

Trace Gas and Aerosol Flux and Vertical Concentration Profile Measurements during MIRAGE

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We will characterize solar radiation (direct and diffuse PAR, uv-b), gases (ozone, NO, speciated VOC, CO₂, H₂O) and aerosol fluxes and vertical concentration profiles at the T1 supersite. The equipment will be deployed in a sea-container, on a 10 m tower and on two tethered balloon platforms that enable sampling at elevated heights (from ground level to 1 km AGL). The facility will be operated by 3 members of the BAI group (A. Guenther, J. Greenberg, and A. Turnipseed). We will quantify fluxes (emissions and deposition) of trace gases and particles using eddy covariance and/or inverse modeling from vertical gradients. Fast response measurements will include ozone (CLD), CO₂ and H₂O (IRGA) and winds and virtual temperature (sonic anemometer). Vertical gradient measurements will include ozone (UV abs), NO (ozone diff), hydrocarbons and oxygenated VOC (samples transported to Boulder for GC-MS analysis), carbon dioxide (IRGA), particle number size distributions (OPC), total particles >10 nm (CPC), direct and diffuse visible light (BF3), and met. variables (humidity, temperature, wind speed and direction). These measurements will contribute to the following MIRAGE Science objectives: vertical plume extent, regional oxidant production, HC oxidation products, reactive nitrogen, gas-aerosol chemical processes, aerosol radiative properties and impacts, surface-atmosphere interactions.