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The TIGER Newsletter

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Edited by:



With the contribution of



Space-tool training at ESA

African researchers tackling water resource management problems have gathered at ESRI, ESA's Earth Observation Centre in Frascati, Italy, from 24 to 28 July 2006 for a free five-day TIGER Initiative training session aimed at facilitating the integration of satellite radar data into their work.

ESA's TIGER Initiative was launched in 2002 following the World Summit on Sustainable Development in Johannesburg. The primary objective of TIGER is to help African countries overcome problems faced in the collection, analysis and dissemination of water related geo-information by exploiting Earth Observation technology.

Freshwater is a scarce commodity across much of Africa and is projected to grow scarcer still. The continent's share of global freshwater is only 9% - a static resource in an ever-thirstier world. Availability of freshwater is important not just for drinking and sanitation but also to ensure food security - 60% of African food production comes from non-irrigated agriculture, leaving it vulnerable to climatic variations.

Researchers from Ethiopia, Cameroon, Kenya, Ivory Coast, Namibia, Morocco, Madagascar, Botswana and South Africa representing selected African universities, research centres and public administrations involved with ongoing TIGER research projects are learning how to incorporate Synthetic Aperture Radar (SAR) image processing into their projects.

The SAR instrument onboard ESA's ERS satellites and the Advanced Synthetic Aperture Radar (ASAR) onboard ESA's Envisat satellite use radar to map the surface of the planet below, with several different modes that allow broad views or detailed snapshots. It is able to work day and night and penetrate clouds and bad weather to map the shape of the land, profile waves and ice, monitor land use and types of vegetation and measure some of the properties of the surface.

Topics addressed at the training session, organised by Planetek Italia, include SAR principles and processing techniques, microwave techniques for hydrological applications, soil moisture estimation, flood mapping, vegetation monitoring and the fusion of SAR images and optical images.

Prof. Paolo Ferrazzoli of the University of Tor Vergata is one of the key lecturers and is teaching the trainees some basic physics in order to better understand the content of SAR images, such as the variables for water-related applications.

"The information content of microwaves is different than optical information content, so by complimenting these two different information sources, we improve our capability to monitor all aspects related to water such as soil moisture, vegetation and wetlands," Ferrazzoli said.

LOOKING AFTER WATER IN AFRICA

The TIGER Newsletter



Tiger trainees

The trainees all come from different regions of Africa and face specific water-related issues. For example, Madagascar's Fanja Vololona Razafindramasy of the University of Antananarivo wants to incorporate radar data into her study of erosion.

According to the World Bank for Madagascar, the country has a 'world-record erosion rate', which is a serious problem for a country whose economy relies on agricultural production. The erosion is filling and clogging coastal waterways with sediment, which has resulted in some port facilities having to be moved inland to prevent ships running aground. By using SAR, it is possible to identify changes in land surface related to severe erosion process.

Freshwater is a limited natural resource in South Africa, which receives only around half the average rainfall of other countries. The Department of Water Affairs and Forestry (DWAF) is responsible for managing the country's water resources, which includes implementing the country's National Water Act of 1998. The National Water Act is based on the principles of sustainability of use and equity of water distribution and requires all water users to register their water use. The water use will be

licensed in an economical manner to include the demographics of the population.

South Africa's Willem Vorster from the Satellite Applications Centre (CSIR) said: "We are working with the Department of Water Affairs and Forestry to help them monitor the new National Water Act that is starting to be implemented nationally. We want to see if we can monitor the effectiveness of this Act by using radar images."

One of the major development resources facing Morocco is the sustainable management of its water. According to the United Nations, in 2000 58 percent of the rural population lacked access to adequate sanitation, and 42 percent lacked access to drinking water. Some two-thirds of Morocco's agricultural exports are produced by irrigated agriculture and consume 92 percent of the country's freshwater resources.

Dr. Ahmed Er Raji of the Centre Royal de Télédétection Spatiale in Morocco is collaborating with the local Agence du Bassin Hydraulique du Souss-Massa on a project which aims to integrate ASAR and optic remote-sensing data into the ground-water exploration process, to monitor the extension of agricultural exploitation in the upstream region of the watershed and to detect the vulnerable zones related to the excessive pumping of ground water.

