

# Modelling of MODIS Sensors

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- Objectives
- Progress Report

# Objectives

- developing "Math Model" for simulating scenes with accurate representation of radiometry and geometry of MODIS-N/T sensors
- uses Monte Carlo ray-tracing techniques to represent e-m radiation interaction with matter
- uses parallel processing (transputer array) and multiprocessor MIPS R4000 (SGI 480) to perform computations and visualise results
- source code to be made available at some yet to be determined time in the future
- would like to combine with 6S as and when Tanre will release software so that a consistent set of atmospheric simulations can be used
- need ray-tracing optical model for MODIS-N/T for simulating internal radiometry/geometry of sensor
- simulate AVHRR, ATSR, LANDSAT-MSS/TM first

# Progress Report

- Version 1 of software completed in March 1991
- IGARSS'91 paper (Newton, Muller & Pearson) described V1.0 and application to automated atmospheric & topographic correction: LANDSAT-TM
- Version 2 (complete re-write) almost completed by P. Lewis includes following characteristics:
  - pin-hole camera (awaiting development of new sensor models dependent on BNSC funding)
  - atmospheric scattering and attenuation (uses Zibordi and Voss model in the absence of 6S)
  - solar spectral irradiance
  - 3D surface (terrain and plant models)
  - different BRDF scattering models (Walthall and Hapke at present, more under development)
- sensitivity studies for AVHRR FIFE site to be completed by end of November 1991
- need INPUT from MODIS Calibration Group for
  - EOS platform orbital model (GE to supply?)
  - MODIS-N and MODIS-T CAD ray-tracing model
  - requirements for sensitivity tests needed