Spatial Data Infrastructure – Africa Newsletter

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Spatial Data Infrastructure - Africa (SDI-Africa) is a free, electronic newsletter for people interested in GIS, remote sensing, and data management in Africa. Published monthly since May 2002, it raises awareness and provides useful information to strengthen SDI efforts and support synchronization of regional activities. ECA/CODIST-Geo, RCMRD/SERVIR, RECTAS, AARSE, EIS-AFRICA, SDI-EA, and MadMappers are some of the other regional groups promoting SDI development.

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The SDI-Africa newsletter is prepared for the GSDI Association by the Regional Centre for Mapping of Resources for Development (RCMRD) in Nairobi, Kenya. RCMRD builds capacity in surveying and mapping, remote sensing, geographic information systems, and natural resources assessment and management. RCMRD has been active in SDI in Africa through its contributions to the African Geodetic Reference Frame (AFREF) and SERVIR-Africa, a regional visualization and monitoring system initiative. RCMRD also implements projects on behalf of its member States and development partners.

If you have news or information related to GIS, remote sensing, and spatial data infrastructure that you would like to highlight (e.g., workshop announcements, publications, reports, websites of interest, etc.), kindly send them in by the 25th of each month. I'd be happy to include your news in the newsletter.

PLEASE share this newsletter with colleagues who may find the information useful and suggest that they subscribe themselves.

Back issues of the newsletter are at the GSDI website: http://www.gsdi.org/newsletters.php
Best regards, Gordon Ojwang, Editor, SDI-Africa_AT_gsdi.org or sdiafrica@rcmrd.org or gojwang@rcmrd.org
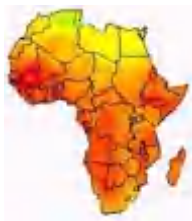
Input to this Issue

Thank you to Kate Lance, NASA/SERVIR-Africa (USA), Hussein Farah, RCMRD (Kenya); Francisco Javier Zarazaga-Soria, GeoSpatiumLab (Spain); Fitssum Woldegiorgis, AMESD, Ethiopia; Anne Thiel, Forest Trends (USA); Balungi Francis, Makerere University (Uganda) and Clemence Chiduwa, Institute for Capacity Development (Namibia) for their contributions to this issue of the newsletter.

SDI News, Links, Papers, Presentations

Africa considers a continent-wide space agency

Africa is a step closer to setting up its own space agency, with the approval of a planned feasibility study by the 53 member states of the African Union in earlier August (2010 Abuja Declaration). The African Space Agency would be intended to help ensure the continent becomes an important player in the global space programme. The agreement was made at the close of the third African Union Conference for Ministers in charge of Communications and Information Technologies meeting in Abuja last month (6 August). Ministers said that the feasibility study would also draft a common space policy for the continent, taking into account various existing space technology initiatives. They added that the continent-wide policy would be developed in collaboration with the International Telecommunication Union (ITU) and the United Nations Economic Commission for Africa.

The news follows the first successful launch of a pan-African satellite by the Regional African Satellite Communications Organization in earlier August. Preparations for the launch began almost twenty years ago,

in 1991, but various controversies held it up until 2007, when the satellite was first launched into orbit - only for it to develop technical problems. The ITU will provide advice to Africa on technical issues involved with setting up the agency, its spokesperson, Sarah Parkes, told *SciDev.Net*. Jonathan Mahlangu, a South Africa-based policy analyst said that the plan by the African Union was long overdue. "Think of the contributions of NASA and ESA to the development of America and Europe," he said. "A well coordinated space agency for Africa will assist in solving most of the challenges before her." According to Mahlangu the critical mass of experts to kick-start the agency already exists. "All what the African Union needs to do is put up a call to her citizens in NASA and Europe to come and contribute with their knowledge." However, others are more cautious, "a number of African countries should first develop their own capabilities and these [countries] could then take the lead in perhaps forming a continental space agency," said Martinez, who also heads the space science and technology division at the South African Astronomical Observatory.

Poor to benefit from global fire monitoring system

People in developing countries are expected to be able to speed up their response to threatening blazes, following the launch last week (11 August) of the first global system for monitoring fires. The Global Fire Information Management System (GFIMS) offers almost real-time detection of emerging fires, and alerts users through an online portal or via email. Soon it will also provide updates in the form of text messages, allowing anyone with a mobile phone to use the system.