"When I return to Morocco we are planning to organise a training session with our partners and colleagues so I can share this information with them," Er Raji said.

At the end of the training course all the participants will receive a license of ERMapper, an image processing software that will allow them to apply the techniques they learned during the course to their ongoing research projects in their respective countries

Source: ESA
Contact: tiger@esa.int



Training for African Wetland Managers

Earth's wetlands are vital to the water cycle and havens for wildlife, but they are under threat.

GlobWetland, an ESA-led initiative in collaboration with the Ramsar Convention Secretariat, has been addressing this issue by using satellite imagery to provide detailed wide-area views of individual wetlands to aid national and local conservation efforts.

Because the success of wetland conservation ultimately comes down to individual wetland managers, the GlobWetland products and services are user-oriented and based on specific requests of users across 50 sites in 21 countries worldwide.

Based on user requirements, GlobWetland products include base maps, land use-land cover (LULC) maps and change detection maps – with historical Earth Observation (EO) satellite images being compared with

current acquisitions to see what changes have occurred during the last ten years or more.

Integrating the EO-derived products and services into the user's traditional working procedures requires training to secure capacity building and to achieve a well-defined amount of competence. This is especially important in Africa where the lack of updated geo-information and the inefficient in-situ monitoring networks hinder the conservation efforts of wetland managers and water authorities.

In support of all African countries participating in the project, GlobWetland – which is funded by ESA's Data User Element (DUE) – hosted a five-day training seminar, developed jointly by Wetlands International and Vexcel, last week from 24-28 April in Lake Naivasha, Kenya, for users to understand and integrate the EO-derived products and services into their work.



Participants from Algeria, Egypt, Lake Chad, Senegal, South Africa and Kenya attended the training which featured lectures, 'hands-on' work with sample products and field work methods carried out in an area adjacent to the training facility.

Remote Sensing Officer for the Lake Chad Basin Commission Garba Sambo Hassan, said: "The training has been really stimulating. I used to perform these tasks manually, which is tedious and cumbersome. I am now anxious to get back to the office and use these products to update my past work. It is marvellous."



Participants to the training, during the field-visit

Doug Taylor from Wetlands international stated: "We are indebted to the ITC and its collaboration with the Lake Naivasha Riparian Association for providing the essential baseline of environmental and community based information upon which we based our training course. We would like to specially mention Mrs Boix-Fayos and her fellow ITC (alumni) students for their contribution over the

years for this knowledge base. Additionally without the excellent organisation and support of the Kenya Wildlife Service Training Institute through its principal prof. George Owiti, this course could not have achieved such high quality results"

The seminar also sought to help African users critically assess their requirements, suggest new products, identify inefficiencies and take over the process. All the training materials were consolidated on a CD and given to all African end users at the close of the session. In addition, all attendees received an ESA TIGER initiative training kit. GlobWetland makes up an integral part of the TIGER initiative, which focuses on the use of EO data for improving water resource management in Africa.

Abundant water makes wetlands the most biologically diverse ecosystems on Earth, more productive even than tropical rainforests. Unlike rainforests, they are scattered across the world, providing regional flood and erosion prevention, water purification and nutrient recycling.

For much of the 20th Century, wetlands were drained or otherwise degraded. However, growing understanding of the vital importance of wetlands led to the signing of the Ramsar Convention on Wetlands in 1971.

Today more than 1 424 wetlands – a total area of 129 million hectares – have been designated as Wetlands of International Importance. The Ramsar Convention's 145 national signatories have committed to maintaining the ecological character and are obliged to report on the state of listed wetlands they have designated.

Source: ESA
Contact: tiger@esa.int



Regional Presentation of the Nile RAK

The Nile River Awareness Kit (RAK), a multimedia education and awareness raising tool about the resources of the Nile River, was enthusiastically received by project participants in a series of workshops held in Africa in May.

The Nile RAK CD-ROM was presented in the joint donor and ministerial session at the Council of Ministers (Nile COM) Meeting in Bujumbura, Burundi on May 3rd, 2006. Ministers from Burundi, Democratic Republic of the Congo, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda, as well as multilateral and donor agencies attended the presentation.

