



Issue n.1, June 2005

The TIGER Newsletter

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Edited by:



With the contribution of



Editorial

It is a pleasure for me to present the first newsletter of the TIGER initiative.

Availability of accurate, timely and synoptic geo-information for Integrated Water Resource Management (IWRM) is a key element towards sustainable development in Africa.

Recognizing the utility of satellite data for water resource management and the urgent need for action in Africa expressed at the World Summit for Sustainable Development (WSSD), the European Space Agency launched in 2002 the TIGER initiative aimed at assisting African countries to improve the deficiencies and lacks in the collection, analysis and dissemination of water related geo-information by exploiting the advantages of Earth Observation (EO) from space.

Since its initiation in 2002, TIGER has evolved thanks to the support from many African water authorities, UNESCO, space agencies worldwide and many other African and International institutions. Several projects have been initiated to better understand and demonstrate the uses of EO technology to match the information needs of African water authorities. Some 50 pilot projects have been approved by ESA to receive EO data, as a first step to facilitate the access to this key information source in the African continent.

In November 2004, the 2nd TIGER Workshop held in Pretoria, drew up a 10-year Strategic Plan, which sets a long-term framework to engage the African user community and donor agencies in a long-term process to make this initiative a concrete step forward towards the aims of the WSSD.

This News Letter is the first in a series, which will provide the TIGER community with timely information about the progress, opportunities and planned events within TIGER and will foster communication within the partnership and with the external world.

A new period for TIGER is starting. A meeting of the Steering Committee will be organised in mid June to prepare a joint action plan for the coming years and ensure the successful achievement of the objectives set up in the 10-year Strategic Plan.

Dr. Stephen Briggs
*Head, EO Science and Applications Department
European Space Agency*

LOOKING AFTER WATER IN AFRICA

The TIGER Newsletter

...we should always remember that in developing nations, water limitations present some of most important contributing factors to poverty and human misery. Food security, wellbeing, and ultimately economic and political stability depend upon the availability of reliable supplies of clean water. Initiatives such as TIGER, which will deliver enhanced and timely information for water resource management, are therefore of critical importance to developing nations."

Honourable Buyelwa Sonjica, Minister of Water Affairs and Forestry, Republic of South Africa, at the 2nd TIGER-Workshop, Pretoria, 8-10 November 2004.

The African Ministerial Conference on Water (AMCOW) and Heads of State of the African Union endorsed the "Africa Water Vision for 2025", which identifies the paucity of information on water resources as a key limitation for sustainable development.

In order to contribute to overcome this limitation and to support African countries to achieve the World Summit for Sustainable Development (WSSD) challenges, the European Space Agency (ESA), and the CEOS partners, have launched in 2002 the TIGER initiative.

TIGER aims at supporting African countries to improve their capabilities to collect timely, accurate and synoptic geo-information for effective Integrated Water Resource Management (IWRM), and to strengthen the capacities of African water authorities and technical centres to sustain the supply, management and use of this kind of information, in a sustainable way.

Since TIGER was launched in 2002, the initiative has evolved thanks to the contributions of all its partners including key African and international players in the context water resource management, space agencies, universities, African national and regional technical centres, service providers and NGOs.

Consultation Process

Over the past years, the TIGER programme has initiated a consultation period with African water authorities, technical centres and other stakeholders (by organising and contributing to international conferences e.g., PANAFCON in Addis Ababa, AFRICAGIS in Dakar, and dedicated TIGER workshops in Paris, Rabat, Pretoria, and Salzburg) in order to better understand the specific institutional, technical, economic and social needs of the water sector in Africa.

North-South Technology Transfer Projects

ESA TIGER Service Demonstration Projects

On the basis of the identified user needs, ESA initiated in 2003 a number of North-South Technology Transfer Projects (fully funded by ESA with 3.5 Million Euro overall) focusing on the specific needs and demands, in terms of geo-information for water management,

expressed by more than 20 different African organisations, which actively participate into the projects.

The CSA TIGER Projects

In summer 2004, the Canadian Space Agency (CSA) issued a request for proposals (RFP), as part of its Earth Observation Application Development Program (EOADP), with a view to selecting Canadian companies working with African partners on projects that offer sustainable products and services to African agencies responsible for integrated water resource management.

Facilitating Access to EO data

Free of Charge Access to ESA Data

In order to further foster the partnerships and cooperation with African stakeholders and to facilitate the easy and low cost access to EO data, African institutions were invited to submit proposals for Pilot Projects to be carried out in the context of the TIGER programme. The 95 project proposals submitted by more than 300 African experts reflect the information needs of the water sector in Africa.