"Many developing countries don't have their own national alert system," said Pieter van Lierop, Forestry Officer at the FAO in Rome. "In those cases, the people responsible for fire management can get an alert and find out if it is a damaging fire or a controlled fire." Uncontrolled fires are a worldwide problem, but Africa is worst hit. The Joint Research Centre of the European Commission estimates that fires in forests and other areas of vegetation affect 350 million hectares of land each year, and half of this damage occurs in Africa.

The system developed in collaboration with the University of Maryland, uses data from a pair of NASA satellites which pass over every point on the globe at least once every six hours, taking photographs with an infrared camera that can detect heat levels on the ground. GFIMS processes the images to produce an online map of fire hotspots, updated roughly two hours after the satellite has passed. This short time-lag allows a rapid response. Existing fire monitoring systems in Africa can update every 15 minutes, but use geostationary satellites focused on the southern region of the continent. GFIMS will help extend this protection to other areas. "It's unlikely to benefit South Africa because we have a real time system giving us much faster responses, but it would certainly benefit countries which don't have a service like that," said Bob Scholes, a systems ecologist at the Council for Scientific and Industrial Research, South Africa. But Johann Goldammer, director of the Global Fire Monitoring Centre in Freiburg, Germany, stressed the need for fire management information on a local or national level.
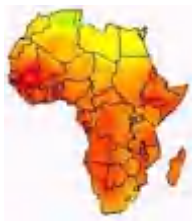
Africa policymakers urged to make use of space data

The UN Office for Outer Space Affairs and the UN Economic Commission for Africa (UNECA) have agreed to promote the use of scientific information obtained from space-based facilities to better manage disasters in Africa, during a three-day meeting in Addis Ababa (6-9 July). The plan to reach out to policymakers and popularise the use of space technologies for disaster management in Africa could help curb disasters such as pest outbreaks and floods. According to Makena Faye, the UN Officer in charge of e-Applications at UNECA, policymakers need to be made aware of the potential of space technologies to improve people's daily lives. "Despite the importance of space science and technology in generating and applying knowledge, they have still not aroused political interest, and many African policymakers do not see this area in a long-term perspective required to enable investment in the needed infrastructure," said Aida Opoku-Mensah, director of UNECA's ICT, Science and Technology Division. "Some countries in Africa have already embarked on developing operational national space programmes. Among them are Algeria, Egypt, Nigeria and South Africa."

"These countries have launched at least one earth observation satellite. Nigeria established the National Space Research and Development Agency (NASRDA) in 1998 and developed a 25-year roadmap for the Nigeria space programme," she said. South Africa is developing its astronomy and space sector, and has established the South African Space Agency to co-ordinate its efforts in space science and technology.

Others countries, like Morocco, are also developing a policy to launch a space programme. But space technology was still not considered important among policymakers in many other parts of Africa.

The need for better coordination between the space science and disaster management communities in Africa was also highlighted in the meeting. Juan Carlos Villagrán de León, programme officer at the UN Platform for Space-based Information for Disaster Management and Emergency Response, said space-based information can play a role in emergency response in Africa, as it has done in many other countries in cases of floods, locust swarms, and drought. "At present, countries like, Namibia, Burkina Faso, Togo, Mozambique and Kenya are making progress in the use of space technologies".

Successful launch of the second Pan African telecommunication satellite

The second Pan African telecommunication satellite, the RQ1R satellite, was launched on 4 August 2010 from the Ariane 5 launch site in Kourou/French Guyana. The launch of RQ1R, which went according to plan, was attended by African Ministers, RASCOM Signatories and Board Members. The Secretary General of the International Telecommunication Union (ITU), Dr. Hamadoun TOURE, graced the occasion by his presence.