The Nile COM presentation was followed by a Regional Workshop to present the Nile RAK CD-ROM to participants in Cairo, Egypt on May 6th, 2006. Approximately 65 participants attended the regional

workshop, including the Honourable Minister for State of the Environment in Egypt, delegates from the Ministry of Irrigation, Nile Basin Initiative (NBI) officials, Ambassadors from Nile basin countries, donor and development partners, and representatives from nine countries. The Honourable Eng. Maged George, Minister of State for Environmental Affairs stated:

"The Nile RAK CD ROM will go a long way in partially fulfilling the information requirement for sustainable management of the resources and the environment in the Nile basin. Within the context of sustainable development, the NRAK brings into the knowledge of the public and the decision makers the pressures and trends in the environment and on the natural resources and this should stimulate actions to reverse negative trends".

Following the Regional Presentation, a Training-of-the-Trainers session was held in Cairo, Egypt from May 6th-7th. The purpose of the session was to train participants

on how to deliver the Nile RAK CD-ROM as a training program. During the session, participants were encouraged to provide feedback and recommendations on the content and layout of the beta version of the CD-ROM.



Participants at the Training-of-the-Trainers Workshop, Cairo, Egypt

Over 100 participants from the NBI, government, civil society, and academia participated in National Training Workshops held in Ethiopia, Kenya and Uganda between May 9 – 15, 2006. During workshops participants were trained in the use of the Nile RAK-CD, and how to deliver the RAK as a training program within their respective organizations. The participants described the Nile RAK CD as an important output from the NBI:

“This is a historic chance to be able to have such a huge amount of information at hand where you need it most” ENTRO, Ethiopia.

“Magnificent! It keeps participants always active, contributing and courageous!” Local Micro Grant Coordinator, Ethiopia.

“The Nile RAK CD-ROM is one of the most efficient educational and training tools that I have ever received. The CD-ROM is full of excellent information compared to other tools”. National Project Coordinator, Democratic Republic of the Congo.

“The tool is highly motivating and encourages critical thinking in addition to practical skills acquired readily and directly”. Urban Environment, Uganda

The goal of the Nile RAK project is to ensure the sustainable management and use of the environment and resources within the Nile basin through an improved understanding of the relationship between water resources and the environment. The project utilized participatory processes to gather input from project stakeholders during all phases of the project including: design, implementation and evaluation. The main deliverable of the project is a multimedia and interactive CD-ROM learning tool that encourages knowledge and awareness regarding the environmental resources and management of the Nile Basin. Earth Observation-based applications (satellite data), training programs and maps are integral components of the project and provide decision makers with an improved capability to understand and manage the environment within the basin.

The Nile RAK project is being implemented by a collaborative partnership between the Nile Transboundary Environmental Action Project (NTEAP) of the Nile Basin Initiative (NBI), and a project team led by Hatfield Consultants Ltd (Hatfield). The project, funded by the Canadian Space Agency under the Tiger Program, is supported by Strata360 and the FAO.

Source: CSA
Contact: Steve.Iris@space.gc.ca



TIGER Workshop 2006

In many African countries water information systems are severely degraded or inexistent, paucity of water information is a major limitation and policies and management decisions in many African countries are in many cases based on unreliable information.

In 2002, responding to the urgent need for action in Africa expressed at the World Summit on Sustainable Development (WSSD), the European Space Agency (ESA), within the context of the Committee of Earth Observation Satellites (CEOS), launched the Tiger initiative. The overall scope is to assist African countries to overcome problems faced in the collection, analysis

and use of water related geo-information by exploiting the advantages of Earth Observation (EO) technology.

In the last few years, the TIGER initiative has evolve thanks to the support of different African and international partners (e.g., AMCOW, AfDB, CSA, CSIR, DWAF-South Africa, UNESCO, UN-ECA among others). It involves today more than 150 African organisations participating in different scientific activities, development and demonstration projects and capacity building actions.

This year, 2006, represents the mid term for the first TIGER implementation period (2005-2007) and the results achieved so far will put the basis for the next steps towards the accomplishment of the main goal of this challenging initiative.

