2011 IMAPP Training Workshop: Satellite Direct Broadcast for Real-Time Environmental Applications

Location: Eastern China Normal University (ECNU), Shanghai, China

Date: 1-5 June 2011

Workshop Agenda

Day Zero (Question & Answer Session): Evening (7-9 pm), 31 May 2011

Day One (MODIS): 1 June 2011 Liam Gumley
Introduction to MODIS sensor and Level 1B data

- **Lecture Session**
  MODIS sensor and Level 1B data characteristics
  - Level 1B (1KM; HKM; QKM)
  - Bowtie
- **Lab Session**
  Exploring MODIS L1B data in Hydra
  - Learning Hydra
  - Exploring MODIS L1B using Hydra using ECNU MODIS DB data

Day Two (MODIS Products): 2 June 2011 Kathleen Strabala
Lecture Session: MODIS Level 2 algorithms and products

- MODIS Atmosphere Products
- MODIS Land Products
- MODIS Ocean Products

Lab Session
Exploring MODIS products using Hydra

Day Three (MODIS Applications): 3 June 2011 Kathleen Strabala
Lecture Session: Applications of MODIS products to local decision making

Weather Observation and Forecasting

- **Public Safety**
  Fog detection
  Snow/ice detection
  Fire detection
  Severe weather
- **Aviation**
  Cloud height, cloud composition, cloud temperature
  Turbulence
  Ash detection
- **Numerical Weather Prediction (NWP) DBCRAS applications**

Direct Broadcast CIMSS Regional Assimilation System (DBCRAS) NWP
Freely distributed, globally configurable 72 hour forecasts of meteorological fields centered on user supplied lat/lon
Improved depiction of cloud and moisture using MODIS products in assimilation
Unique forecast satellite imagery

Air Quality

Aerosol detection
IDEA-I - Infusing satellite Data into Environmental Applications-International

Others

Use of sun glint patterns
Land Surface Temperatures case study of infestation

Lab Session

IDEA-I case study
Exploring DBCRAS using McIDAS-V

<u>Day Four</u> (AIRS & RTTOV): 4 June 2011 Allen Huang

Lecture Session:

AIRS sensor, algorithms, products, and applications and RTTOV

- AIRS measurement principal
- AIRS sounding retrieval theory & algorithm
- AIRS product & application examples

RTTOV

- What is RTTOV?
- Running RTTOV
- Interpreting RTTOV outputs

Lab Session: AIRS Measurement Information Content

<u>Day Five</u> (Class Exercises & Q/A): 5 June 2011

- Creating gridded averages of IMAPP MODIS AOT and TPW products (Liam)

In the morning, the students will work through the process of creating a gridded monthly average of MODIS Aerosol Optical Thickness from the ECNU DBPS (in groups of three). The morning session will be guided by the instructor in a tutorial format. In the afternoon, they will repeat the exercise on their own using the MODIS TPW product, and they will present their results to the group.

Number of Participants: no more than 30

Lab Facility: Enough computers for one for each of three participants (i.e. for 30 participants 10 computers plus two to three backups are optimal)

Reading Assignments:

1. Paul Menzel – Application with Meteorological Satellites
2. COMET MODIS training module

3. COMET AIRS training module

Lecturers:
Allen Huang, Liam Gumley, Kathy Strabala and Willem Jacobus Marais