The satellite underwent the Launch and Early Orbit Phase (LEOP) operations and following which the In-Orbit Tests (IOT) will be conducted and expected to be completed by 5th September 2010. At the conclusion of the IOT, RQ1R satellite will be collocated with RQ1 satellite at 2.9ºE to ensure a seamless transfer of services from RQ1 to RQ1R. RQ1R is endowed with a powerful Pan African beam in the C-band and two overlapping Ku Band zonal beams judiciously designed to cover the whole African continent and its associated islands as well as parts of the Middle East and Europe. This ensures low cost of the associated Ground Segment. RQ1R will provide the following services:
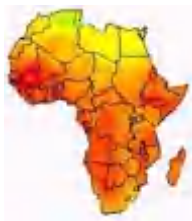
- Bandwidth Lease Services (BLS); It should be recalled that already this service provides a continental connectivity to more than 30 African countries to support the Pan African e-network for e-health and e-learning which is a project promoted by the African Union and the Indian Government. Those who are using the first satellite will have a seamless transfer to the replacement satellite;
- Broadband Connectivity Services (BCS); This service provides for direct connectivity among all the African Countries as well as parts of Europe and the Middle East;
- Telephony Services (TES); This service will extend access to remote and underserved areas in Africa using a specially designed terminal supporting voice, data(internet) and Radio/TV reception to all areas of the African continent without exception.

All of this has been made possible through the excellent partnership with other stakeholders which are part of the RASCOM Project. The successful launch of RQ1R into geostationary orbit is a herald to this seminal year of ICT as declared by African Heads of States and Government.

2009 Kenya population and housing census results launched

According to the official 2009 population census figures released on 31 August 2010, there are 38,610,097 people in Kenya. Out of these, men and women seem to have struck a balance, nearly, with 19,192,458 being male and 19,417,639 female.

Releasing the results in Nairobi, Planning minister Wycliffe Oparanya, however, said a repeat census has been ordered in eight districts after inconsistencies were noted in the population data for areas in northern Kenya. The inconsistencies in these regions were arising from the rate of population increase being higher than what birth and death rates would support, and age and sex profiles deviating from normal. Releasing the census data exactly a year after the count, the Minister said the results are phased in different categories including: by administrative units, political units, by age and gender, and by cultural and socio-economic clusters. The results include figures by ethnic and religious affiliation. The top ethnic communities by numbers are Kikuyu at 6.62 million, Luhya 5.33 million, the Kalenjin at 4.96 million, and Luo 4.04 million. Others are Kamba (3.89 million), Kenyan Somali (2.38 million), Kisii (2.21 million), Mijikenda (1.96 million), Meru (1.65 million), Turkana (0.99 million), Maasai (0.84 million), Teso (0.33 million) and Embu (0.32 million) among others. The census results indicate that Protestants churches enjoy the biggest following in the country, with 18.3 million followers. They are followed by the Catholic Church with 9,010,684 followers while other Christian churches account for 4,559,584 followers. The Muslim population in the country stands at 4,304,798 while that of Hindus is 53,393. The population data released after Kenya proclaimed a new
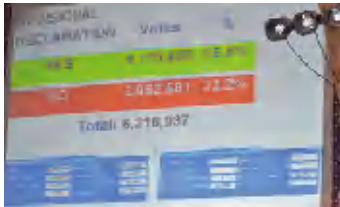
Constitution also shows the population by 47 counties created in the new law as well as the most and least populated districts.

A total of Sh8.4 billion was spent in conducting the last census. The release of the results has been postponed twice, due to what the Government termed as "complexities in data analysis". A number of challenges to the census exercise cited include cash-flow problems, insecurity concerns, complex logistics for counting of pastoralist communities, creation of new districts which raised the census budget, "competing national interests such as famine, drought and resettlement of IDPs", and post-election violence which disrupted mapping activities. The last census in 1999 showed the number of Kenyans at 28.7 million. For the first time, the population growth would be captured at intervals of five years, a development that Mr. Oparanya said will make it easy to capture data of both the young and the elderly.

Kenya on the path to fully automated electronic voting system

With an 80 per cent successful implementation of electronic voter registration and vote tallying at the August 4 2010 Referendum, there are all indications that Kenya would embrace the system on large scale in 2012 General Elections. Electronic Voter Registration is a system that uniquely identifies the voter by capturing the biometric features (face recognition and fingerprint). It is a precursor to electronic voting, a system used in India, US, Australia, Belgium, Brazil, Canada and France among others.