In this context, the TIGER Steering Committee is glad to invite you to the TIGER Workshop 2006. The main objective of the workshop is to review the results of the different TIGER projects so far, identifying the main strengths and weaknesses of the initiative and prepare the basis for the next implementation period 2008-2010.

The Tiger workshop 2006 will take place the 20 and 21 November at the premises of the Western Cape University in Cape Town (Bellville), South Africa.

The main objectives of the Workshop include:

- Review the main results of the TIGER research component and its projects.
- Review the preliminary results of the water information services development projects.
- Discuss the main strengths and challenge of the initiative so far.
- Prepare the basis to launch the next implementation period in 2008.

Registration to the event: <http://www.congrex.nl/06m31/>

The workshop is open to all the TIGER stakeholders and other interested organisations: African water authorities, technical centres, remote-sensing institutes, space agencies, international organisation, development partners, universities and other relevant institutions.

No participation fees will be charged. Participants are expected to finance their own travel and accommodation expenses.



Free Spot-4 data offered by ESA to Tiger PIs

Within the framework of an agreement between ESA and Spotimage, an opportunity is offered to access between September 2006 and March 2007 new acquisitions of Spot-4 images over Africa. ESA can provide Principal Investigators (PI)s of accepted Tiger projects with free of charge access to an initial set of 10 Spot-4 products per project to be acquired up to March 2007. The offer concerns new acquisitions (Panchromatic or Multispectral) taken by the HRVIR sensor onboard Spot-4. Pending PI agreement to the Spot-4 terms of applicability, the acquisitions will be performed and the products will then be delivered by Spotimage. located in Africa), which offered office space to host the Bureau.

Source: ESA

For more information: tiger@esa.int

UN Water website

In 2003, UN-Water was endorsed as the new official United Nations mechanism for follow-up of the water-related decisions reached at the 2002 World Summit on Sustainable Development and the Millennium Development Goals. It will support Member States in their

Steering Committee and Organising Partners:

- African Ministerial Conference On Water
- African Development Bank
- Department of Water and Forestry, South Africa
- Canadian Space Agency
- European Space Agency
- UN-ECA
- UNESCO-IHP
- University of Western Cape, South Africa
- FAO
- Ramsar Africa

As the last year, the workshop will be preceded by a training session organised by UNESCO Windhoek and Harare Offices, ESA and the University of Western Cape the previous week. This training session makes part of the TIGER capacity building actions aimed at supporting water research in Africa exploiting the advantages of Earth Observation technology.

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Short News

efforts to achieve water and sanitation goals and targets. A website is available at: <http://www.unwater.org/>

Source: Web

For more information: <http://www.unwater.org/>

Upcoming events in Africa

Environmental Education Association of Southern Africa 2006 Conference, Harare, Zimbabwe, 14-18 August 2006. For more information see www.action.co.zw

2D ArcGIS West Africa User Conference (AWAUC 2006), Accra, Ghana 8-9t November, 2006, Read more: <http://www.sambus.com/conference/index.html>

6th African Association of Remote Sensing of the Environment (AARSE) Conference. Cairo, Egypt, 30 October to 2 November 2006. For more information, see <http://www.narss.sci.eg/aarse2006>

Prioritizing Food Security Policies For Health And Development In Africa Yaoundé, Cameroon, 15 - 16 November 2006. Read More: http://www7.nationalacademies.org/africa/1ANNUAL_MEETING_2006.html

Colloque International Euro- Méditerranéen sur les SIG et Télédétection: les outils d'aide à la décision et à la gestion

des territoires dans les pays du bassin méditerranéen, Meknes, Maroc 8-10 November 2006. For more information:

http://geologie.fs-umi.ac.ma/departement/pages/web_sig_teledetec/index_fichiers/page0001.htm

Tiger Workshop 2006, Cape Town (Bellville), South Africa 20-21 November 2006; For more information:

<http://www.congrex.nl/06m31/>

Second International Conference and Exhibition on Geo-Resources in The Middle East and North Africa, Cairo,

Egypt 24-28 February 2007. For more information: <http://www.grmena.com.eg/>

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