AERONAUTICA MILITARE

CIMSS

EUMETSAT

International School on
Applications with the Newest Multi-spectral Environmental Satellites
6 – 15 June 2016, Bracciano, Italy

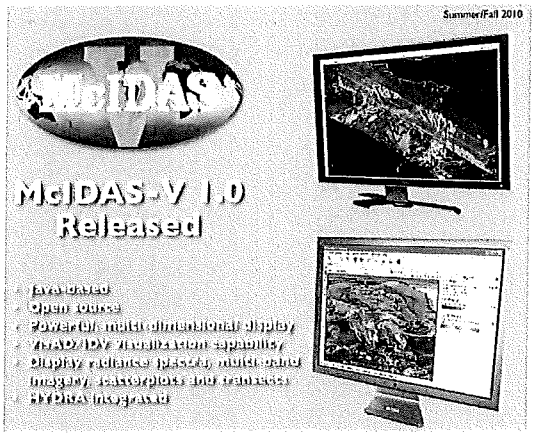
Objectives
An in depth explanation of methods and techniques used to extract information from environmental satellite data, with emphasis on the latest measuring technologies. The course will consist of lectures, laboratory sessions, group lab projects, homework and tests. The results from each of the group projects will be presented to the class by the participating students. English is the official language of the School. All provided material will be in English.

Main Topics
A. Lectures:

- Radiation and the Radiative Transfer Equation
- Spectral signatures from Earth's surface and atmosphere
- High resolution sounding using infrared high resolution spectral data
- Multi-spectral sensors for imaging
- Instrument Considerations and Cal/Val
- Evolving to the Future Global Observing System

B. Labs:

- Using McIDAS-V (a JAVA based tool) to manipulate multi-spectral data
- Staging, Viewing, Interrogating MODIS, AIRS, AMSU, IASI, GOES, MSG data
- Group Projects



Visualization Tools for Lab
McIDAS-V is used to interrogate and view multispectral data in the labs; it is available for free at http://www.ssec.wisc.edu/mcidas/software/v/

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Draft Agenda

Monday, 6 June

am	Welcome	Introduction of students and teachers plus discussion of agenda (All)
	Opening Quiz	ALL
	Lecture 1	Electromagnetic spectrum and radiative transfer – **Bennartz**
	Lab 1	Introduction to McIDAS-V (case from 6 November 2005)
pm	Lecture 2	Satellites, instruments and orbits – **Bennartz, Kerkmann**
	Lab 2	Wildfires/Smoke in Botswana (29 August 2008)
	Lab 2	Discussion of results

Tuesday, 7 June

am	Lecture 3	Infrared soundings (multi-spectral and hyperspectral) – **Bennartz**
	Lab 3	Investigate a tropical depression with AIRS
	Lab 3	Discussion of results
pm	ALL	Daily Weather Briefing
	Lecture 4	Microwave soundings – **Bennartz**
	Lab 4	Investigate a tropical depression with MODIS and AMSR in addition to AIRS
	Lab 4	Discussion of results

Wednesday, 8 June

am	ALL	Daily Weather Briefing
	Lecture 5	Aerosols 1 (dust, smoke) – **Kerkmann**
	Lab 5	Dust / Smoke discrimination (22 October 2007)
	Lab 5	Discussion of results
pm	Lecture 6	Aerosols 2 (ash and SO2) – **Kerkmann**
	Lab 6	a) Thin ash and ice clouds (15 April 2010) b) Volcanic Ash and SO2 clouds (6 June 2011)
	Lab 6	Discussion of results

Thursday, 9 June

am	Lecture 7	Looking at clouds (cloud properties, VIS and NIR) – **Bennartz**
	Lab 7	Deep convection over Burkina Faso (5 April 2007)
	Lab 7	Discussion of results
pm	ALL	Daily Weather Briefing
	Lecture 8	Looking at clouds and precipitation – **Bennartz**
	Lab 8	Precipitation case with microwave channels from AMSR-E and an overpass by CloudSat
	Lab 8	Discussion of results

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Friday, 10 June

am	Lecture 9	Cloud microphysics & Day/Night Microphysics - **Kerkmann**
		RGB products
	Lab 9	Exploring different cloud scenes (3 cases)
	Lab 9	Discussion of results
pm	ALL	Daily Weather Briefing
	Lecture 10	Climate applications, inter-calibration,long-term stability – **Bennartz**
	Lab 10	Looking at Arctic sea ice extent with AMSR-E
	Lab 10	Discussion of results

Weekend, 11-12 June (private visit to Rome)

Monday, 13 June

am	Lecture 11	RGB Products overview – **Smiljanic**
	Lab 11	Looking at low clouds (13 July 2014)
	Lab 11	Discussion of results
pm	ALL	Daily Weather Briefing
	Lecture 12	Low-level humidity seen in (VIS and) IR channels - **Smiljanic**
	Lab 12	Moisture boundary cases (16 October 2014, 14 July 2006)
	Lab 12	Discussion of results

Tuesday, 14 June

am	Lecture 13	Convective clouds seen in SEVIRI, MODIS, VIIRS - **Valachova**
	Lab 13	Convective case 1 (Date TBD)
	Lab 13	Discussion of results
pm	ALL	Daily Weather Briefing
	Lecture 14	Convective clouds: Part 2 - **Valachova**
	Lab 14	Convective case 2 (Date TBD)
	Lab 14	Discussion of results

Wednesday, 15 June

am	Lecture 15	Precipitation products of the Hydrology SAF – **Melfi**
	Final Test	ALL
	Course Evaluation	ALL
	Summary & Concluding Ceremony (end at 12.30 h)	

AM sessions: 9:00 am – 12:30 pm
PM sessions: 2:00 pm – 5:30 pm