

The MODIS/ASTER Simulator (MASTER) - A New Multispectral Airborne imaging Spectroradiometer for Land Surface Studies

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In 1998 NASA's first Earth Observation System platform will be launched into earth orbit. Five instruments are mounted on the platform including the Moderate Resolution Imaging Spectroradiometer (MODIS) and the Advanced Spaceborne Thermal Emission Reflectance Radiometer (ASTER). MODIS has 36 spectral channels between 0.4 and 14 μm and **ASTER** has 14 spectral channels between 0.5 and 12 μm . Currently, data for these instruments are simulated using either the MODIS Airborne Simulator (MAS) for MODIS or a combination of the Airborne Visible Infrared imaging Spectrometer (AVIRIS) and Thermal Infrared Multispectral Scanner (TIMS) for ASTER. These airborne instruments provide a reasonable simulation of MODIS but are less well suited for simulating ASTER since the AVIRIS and TIMS instruments are mounted on different platforms and have different instantaneous- and total- field of views. Further, the TIMS instrument is 14 years old and becoming increasingly difficult to maintain. In order to better simulate ASTER, as well as provide a backup for the MAS, a new instrument is being developed termed the MODIS/ASTER Simulator (MASTER). This instrument will have 50 spectral channels located between 0.4 and 13 μm . MASTER consists of three main components: the recorder/digitizer, the spectrometer and the scan head. The recorder/digitizer is being built by Berkeley Camera and the Ames Research Center. The spectrometer and scan head are being built by Daedalus Enterprises. The instrument will be integrated and operated by the Ames Research Center with scientific oversight from the Jet Propulsion Laboratory. MASTER will have a 2 milliradian instantaneous field of view and a total field of view of 80 degrees. The visible through short wave infrared channels will be calibrated by viewing internal lamps and the mid infrared and thermal infrared channels will be calibrated by viewing two internal blackbodies. The instrument is scheduled for completion at the end of 1997.

This presentation will provide a detailed description of the MASTER instrument as well as simulated MASTER images.

Conference Topic: Airborne Platforms or Major Airborne R&D Programs and Campaigns

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