor on various field missions undertaken by Aerodyne's particle measurement research group. Aerosol particles affect the radiative balance of the earth directly, by scattering and absorbing solar and terrestrial radiation, and indirectly, by acting as cloud condensation nuclei. The atmospheric loading of aerosols generated through human activities can exert an influence on the earth's radiation budget comparable in magnitude with greenhouse gases. The uncertainties in the current understanding of aerosol direct and indirect forcing limit the ability to quantify human influences on climate change.

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step_SATdb, An Open Source Based Satellite Design Data Architecture with API Design and Management Plugins

[sci_zone](#)

Technical Abstract

Satellite design encompasses a multitude of steps from concept to flight, which can take several years, depending on the scope, requirements and budget of the mission. The process also requires a wide range of design and management tools, with limited consistency and data interchange capability. Detailing the relationships between the satellite configuration (components and interrelationships), inventory control systems, life cycle management, design, analysis and test data is extremely difficult at best. No tool exists that meets these needs for the general satellite design, system engineering and integration process. Sci_Zone has begun development of our innovative Satellite Design Automation architecture QuickSATTM, in conjunction with our step_SATdb open database architecture to meet this need. step_SATdb seamlessly integrates existing detail design tools with QuickSATTM, as well as databases tracking requirements, hardware and software components and payloads in inventory, with the final configuration of the satellite. QuickSATTM, provides for not only rapid design, via design wizards and integration to existing design tools, but will provide coherency between a range of applications and data sets. step_SATdb stores and distributes supporting satellite design, configuration, mission, support and test data from a centralized database server and can distribute the data across multiple platforms and via the internet.

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