After the review process, in early 2005, some 50 projects have been selected to be included in the TIGER programme and will benefit from free access to ESA EO data, such as MERIS or ASAR. A list of the selected proposals can be consulted in the web page of the ESA Principal Investigator Portal (<http://eopi.esa.int>) by using the searching tool. To reach the list you should 1) click on "Search"; 2) click on "Other"; and 3) select the EO Tiger option in the "Type" field.

Free of Charge Landsat imagery over Southern Africa

CSIR, South Africa, has made available for the TIGER initiative free Landsat Imagery up to 2006. This is being provided by the South African government through the Chief Directorate of Surveys and Mapping of the Department of Land Affairs.

Free of Charge Access to RADARSAT I images

The Canadian Space Agency (CSA) in the context of TIGER is making available new and archive RADARSAT I data to African organisations. Applicants may be private companies, academic institutions, government agencies and non-government organizations, their employees and end-users

Fostering Long-term Sustainability

In November 2004, at the 2nd TIGER Workshop held in Pretoria, South Africa, a 10-year Strategic Document for TIGER was developed by the 135 participants (including water authorities and technical centres from more than 18 African countries). This strategic document sets up a long-term framework for TIGER and engages the African user community, the space agencies and development partners in a sustainable process towards the achievement of the African Water Vision for 2025.

Source: ESA.

**For more information: <http://www.esa.int/tiger>
Contact: tiger@esa.int**

While progress with Integrated Water Resource Management (IWRM) is fundamental for poverty eradication and sustainable development, a pre-requisite for furthering these processes is an effective system that serves the information needs of all stakeholders, and promotes equity through enabling good governance. Developing an IWRM information system is a challenge, even for the wealthier and more organized countries in Africa. In most countries, water information systems are severely degraded, policies and management decisions are based on unreliable information, and financiers are reluctant to provide long-term support for remnants of outdated observation networks that will never become adequate for IWRM requirements. An innovative, inclusive approach is required, that enables full African participation in the rapidly evolving global 'earth observing' system, and so benefit from a number of powerful approaches to collect, manage and disseminate water related information, in cost effective and sustainable ways. Without an urgent action to assist African stakeholders in IWRM to bridge the information gap, IWRM will remain a dream, and the Millennium Development Goals (MDGs) will remain unattainable in Africa.

In this context, within the framework of TIGER, the European Space Agency (ESA) have launched a set of information services demonstration projects aimed at developing and transferring to African authorities, information systems responding to their specific information needs for integrated water resources management: *AQUIFER*, *GlobWetland*, *Rivers & Lakes* and *Epidemio*.

More than 20 different African organisations participate actively in the projects in close collaboration with an interdisciplinary team of experts.

Aquifer

Lack of access to safe drinking water is a focus of the Johannesburg Plan of Implementation. Africa is particularly touched, with more than half the population without access to clean water. Over-pumping of ground water are causing water tables to fall and shared water resources, particularly aquifers, are becoming a source of conflict. Due to the hidden nature of ground water resources, they are difficult to evaluate and there is a lack of reliable information on which to base decisions. Thus there is an urgent need for objective, spatial information that can be accepted by the different countries sharing an aquifer and used effectively in its management.

The Aquifer project shall provide information to users including land-use and land-cover maps, change maps, surface water extent and dynamics, digital terrain models and estimation of water consumption and extraction. The project will also support the integration of the products and services within the user's traditional working procedures with training and capacity building activities.

The current users for the Aquifer service are the National African Authorities in charge of water resources, including the following countries: Algeria, Libya, Mali, Niger, Nigeria, and Tunisia. The OSS participates in the project as a coordinator of the user involvement.

In addition, the project will provide training to a number of local service providers (e.g., local and regional remote

sensing centres) in order to develop the local capacity to set up a long-term sustainable service.