The Interim Independent Electoral Commission (IIEC) launched the pilot electronic voting system in the country on April 12 with electronic data capture in 18 selected constituencies. A total of 1.4 million voters were registered with the Electronic Voting System. The IIEC begun transmission and tallying of results just an hour after the polling was closed, something that is unthinkable with the manual process. The system is real time and allows for audit trails to individuals in case there is a mess and guarantees democratic, tamper-proof electoral system that would make impossible manipulation of voting outcome at polling points and rigging games at tallying centres.
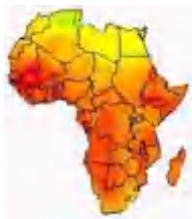
In all the polling stations where the electronic system is used, the presiding officers and other pool officers use low-cost mobile phones, which are GPRS-enabled to send results to the constituency and national tallying centres in real-time. The GPRS technology rides on mobile network to transmit data - meaning the system works in all areas covered by mobile networks. From the constituency-tallying centre, normal office computers are used to relay data to the national tallying centres. This makes it near impossible to rig, since once the information is sent, it is seen by the public via a screen, and those at the national tallying centre. The system also automatically adds up the results as they trickle. Each of the phones used to transmit polling results is specifically configured to transmit data through a dedicated access point in the virtual Private network (VPN) and any other phone cannot be used to transmit to the tallying centre. This also applies to the computers, which utilize cable or wireless Internet connectivity depending on the location. "We are still having hurdles covering areas not covered by mobile network, but we intend to introduce phones that use satellite technology, so that we can cover remotest of areas," says Ong'ondi, the IIEC Director of ICT.

Kenya plans to build data centre

The Government plans to establish a national data centre portal to ease the tedious processes of getting government service. This move will increase efficiency in ministries and government departments and cut corruption. Studies have established that inefficiencies in government departments and corruption are largely fuelled by the traditional methods of keeping information.

Through this initiative, the government will store individual information at a central storage referred to as the National Neutral Data Centre (NNDC). The information can only be accessed only on request by a certified organisation or individual. The data centre is part of the public-private sector plan to build a robust and modern infrastructure to accommodate a centralised system that would enhance government functions and the private sector. Under the system, banks, insurance firms and many other organisations can obtain information about a client or any party with ease in course of their interactions.

Last month, millions of Kenyans, thronged the registrar of persons' offices to process birth certificates. This followed a directive that made the document a pre-requisite for enrolment in any school and registration for national examinations. Information Technology experts say that with a proper registry in place, schools and any other institutions would access these documents from a central portal on their own and eliminate the need to present a physical verification document. To guarantee the safety and privacy of Kenyans, anybody

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seeking to access certain information will be required to register with specific government offices clearly stating their reason for seeking such information.

RCMRD joins network of UN-SPIDER regional support offices

In July 2010, the Regional Center for Mapping of Resources for Development (RCMRD) and the United Nations Office for Outer Space Affairs (UNOOSA) signed a cooperation agreement on the occasion of the UN-SPIDER Regional Workshop - "Building Upon Regional Space-based Solutions for Disaster Management and Emergency Response for Africa" in Addis Ababa. This makes RCMRD the 9th member of the network of Regional Support Offices which support the implementation of the activities of the UN-SPIDER programme in their respective regions in a coordinated manner by taking advantage of the expertise and capabilities being offered. In its role as UN-SPIDER Regional Support Office, RCMRD will support development and strengthening of national capacities in the Eastern African region, contribute to horizontal cooperation and technical assistance to countries and organizations involved in disaster prevention and mitigation, as well as assist in generating and sharing knowledge for the use of valuable space based information in the decision making processes. Also see Servir News.

Landmines and/or unexploded ordnance survey begins in the Kibira forest area, Burundi

Through funding from the Swiss Government, the Burundian Civilian Defence and MAG are finally able to survey the last areas suspected to be contaminated by landmines and/or unexploded ordnance (UXO) in the area around the Kibira Forest in north-west Burundi.

Since the independence of Burundi in 1962, the Kibira forest had been a stronghold for different armed movements until May 2009 when the last active rebel group disarmed and joined the peace process. Due to the security situation, no survey had been carried out in this particular area, while due to the immense pressure on land in Burundi, the population rapidly returned to the area for agriculture and encountered mines and other Explosive Remnants of War (ERW). Over sixty "Suspected Hazardous Areas" (SHAs) have been identified by the Direction de l'action humanitaire contre les mines (DAHMi) and this survey will confirm those areas as dangerous or allow them to be returned to the population.
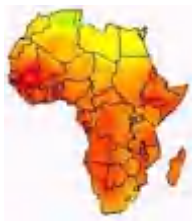
The survey is conducted by six Civilian Defence agents split into two squads who have been trained in liaison with communities and survey techniques by a MAG Community Liaison Manager, who will accompany and supervise them all along the two months that the survey is expected to last. These agents are also providing basic Mine Risk Education (MRE) to the population to reduce the risks of accidents related to mines and UXO. The information gathered will allow the DAHMi and MAG to develop a plan for the clearance of areas that have been confirmed as contaminated, thus freeing them for agriculture or development initiatives (such as the building of schools or health centres). It is expected that the clearance of the dangerous areas could take place in 2011 and that Burundi could become the second African country to be declared "mine-free" according to the Ottawa Convention.

