



"Space Imaging/CRISP - Singapore"

# Space Technology and Disaster Management

## UN/Algeria/ESA Seminar Space Technology for Prevention and Management of Natural Disasters

The United Nations/Algeria/European Space Agency International Seminar on the Use of Space Technology for Disaster Management: Prevention and Management of Natural Disasters, was held in Algiers, Algeria, from 22-26 May 2005. The Seminar was hosted by the [Algerian Space Agency \(ASAL\)](#), co-sponsored by the [European Space Agency](#) and the [Islamic Educational, Scientific and Cultural Organization \(ISESCO\)](#), and was organised to build upon the work being carried out by OOSA as part of the space technology and disaster management programme. The workshop had a total of 128 participants from 27 countries, including 68 international participants and 60 participants from Algeria (see group photo on page 2).

### Seminar Programme

The Seminar comprised a keynote presentation session and 10 presentation sessions, with 5 thematic presentations sessions on: geohazards; forest and bush fires; floods; drought, desertification and land degradation; and entomological risks. The remaining 5 presentation sessions focused on: cutting edge solutions for disaster management; global initiatives such as the Disaster Monitoring Constellation and the International Charter Space and Major Disasters; the work of the UN; the role of the private sector; and ways to increase the use of space technology in Africa. A total of 46 presentations were delivered. Intensive discussions were held at the conclusion of each presentation session. The seminar was conducted in French, English and Arabic with simultaneous interpretation provided.

Three discussion sessions were organized, with participants divided into groups according to geographic region. The discussion sessions were structured to help civil protection agencies and space technology institutions to develop plans to work together to incorporate the use of space technology into operational disaster management activities. Three groups were defined: Libya and Sudan; Morocco, Tunisia and Algeria; Mauritania and Niger. During the first discussion session, participants identified the main types of disasters in the region, institutions responsible and the current uses of space technology for disaster management. The second discussion ses-

sion was designed to help countries define the main activities to focus on and an initial list of activities to be carried out in their countries. During the third discussion session, the three discussion groups presented the results of their discussions and defined together a regional strategy, stressing the need for closer cooperation between the national civil protection institutions and the space technology institutions.

### Recommendations

The participants of the Seminar identified the need for a Regional Coordination Network that would bring together the civil protection and space technology institutions in Northern Africa and which would together contribute to the following activities which are important to the region as a whole:

1. Provide support to the implementation of regional early warning and monitoring systems that incorporate the use of space technologies for the reduction of risks in the areas of floods, forest fires, drought, desertification, and locust peril;
2. Provide support to the integration of the use of space technologies in the development of regional seismic risk charts;
3. Provide support to the development of regional vulnerability analysis maps, specifically with a focus on desertification, in synergy with current on-going initiatives (World Food Programme -WFP, Life-Pays-Tiers-OSS, etc.);
4. Provide support to the implementation of local pilot projects that focus on incorporating solutions based on space technology to deal with hazards relevant to the region;
5. Provide support to the incorporation of space technology solutions in the development of a regional locust biotopes map, and;
6. Provide support to the

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implementation of a regional network for permanent observation using Global Navigation Satellite Systems (GNSS).

The participants emphasised the need to strengthen national capabilities in the area of integration and use of space technologies in the prevention and management of natural risks, specifically through targeted training, appropriate for the regional context, taking advantage of the existing regional structures and specialised centres of excellence.

The participants welcomed the Algerian Space Agency's (ASAL) offer to take on a coordinating role of this Regional Coordination Network and also the offers from the Algerian Directorate-General of Civil Protection (DPGC), the Remote Sensing Authority of Sudan (RSA) and the Royal Centre Remote Sensing of Morocco (CRTS), to co-chair the network together with ASAL.

The United Nations Office for Outer Space Affairs agreed to provide support to the Regional Coordination Network by integrating this Network into the Global Network for Space Technology and Disaster Management, by contributing to maintaining the list of institutional focal points, by bringing into the network relevant institutions from other regions and by linking and synergizing the work of the network with other international initiatives such as the coordination entity being proposed by the Committee on the Peaceful Uses of Outer Space, the proposed Global Earth Observation System of Systems, the Global Monitoring for Environment and Security initiative and the Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters.