GlobWetland

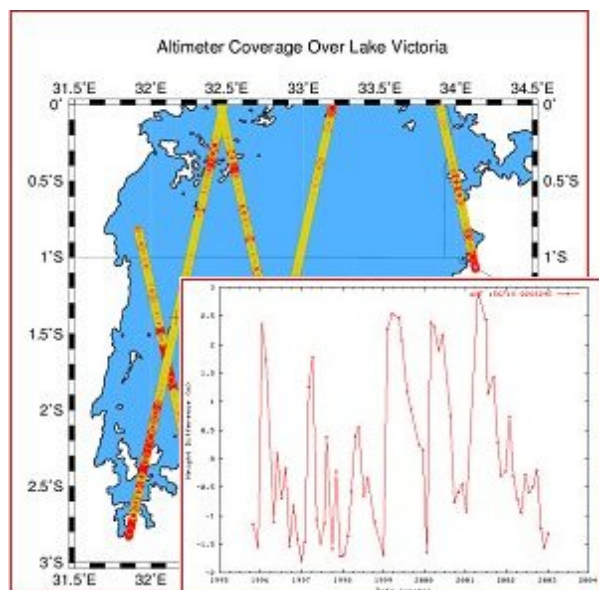
Wetlands represent a critical component of the water cycle, a key habitat for wildlife, and a main source of fresh water for many communities worldwide. The Globwetland project is developing an information system for water authorities and wetland manager to support the inventory, assessment and monitoring of wetlands. The GlobWetland Information System will improve the ability of wetland managers to better monitor and assess the condition of wetlands within their respective countries, manage their water and land resources and aid local and national authorities in fulfilling their obligations under the Ramsar Convention for wetlands management and conservation.

As a contribution to TIGER, the project has strong focus on Africa, where 10 different countries makes part of the GlobWetland User Group: Algeria, Egypt, Kenya, Senegal, South Africa and the member countries of the lake Chad Commission: Cameroon, Niger, Nigeria, Chad, and Central African Rep.

Epidemio

This project develops Earth Observation services in the context of health and sanitation, with a particular focus on malaria in Africa. Malaria affects 300 million people worldwide and kills up to 1.5 million people annually. The incidence of the disease is influenced by local climate, which can be monitored by satellites to help forecasting epidemic outbreaks. The Epidemio project provides maps of water bodies, digital elevation models and weekly land surface temperature maps.

Water mapping is especially useful for malaria risk prediction since mosquitoes begin life as aquatic larvae and adults rarely travel more than 2km from their breeding sites. The major users for Epidemio involves key international and national research institutes dedicated to combat diseases worldwide with especial focus on Africa.



Water level differences over time in Lake Victoria



The ESA TIGER Service Demonstration Projects

River and Lakes

The large majority of the world's population dwells alongside, and is depending on, continental water bodies. Inland water bodies (rivers, lakes, wetlands, floodplains) play important roles in a variety of interdisciplinary applications. ERS-1 and ERS-2 have been acquiring radar altimeter echoes for more than ten years and with the availability of ENVISAT data, this time series will be prolonged into the future.

Extracting hydrological information from the radar echoes is a complex process due to the unpredictable nature of the echo shape over continental surfaces. ESA has launched the development of a new hydrological product ready to use by hydrologists: the River-Lake Project aiming to translate the valuable hydrological data encoded in altimeter echoes returned from rivers and lakes into height estimates, thus permitting time series of river and lake heights to be produced.

In Africa the following study-areas have been identified: River Congo and Senegal, Lake Victoria, Kyoga, Tana, Mai-Ndombe, Volta, Lake Chad and the Aswan Dam.

Water authorities will receive through this project near real-time information on water levels and time series of observations to for a better know the water cycle and estimate water availability.

Source: ESA.

For more information:

- <http://www.globwetland.org>
- <http://www2.gaf.de/Aquifer>
- <http://www.epidemio.info>
- <http://earth.esa.int/riverandlake/>



The CSA TIGER Projects

African – Canadian working together demonstrating the benefits of Space for Water management

In support of the ESA TIGER initiative to promote Earth observation for water resources management in Africa, the Canadian Space Agency has initiated an action allowing selected Canadian companies to participate in the TIGER program by developing projects to demonstrate the use of space Earth observation products in the African context. A call for proposals has been issued in 2004, the proposed projects were evaluated by a peer review committee made of experts in Earth observation and international development. A particular attention has been given to end user involvement and capacity building issues in the selection process. The selected projects, which have an average duration of 2 years, take place in a variety of African countries: Burkina Faso, Ghana, Kenya, Morocco, Mozambique, Nil riparian countries, with the participation of local authorities and NGOs. They cover a variety of topics related to water

management: hydrogeology, river basin management, environmental awareness and education, health problems related to water, flood and drought preparedness, etc. Earth observation data used in the process are from a variety of sources, but RADARSAT data provided by CSA are used in all projects, most of the time in combination with ENVISAT and optical data. The Canadian Space agency is not an international donor agency, so these projects should be considered as Earth observation demonstration projects, and not as long-term development projects. However, it is expected that they will be used as a leverage effect to generate funding from other sources and long-term commitment with the African partners for a sustainable use of Earth observation in development projects.

