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MASTER - A New Instrument For Hyperspectral Analysis From The Visible To Thermal Infrared

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Abstract (312 words):
MASTER - A New Instrument For Hyperspectral Analysis From The Visible To Thermal Infrared

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Abstract

The MODIS/ASTER Airborne simulator (MASTER) is a 50 channel imaging spectrometer operating from 0.4 to 13 micrometers with a 2.5 milliradian instantaneous field of view and 85.92 degree field of view. MASTER is operated from a variety of aircraft including a Beachcraft B200, DC-8 and ER-2. MASTER was developed by the Moderate Resolution Imaging Spectroradiometer (MODIS) and Advanced Spaceborne Thermal Emission and Reflection radiometer (ASTER) science teams to simulate and validate MODIS and ASTER data. The MODIS and ASTER instruments are scheduled for launch in December 1999 on the Terra Platform.

MASTER was declared operational in January 1999 after a series of in-flight validation experiments. These experiments involved measuring the ground radiance of known targets then propagating the ground radiance through the atmosphere with a radiative transfer model to obtain the radiance at sensor. The model was driven with local atmospheric data. The predicated radiances were then compared to the measured radiances. The results indicate the percent difference between the predicted and measured radiance in the visible shortwave infrared channels, outside the water vapor bands, is typically around 2-5%. In the thermal infrared, the percent difference is typically around 0.2-0.5%.

Results from an airborne validation experiment will be presented as well as examples of MASTER data processing for the extraction of mineralogic information.

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