

## Ground-based Radiation Budget and Aerosol Validation of the Geostationary Operational Environmental Satellite R-Series (GOES-R) Products Using a NOAA Mobile SURFRAD Station

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In preparation for the GOES-R satellite launch in late 2015, a mobile field site for ground-based validation of radiation and aerosol products has been developed. The instruments are much like the current Surface Radiation (SURFRAD) (<http://www.srrb.noaa.gov/surfrad/index.html>) suite of instruments with the addition of a spectral surface albedo capability. The goal is to validate many of the baseline and Options 2 products that are being developed for GOES-R. Permanent SURFRAD stations and the mobile SURFRAD station will provide validation for several baseline products including aerosol optical depth and downward surface shortwave radiation. Option 2 products include surface shortwave radiation, downward longwave radiation, spectral surface albedo, vegetation fraction and index.

The mobile SURFRAD station has been deployed at two campaigns: 1) Department of Energy/Atmospheric Radiation Measurements (ARM) Two Column Aerosol Project in July and August 2012, and 2) the DISCOVER Air Quality (DISCOVER-AQ) Campaign in the San Joaquin Valley of California in January and February 2013. The first deployment and test of the mobile SURFRAD station was at ARM's Mobile Facility 1 deployment in Cape Cod. This deployment was a subset of SURFRAD measurements consisting of spectral aerosol optical properties and spectral surface albedo. The DISCOVER-AQ featured the suite of radiation products for radiation budget including downwelling and upwelling shortwave and longwave radiation, retrievals of spectral aerosol properties, and spectral surface albedo as measured by the Multi-Filter Rotating Shadowband Radiometer at 415, 500, 673, 870, and 1625 nm. We will give an overview of the measurement capabilities and results from these two campaigns.



**Figure 1.** Mobile SURFRAD suite of instrumentation at the DISCOVER-AQ Campaign in the San Joaquin Valley, CA.