Source: CSA.

For more information: <http://www.space.gc.ca/tiger>



TIGER Innovators: A new ESA opportunity for Collaboration

In the context of the TIGER initiative, the European Space Agency (ESA) has launched a new Invitation To Tender (ITT) for a set of small-size projects to be led by organizations based in ESA Member states (A, B, DK,

FIN, F, D, I, NL, N, E, S, CH, UK, CDN) to support the use of EO technology for water resource management in Africa.

Through these projects (called TIGER-Innovators) bidders shall implement and demonstrate innovative information

services that give a practical and concrete respond to specific user needs expressed by African water organisations. To this end, projects shall be carried out by North-South partnerships involving European/Canadian Industry and research groups besides African users (e.g., National departments of Water) and technical centers (e.g., African remote-sensing centres, African National Environmental Agencies, local service providers).

A maximum of 5 implementation and demonstration projects will be funded, each with a maximum budget of 100KEuro. In order to support the on-going activities with the TIGER initiative and to promote and facilitate contacts and the formation of North-South partnerships, European/Canadian bidders have been encouraged (through the special conditions to tender) to contact the different African teams selected under the TIGER Announcement of Opportunity issued by ESA in 2004 to create consortiums and prepare proposals responding to this ITT. At the same time we would like to encourage African water authorities who might be interested, to proactively get in touch with European/Canadian

organisations to create a partnership and submit proposals to TIGER Innovators. A list of European/Canadian companies and research centres that have already worked in ESA exploitation programmes is available at the addresses:

<http://dup.esrin.esa.it/companies.asp>

<http://www.eomd.esa.int/compendium/companies.asp>

However "new" European and Canadian companies and technical centres bidding on this ITT are welcomed.

Due to ESA rules, the maximum budget allocated for the participation of African Partners in each of the foreseen contracts is strictly limited to 20 KEuros (Twenty Thousand Euros) for the entire African team.

An ESA Tender Evaluation Board will select the 5 proposals that will offer more value for money.

Source: ESA.

For more information:

<http://dup.esrin.esa.it/news/news83.asp>



Wetlands satellite mapping scheme yielding first results

Earth's wetlands are havens for wildlife and vital to the water cycle, but they are also under threat. An ESA-led initiative aims to develop a global wetland information service based on Earth Observation for conservation efforts. The Globwetland project has now entered a new phase, with prototype products being developed based on sites across four continents.

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.

Taking place as part of ESA's TIGER initiative, the aim of Globwetland is to utilise satellite imagery to provide detailed wide-area views of individual wetlands and their surrounding catchment areas, and how they are changing. This will assist with Ramsar reporting, and also aid national and local conservation efforts – the success of which ultimately comes down to individual wetland managers. For this reason Globwetland is user-oriented, developing and demonstrating a space-based information service based on the specific requests of local and national users across 50 sites in 21 countries worldwide, 10 of them are in Africa: The GlobWetland TIGER Network.

The GlobWetland TIGER Component

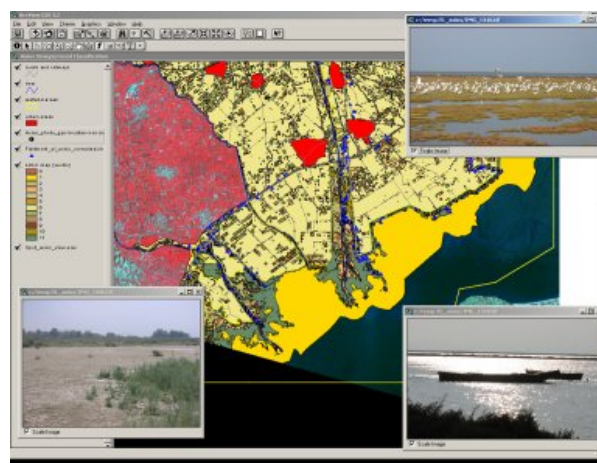
As a part of the TIGER initiative, GlobWetland has a strong focus on the African Continent. In particular, several user organisations have collaborated with ESA since the very beginning of the project, providing user requirements, supporting ground data collection and assisting in validation activities.