African scientists develop UAV for surveying

The engineering team that developed South Africa's first commercial satellite, SumbandilaSat, is now developing an unmanned aerial vehicle (UAV) that can snap pictures of farmland. The project aims to provide farmers with an affordable way to survey their properties from the air. At present, farmers who want an aerial view of their land rent helicopters or small fixed-wing aircraft, which cost them around R2000-R8000 an hour. The UAV will cost about R1300 an hour, according to project leader Thomas Jones, an associate professor of engineering at the University of Stellenbosch.

The camera mounted on the vehicle would provide more detail than satellite imagery, Jones said. The user could programme the vehicle's flight path and where it should hover and take pictures. The images could be viewed at the ground station. A user could redirect the helicopter in case he wants a closer look of any particular object. Prof Jones said the UAV will be available in market in the next two years. The unmanned aircraft's airframe is a German Vario XLV helicopter with a 2.5m rotor, fitted with an onboard computer to control its flight and a camera. It can travel up to 10 Km away from its base station, and stay airborne for about 45 minutes.

The Civil Aviation Authority is devising regulations for unmanned aircraft. The development project has been funded by Stellenbosch University, Armscor, Denel, the Department of Trade and Industry, the National Research Foundation, the National Aerospace Centre of Excellence and the aerospace and defence

company Advanced Technologies and Engineering. Also see: SA scientists working on developing cheap pilotless helicopters.

Community-based adaptation to climate change in Africa project launched in Zimbabwe

As climate change issues gather momentum internationally, a rural community from Domboshawa in Goromonzi district, and a number of climate change experts, gathered recently at a one-day workshop in the capital, to witness the launch of the community-based adaptation to climate change in Africa project. Zimbabwe, like many other African countries, is already affected by extreme climatic events such as droughts and floods. This process is expected to become worse as a result of long term changes in climate systems. Whenever they happen, these extreme events negatively impact livelihoods, especially those of the poor who are highly dependent on natural resources. Munyawiri Ward in Domboshawa, like many communal areas in Zimbabwe, experiences poverty conditions which emanate from a number of socio-economic and environmental factors. The major challenges are food insecurity, poor energy supplies, poor infrastructure and transport, deforestation, land degradation and poor sanitation services. Climate-related ones include water scarcity as a result of recurrent droughts and this has compromised agricultural productivity.

"In response to these challenges, the African Centre for Technology Studies (ACTS) and other partners in Europe and South Asia are undertaking an action research, testing tools for community adaptation, knowledge generation and capacity building project on Community-based Adaptation to Climate Change in Africa (CBAA) project," said Shepard Zvigadza, Director of the Zimbabwe Environmental Regional Organization (ZERO). ACTS is a three-year project being implemented with selected vulnerable communities in Kenya, Malawi, Mali, Sudan, South Africa, Tanzania, Uganda, Zambia and Zimbabwe. Its objective is to assist communities to adapt to climate change and share lessons learned from project activities with key stakeholders at local, national, regional and international levels and to elicit their support for climate change adaptation.
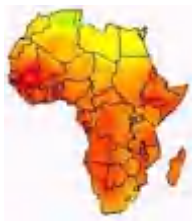
Ghana 2010 national population census to define planned agricultural census

The 2010 National Population and Housing Census of Ghana will serve as a launch pad for a planned agricultural census next year. The Ghana Statistical Service intends to carry out an agricultural census in 2011, with the aim to provide adequate data on agricultural production in the country. Ashanti Regional Statistician, Emmanuel George Osei says collated information in the upcoming National Census will form the basis for the planned agricultural census. Addressing a sensitization workshop in Kumasi, Mr. Osei said the 2010 Population Census will also cover other economic areas, including information communication technology. "We want to know the ages of people in various occupations. The information we are also soliciting, we want to know the number of people who have those ICT materials, like telephones in the home, computers, mobile phones, and all those things", he said. The main 2010 Census enumeration will start on the night of September 26, 2010 and complete within two weeks. Field officers and supervisors are undergoing training to ensure the success of the census in all 37, 000 enumeration areas.