## IGOS Geohazards Workshop

The IGOS Geohazards Bureau organised and hosted an International Geohazards Workshop which took place from 27<sup>th</sup> to 29<sup>th</sup> June 2005 at the bureau's host institution, the BRGM (French Geological Survey) in Orléans, France. This Workshop brought together over 50 experts from

across Europe, the Americas, Asia and Africa to work toward improving the mitigation of Geohazards.

An "Integrated Global Observing Strategy" (IGOS) was defined for the Geohazards in an initial phase of this initiative resulting in the IGOS Geohazards theme report published in April 2004. In partnership with the European Space Agency, the BRGM established the IGOS Geohazards Bureau in the last quarter of 2004 to work toward the implementation of this strategy. One important aspect of this work is to set up and coordinate working groups structured around five themes of critical importance for geohazard mitigation. These are: 1. Science – Long-term fundamental science with potential application to the geohazards observations; 2. The measurement of geophysical/geological processes that are at the origin of the geohazards; 3. Infrastructure – the structures and techniques used for the storage and dissemination of data and information required in the mitigation of geohazards; 4. Integration – the processing required to change data (measurements of the geophysical/geological processes) into information that can be used by decision makers, and; 5. Capacity Building – Facilitating the transfer of knowledge

These groups represent the backbone for this new hybrid community, as well as allowing the development of common projects they will also work on the gradual evolution of the strategy in order that it maintains its relevance, and is extended.

### Objectives of the workshop

One of the main objectives of the workshop was to provide an initial forum for experts keen to participate in this work, allowing them to see how IGOS Geohazards relates to other international initiatives such as the Global Earth Observation System of Systems (GEOSS), Global Monitoring for Environment and Security (GMES) and other institutions involved in disaster mitigation such as UNESCO, UNISDR and UNOOSA. The workshop also gave the opportunity to discuss IGOS Geohazard inputs to GEOSS directly with a representative of the GEOSS Work Plan Team. The structure of the workshop provided keynote

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presentations as subject matter for working group discussion sessions. Presentations and a report from each working group are available on the web at [www.igosgeohazards.org](http://www.igosgeohazards.org). The working groups set up will continue their work, coordinated by the focal points established during the workshop, through a web-based collaborative working environment that will be put in place during July. For those interested please contact the IGOS Geohazards Bureau [igosg@brgm.fr](mailto:igosg@brgm.fr).

**Thank-you to Stephen Hosford for this contribution**

## ISPRS Commission VIII/WG2

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ISPRS Commission VIII/WG2 sponsored three Hazards, Disasters and Public Health Sessions during the 31st ISRSE Conference in St. Petersburg, Russia on the 22nd and 23rd of June 2005. The underlying thread of the presentations was how remote sensing data and technologies can be used to enhance information important to natural and man-made disaster and human health.

Topics in first session concerned primarily the description of remotely sensed data and GIS systems for assessment and mitigation of disasters; particular attention has been paid to the availability and geometric pre-processing of high geometric resolution images and their usage in expert systems. Presentation topics in the second session ranged from food security and drought to dust forecast modelling for public health early warning systems to operational applications of atmospheric chemistry and a conceptual design for an integrated European air quality system. Topics in the third session primarily focused on environmental contaminations that can affect human health. Presentations included mapping atmospheric trace gas concentration distributions using the differential optical absorption spectroscopy (DOAS) - tomography measurement technique with aircraft and ground instruments; monitoring pollutants using satellite imagery via texture and spectral behaviour techniques; and identifying environmental parameters to assess the risk of malaria using remotely sensed images.

In addition, a couple of poster session provided informa-

tion on other studies using remote sensing data and technologies in support of disaster management and public health issues. From the technical sessions and the poster sessions it is evident that these data and technologies are invaluable assets for understanding environmental impacts both on human health and remediation actions and for providing tool sets that improve the ways in which the disaster and public health community makes decisions regarding risks, predictions, and mitigations related to hazards and human health issues.

Further information can be found on the following website

<http://www.commission8.isprs.org/wg2/>

And the presentations can be accessed at:

[http://www.isprs.org/publications/related/ISRSE/html/sections\\_6.html](http://www.isprs.org/publications/related/ISRSE/html/sections_6.html)



**Thank-you Piero Boccardo and Amy Budge, Chair and Co-Chair of Commission VIII/WG2, for this report.**

## Landsat Data for Africa

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In 2001 the US Government, through NASA and USGS, formally announced it would provide the circa 1975, 1990 and 2000 global Landsat data sets to the United Nations for further distribution and use by the international community. These geo-registered data sets of more than 23,000 images, with wall-to-wall coverage of the earth's entire land surface, constitute an important and valuable source of baseline information to document and quantify the present state-of-the-earth and changes to the environment since the early 1970s.

