



Validation plan for SAGE III on ISS

Jean-Paul Vernier (1,2), Larry Thomason (2), Dave Flittner (2), Joe Zawodny (2), and Randy Moore (1)

(1) Science Systems and Applications, Inc. Hampton, Virginia, USA, (2) NASA Langley Research Center, Hampton, Virginia, USA

Continuing the heritage of atmosphere profile measurements by solar occultation is extremely important to assess long-term changes of ozone, water vapor and aerosol in the upper troposphere and stratosphere. SAGE III will be launched and installed on the International Space Station (ISS) in 2014 to provide accurate information on ozone and to monitor its predicted recovery. Variations in stratospheric aerosol loadings, which are the principal natural source of radiative forcings at multi-years and decadal timescales under volcanic conditions, will also be monitored. Finally, SAGE III will provide accurate measurements of stratosphere water vapor, which is a very sensitive parameter to transport changes across the tropopause that could result from climate changes.

SAGE III/ISS will measure atmospheric profiles of O_3 , H_2O , NO_2 concentration and aerosol extinction at several wavelengths through the solar occultation technique in the UV-Vis and Near-IR. SAGE III/ISS will also measure profiles of night-time O_3 , NO_2 , and NO_3 using the lunar occultation technique, as was done by its brother instrument on-board the Meteor3-M space-craft. From the vantage point of the ISS, SAGE III will make measurements over the latitude range 60° S to 60° N approximately every month, with solar occultation coverage very similar to SAGE II. Concurrent satellite observations of the same parameters that will be available during the lifetime of SAGE III/ISS will be a very interesting source of corroborative measurements that will be explored. The validation of SAGE III/ISS gas and aerosol extinction profiles will require high precision correlative measurements that will be available via balloon and aircraft measurements.

To organize the validation of SAGE III/ISS products, we seek to enhance our collaboration with worldwide ground-based networks that are involved in the measurement of O_3 , H_2O , NO_2 and aerosol in the upper troposphere and throughout the stratosphere.