

Title: Evaluation of the MODTRAN Modeled/Simulated Radiance over the Lunar Lake, NV
Calibration Target in 1997.

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Abstract:

On the 23rd of June 1997, NASA's Airborne Visible/Infrared Imaging Spectrometer (AVIRIS) measured the spectral radiance over a calibration target established at Lunar Lake, NV. At this calibration target, the surface spectral reflectance, discrete atmospheric optical depths and atmospheric water vapors were measured. These in situ measurements were used to constrain the MODTRAN radiative transfer code and predict the total **upwelling** spectral radiance incident at AVIRIS. The absolute average agreement from 400 to 2500 nm between the modeled/simulated spectral radiance and the measured spectral radiance were better than 96 percent. This experiment shows that MODTRAN accurately models/simulates the absorption and scattering properties of the atmosphere as well as the solar source. With this validation of MODTRAN, the code may be used for inversion of surface and atmospheric parameters. As an example of model based inversion, MODTRAN is used to derive information about the atmospheric water vapor and surface spectral reflectance for the entire Lunar Lake, NV data set.