In particular, the TIGER component of GlobWetlands includes the water authorities and wetland manager of Algeria (Ministry of Agriculture and Fisheries, Directorate General of Forests), Egypt (Egyptian Environmental Affairs Agency), Senegal (Centre de Suivi Ecologique), South Africa (Department of Environmental Affairs and Tourism),

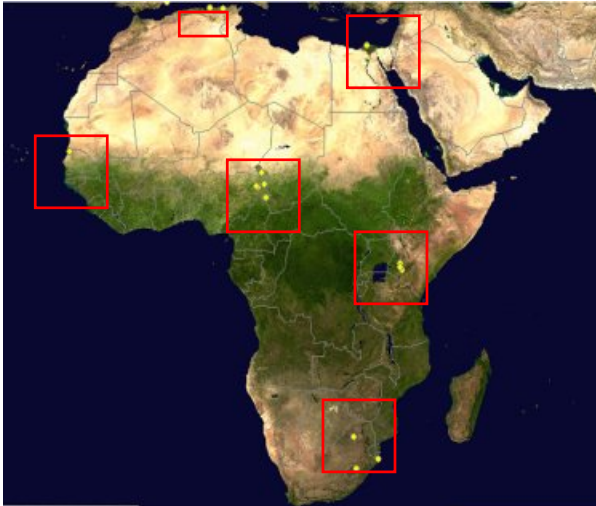
Kenya (Kenya Wildlife Service) and the trans-boundary area of the lake Chad (coordinated through the Lake Chad commission).

For each country a number of wetlands have been identified to be included in the project as service cases. An information system will be developed for each of the sites and delivered to the users to support their management activities.

In addition, as a part of the TIGER initiative, the project will provide training and capacity building to the GlobWetland African user community. This capacity building activity will represent a first stage towards the development of a sustainable network of wetlands observatories in Africa based on EO technology.



*Example of the GlobWetland Information System
Source: Atlantis Scientific (CND)*



African GlobWetland Sites
Source: ESA

The GlobWetland Information System

Based on the user requirements, Globwetland core products are base maps, land use-land cover (LULC) maps and change detection maps – with historical satellite images being compared with current acquisitions to see what changes have occurred during the last ten years or more.

Specialised products available if requested include digital elevation models (DEMs), water cycle regime monitoring – showing flood and retreat patterns – and biophysical data acquired from multispectral satellite sensors, showing vegetation health based on chlorophyll levels or the sediment contents of wetland water bodies.

"Wetlands have been very difficult to identify from space," explained Doug Taylor of Wetlands International, a non-governmental organisation that maintains the Ramsar Sites Database and is a Globwetland partner. "The Millennium Ecosystem Assessment remote sensing group identified this ecosystem as the least well recognised from space.

Kampala COP 9 will present progress

The Ninth Meeting of the Conference of the Parties (COP 9) of the Ramsar Convention is due to take place in Kampala, Uganda from 8 November 2005. The meeting will include a presentation from the Globwetland team on the project's progress so far.

Source: ESA

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

Contact:

Diego Fernández-Prieto (ESA)
Diego.Fernandez@esa.int

Short News

Assistance during first ESA Data Order

At the address tiger@esa.int, ESA has set a point of contact that will follow the development of your accepted project and might assist you during your first ESA data order. Should you have requests about the procedures for project initialisation, data selection and ordering, feel free to contact such address.

Source: ESA
Contact: tiger@esa.int

The TIGER Steering Committee Meeting will meet in Mid June

A new meeting of the TIGER Steering Committee will take place in the ESA premises of ESRIN, Frascati, Italy, in mid June 2005. This meeting will discuss the TIGER implementation plan for the next years and will coordinate the contributions of all the participants to the inactive.

Source: ESA
Contact: tiger@esa.int

Research grants

The International Foundation for Science (IFS) and the CGIAR Challenge Program on Water & Food (CPWF) have issued a call for research proposals open to young scientists. Researchers in developing countries who satisfy the IFS eligibility criteria and undertake research into Crop Water Productivity Improvement; Water and People in Catchments Aquatic Ecosystems and Fisheries; Integrated Basin Water Management Systems; or the Global and National Food and Water System may apply for the grant. Research grants are awarded up to a value of US\$ 12,000 for a period of 1-3 years. The twice renewable grants are intended for the purchase of scientific equipment, expendable supplies and literature, and to arrange field activities. Grantees must be salaried by, or have a stipend from, the university where the research project will be conducted. The grant will include mentorship and guidance on theme, basin and project from theme leaders, basin coordinators and project leaders. Application Deadline: 30 June, 2005.

