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ABSTRACT

This paper presents the spectra], radiometric and spatial calibration of NASA's Airborne Visible/Jnfrad imaging Spectrometer (AVIRIS) in the laboratory as well as the validation of the calibration in-flight. AVIRIS measures the total upwelling spectral radiance at 20 km altitude through 224 channels from 400" to 2500" nm at 1() nm spectral intervals. These spectra are acquired as images of 11 by up to 100 km with 1"? by 17 m spatial sampling. The relative importance of sensor calibration in the laboratory (where no science data are acquired) versus calibration and validation in-flight (where all science data are acquired) is discussed.

Based on the validated calibration of AVIRIS in-flight, examples of the derivation of physical parameters from AVIRIS spectra are presented for the disciplines of: the atmosphere; geology and soils; ecology and agriculture; coastal and inland waters; biomass burning; snow and ice hydrology as well as satellite sensor calibration and multi-spectral sensor simulation.

KEY WORDS: Spectra, Radiometric, Calibration, AVIRIS