



# 2009 IEEE International Symposium on Geoscience and Remote Sensing

Earth Observation - Origins to Applications

July 13-17, 2009 • Cape Town, South Africa



## ASTEM 2009

a short course on

### Advanced Satellite Techniques for Environmental Monitoring.

Cape Town July 6-10, 2009



Organized by DIFA (Department of Engineering and Physics of Environment of the University of Basilicata – Potenza – Italy) and by IMAA (Institute of Methodologies for Environmental Analysis of the Italian National Research Council – Tito Scalo – Italy) in the framework of IGARSS'09, this short course will be held during the week before the Conference from July 7 and July 11. The course will offer to the students the basic and specialized knowledge on the use of Satellite Remote Sensing Techniques for Environmental Monitoring.

It will be organized in two modules, ASTEM-0 (3 days and ½ ) and ASTEM-1 (1 day): the first one will be devoted to offer to the students the basic knowledge of remote sensing concepts, instruments and data analysis techniques, the second one will be devoted to offer the theoretical basis and practical demonstration (by test-cases) of the application of satellite remote sensing observations to a selection of different natural, environmental and security related emergencies.

Both modules will be drawn to be self-sufficient as far as basic physical principles are concerned in order to be understandable even for not specialist and under-graduate students (no specific background on physics and/or mathematics is then required). Both modules will be based on theoretical (classroom) and practical (laboratory) lessons given by well recognized specialists in the Satellite Remote Sensing field.



the Abdus Salam International Centre  
for Theoretical Physics

African scientists and students are particularly encouraged to participate to the course. The possibility to apply for fellowships (6-12 months) offered by the Abdus Salam International Centre for Theoretical Physics (ICTP) of Trieste within the *TRIL for Africa* Program for training and research in Italian Satellite Remote Sensing Laboratories will be offered to these participants.

#### Short Course outline

- **ASTEM-0** (3 days and ½). Classroom: Basic principle of matter-radiation interaction. Interactions in atmosphere and at the Earth's surface. Spectral, thermal, spatial, temporal signatures. Principal sensors and platforms for Earth Observations in the optical and MW spectral range. The choice of suitable technology by cost-benefit analysis. Laboratory: digital image processing and interpretation. Practical exercises (RGB coding, image classification, cloud detection, hot spot detection, etc.).
- **ASTEM-1** (1 day). Interactive seminars on the use of advanced satellite techniques for Early Warning, Monitoring and Rapid Mapping in case of events (floods, forest fires, volcanic eruptions, earthquakes, dust storms, accident to infrastructures, etc.) potentially dangerous for civil population.