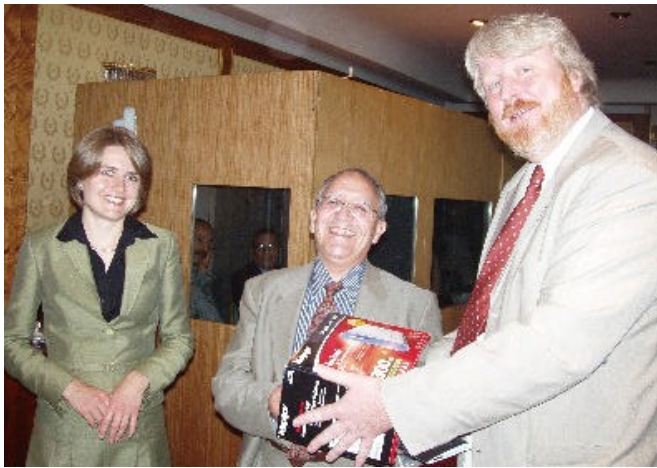
The Office for Outer Space Affairs has received the data for Africa and is committed to contributing to the dissemination of the data to African institutions. With the support of the United States Department of State the Office has provided the data to the UN-affiliated African Regional Centre for Space Science and Technology in French Language (CRASTE-LF) in Rabat, Morocco.

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### Landsat Workshop in Rabat, Morocco

Additionally, CRASTE-LF organised between 7–9 July 2005 in Rabat a workshop entitled “Landsat Datasets for Supporting Sustainable Development in Africa”.



**Donation of Landsat Data to the Director of CRASTE-LF Dr. A. Touzani (centre) by UNOOSA staff members**

The workshop was organized within the framework of the UNOOSA Programme on Space Applications to present the available Global Landsat datasets donated by the Government of the United States of America, and to train users in the use of the datasets. The workshop involved the students of the nine-month post-graduate course on Satellite Communications, Satellite Meteorology and Global Climate and experts from African institutions. A total of 41 participants from 11 countries and a representative of the Islamic Educational, Scientific and Cultural Organisation (ISESCO) attended the 3-day workshop.

### Workshop Programme

The workshop comprised an opening ceremony and thematic sessions on: (1) a brief history of Landsat series (Landsat MSS, TM, ETM+) and their technical characteristics; (2) Landsat image interpretation and processing using ERDAS Imagine and ESRI/ArcGIS softwares; and (3) Landsat applications. Training involved field work as well. The lectures were given by Prof. A. Emran (Scientific Institute of the Mohammed V University, Agdal-Rabat, Morocco) and Prof. M. Hakdaoui (Faculty of Sciences of the

Hassan II Mohammedia University, Casablanca, Morocco). The Office also contributed with a presentation on the dissemination of the Landsat data sets in Africa, the format of the data sets and access to the data through the Internet. The final afternoon was reserved for a panel discussion for putting forward relevant observations and recommendations.



Further information on the available Landsat Data can be obtained from Ms. Sharafat Gadimova ([sharafat.gadimova@unvienna.org](mailto:sharafat.gadimova@unvienna.org)).

## STDM Activities

Check out the STDM website for information on upcoming activities:

Website: [www.oosa.unvienna.org/SAP/stdm](http://www.oosa.unvienna.org/SAP/stdm)

We will be organising a Special Session during the upcoming [AfricaGIS 2005 Conference](#) on the availability, access and use of Landsat Data for the benefit of Africa.

Expressions of Interest for STDM projects in Southeast Asia will be received by the end of July and the selected EoIs will be invited to submit a proposal. Further information can be found on the above website.

And we are beginning to plan two workshops for 2006: Azerbaijan and Syria.



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The United Nations Office for Outer Space Affairs (OOSA) implements the decisions of the General Assembly and of the Committee on the Peaceful Uses of Outer Space and its two Subcommittees, the Scientific and Technical Subcommittee and the Legal Subcommittee. The Office is responsible for promoting international cooperation in the peaceful uses of outer space, and assisting developing countries in using space science and technology. Located in Vienna, Austria, OOSA maintains a website at <http://www.oosa.unvienna.org>.