Applications with the Newest Multi-spectral Environmental Remote Sensing Satellites

Environmental Remote Sensing 2006
A series of 6 lectures with homework and labs

Objectives
An in depth explanation of methods and techniques used to extract information from meteorological satellite data, with emphasis on the latest measuring technologies.

The course will consist of lectures, laboratory sessions, group lab projects, homework and tests. The results from each of the group projects will be presented to the class by the participating students.

Main Topics
A. Lectures:
• Radiation and the Radiative Transfer Equation
• Spectral signatures from Earth’s surface and atmosphere (MODIS)
• Cloud detection and cloud properties (MODIS & AIRS)
• Sounding using infrared high resolution spectral data (AIRS)

B. Labs:
• Using HYDRA (a JAVA based freeware tool) to manipulate multi-spectral data
• Staging, Viewing, Interrogating MODIS, AIRS, and GOES Data
• Group Projects

Location and timing
The course will take place 6 March to 4 April 2006, using the facilities provided by CCNY-CREST

Who can attend
Participants should have familiarity with Calculus, Meteorology, & Physics
The maximum number of students is 25.
APPLICATIONS WITH THE NEWEST MULTI-SPECTRAL ENVIRONMENTAL REMOTE SENSING SATELLITES
6 March – 4 April 2006
Lecturer: Dr. Paul Menzel

Week 6 Mar
M am Lecture 1 Radiation and the Radiative Transfer Equation
T pm Lab 1 Introduction to the Labs and HYDRA
W am Lecture 2 Remote Sensing of the Earth’s surface and atmosphere
   (e.g. ocean color, snow/ice, vegetation, fire, aerosols, & ash)
R am Homework 1

Week 13 Mar
M am Lecture 3 Clouds, SST, and Moisture sensed with MODIS
   Quiz 1
T pm Lab 3 Multi-spectral Cloud Mask Properties
W am Lecture 4 Investigations with High Spectral Resolution Sounders
Homework 2
R am Lab 4 Staging, Viewing, Interrogating Multispectral Data

Week 20 Mar
M am Lecture 5 Spectral Signatures seen with AIRS
   Quiz 2
T pm Lab 5 High Spectral Resolution IR data: Exploring Spectral Properties
   of clouds and moisture
W am Lecture 6 Summary of Remote Sensing Lessons
R am Lab 6 Organizing Group Projects (Cal/Val, ocean color & SST,
   cloud clearing, Eco Syst, dust & aerosols)

Week 27 Mar
M am Lab 6 Continue Group Projects
T pm Lab 6 Continue Group Projects
W am Lab 6 Continue Group Projects
R am Lab 6 Finish Group Lab Projects

Week 3 Apr
T pm Presentation of Group Lab Projects [Students]
W am Quiz 3

Mon, Wed, Thur AM sessions: 10:20 am – 12:00 noon – Tues PM sessions: 12:20 pm – 2:00 pm