Source: IFS
For more information:
www.ifs.se/Programme/waterandfood_call_2005.asp

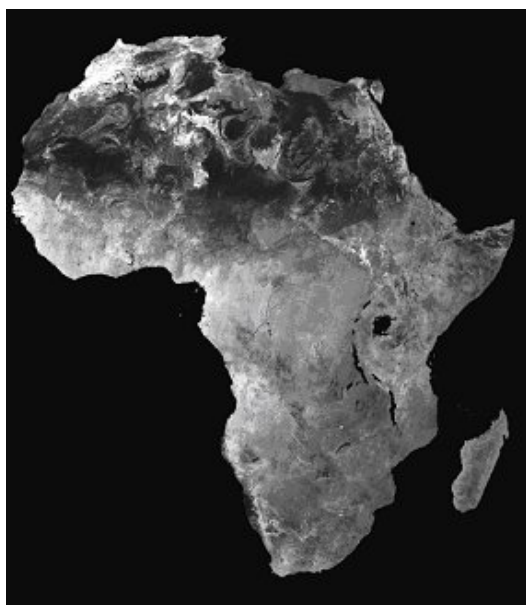
Availability of new and archive RADARSAT data and online data ordering form on CSA web-site

Within the context of the TIGER initiative, CSA would like to provide privileged access to RADARSAT 1 data on the basis of accepted projects submitted by African stakeholders during TIGER's "seeding" phase (2005-07). A total of 100 RADARSAT 1 scenes are available under this announcement. A maximum of 5 scenes can be allocated per projects. The accepted demonstration projects will need to meet sustainable development basic principles: aim for sustainability; require user engagement; and correspond to appropriate level of technology that fits user's capabilities.

For ordering individual RADARSAT 1 scenes, please consult the online data ordering form under the following link www.space.gc.ca/tiger

Source: CSA

For more information: www.space.gc.ca/tiger



RADARSAT 1 mosaic of Africa

TIGER web page – Canada

In order to know more about the Canadian participation in the TIGER initiative, please consult the following link www.space.gc.ca/tiger. This page includes a description of the Canadian strategy in support of TIGER.

Source: CSA

For more information: www.space.gc.ca/tiger

Project coordination meeting in Canada

Canadian Space Agency (CSA) is planning the organization of a Joint-project kick-off meeting for the Canadian supported projects. The meeting will be held at the CSA and will allow the contractors who were awarded a contract under the Earth Observation Application Development Program (EOADP) -TIGER Request for Proposals to get together. The objective of this meeting is

to stimulate information exchanges among the different participants involved in the EOADP-TIGER initiative and to present the resources that are available to the project teams in the context of their project implementation. During this meeting, project teams will be invited to present the objectives, the context, the activities, and the expected results of their project. In addition to these presentations, representatives from sustainers, spaces agencies who are involved in TIGER, and experts in aid and cooperation will be invited to present their expertise pertinent to the implementation of the projects. Consultation in preparation for this meeting will be held during the next few months. The targeted timeframe for the meeting is mid-september.

Source: CSA

For more information: www.space.gc.ca/tiger

Upcoming events

Environmental Education Association of Southern Africa (EEASA). 16-20 May 2005. Annual conference to be held in Lusaka, Zambia. Contact wwf-zeep@zamnet.zm or jmukosa@necz.org.zm.

Restoration and Sustainable Forest Management in Ghana, 5—7 July 2005, Elmina Beach Resort, Ghana. For more information, see: www.tropenbos.org/news/GhanaConference2005.htm

1st Regional Biannual Conference: Africa Chapter of International Association of Lands Ecology (Africa-IALE): Changing Landscapes of Africa: A Common Approach to Diverse Challenges, 19 – 23 July 2005, Elmina, Ghana. For more information, see <http://calmit.unl.edu/africa-iale/cd/>.

AfricaGIS 2005 The conference is to be held at the CSIR International Convention Centre, Tshwane (Pretoria), South Africa, from 31 October to 4 November 2005. For more information, see <http://www.africagis2005.org.za/>

Workshop international en Télédétection et SIG sur le thème Information Spatiale et Développement Durable, Rabat, Maroc, du 14 au 16 novembre 2005. Plus d'information: <http://www.israbat.ac.ma> (page «séminaires»)

RAMSAR COP9, Kampala, Uganda, November 2005. For more information: www.ramsar.org/index_cop9_e.htm

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