Piloting greater use of standardised approaches in the Clean Development Mechanism

Within the international climate negotiations, a number of reforms to the carbon market are being discussed that would help to improve its efficiency, environmental integrity and help increase access to carbon finance by low income countries. One such reform that could help achieve these objectives is greater use of 'standardized approaches': methodologies based on uniform methods and procedures that are applicable to multiple projects. The UK's Department for International Development (DFID) has recently put out to tender for a project that will pilot specific practical examples of standardised approaches (e.g. performance standards and default emissions factors) that could be applied to CDM projects. The project will demonstrate how standardised approaches can be adapted to suit national circumstances in a few key countries (to be chosen as part of the first phase of the work). In demonstrating the benefits of standardised approaches, and targeting project types of particular interest to low income countries, the work will demonstrate how standardised approaches can help improve access to the CDM for countries that are currently underrepresented in the mechanism. The deadline for expressions of interest is 7 September 2010, with bids due by 24 September 2010.

Application of satellite remote sensing to support water resources management in Africa: Results from the TIGER Initiative

In Africa, where a 90% decline in available infrastructure at water stations was reported (Brown, 2002) and where there are issues related to occurrence, distribution, protection and management of available water resources as well as to the management of competing demands for such resources (ECA et al., 2000), exploitation of EO data has been marginal in the past. Only in 2002 the European Space Agency (ESA) in the context of the Committee of Earth Observation Satellites (CEOS) started the TIGER initiative as a concrete action following the resolutions of the World Submit on Sustainable Development held in Johannesburg. The initiative aims at assisting African countries to overcome problems faced in the collection, analysis and dissemination of water related geo-information by exploiting the advantages of EO technology.

UNESCO through its International Hydrological Programme, IHP, published the results provided by several different groups involved in the TIGER research and pre-operational projects in the series *IHP Technical Documents in Hydrology.* The publication will stimulate researchers worldwide to perform additional in-depth work and analysis on the exploitation of space borne remote sensing technology for water resources in Africa. The papers in this special issue fall under four interrelated themes: (1) use of multi-source EO data to facilitate analysis and management (through ingestion in Decision-Support Systems or models) of large aquifers (transboundary such as SASS and SAI and national such as Sous-Massa); (2) exploitation of EO data to derive information about catchment characteristics (lineaments and geology, landcover and land use etc.); (3) extraction of water bodies from multi-temporal datasets for the creation of inventories and assessment of flooding patterns; and (4) the derivation of soil moisture information on a dynamic basis from satellite data.

Geoinformation for disaster and risk management: examples and best practices

National governments, international organizations and research institutions worldwide have set to work to improve disaster management in all its phases: mitigation, preparedness, relief and response, and recovery and reconstruction. Many governments have put the formation of a hazard-resistant and disastercoping society on their political agenda as an important factor of sustainable economic development and better quality of civil life. In this respect, the awareness of new geospatial technologies and their successful utilization in disaster management is becoming crucial.
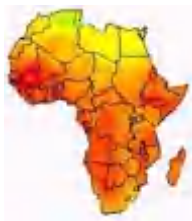
The publication aims to explain to governments, decision makers and disaster professionals the potential uses of geoinformation technologies for reducing disaster risks and losses, based on the knowledge and experience of experts in these fields. It covers all regions of the world and all aspects of disaster risk and its management. The papers are written for a wide-spread audience, with a minimum of technical detail. The booklet demonstrates that geoinformation and satellite technology is used to manage disasters in all parts of the world and helped in various response and recovery operations. Sixteen contributions have been selected with geographic distribution covering the Disasters in China, Germany, Greece, Haiti, Hungary, India, Indonesia, Italy, the Philippines, Sudan, and the USA are analyzed in detail. Some of the most devastating natural disasters such as the South Asia tsunami and the Haiti Earthquake, as well as humanitarian crisis situations such as the Sudan refugee camps reveal the international efforts in providing maps and satellite imagery.

Locating climate insecurity: where are the most vulnerable places in Africa?

This paper was presented at the conference on Climate Change, Social Stress and Violent Conflict in Hamburg, Germany, CCAPS researchers, led by Dr. Joshua Busby. The paper opens with a discussion of the attributes of vulnerability, including a review of several exemplars of vulnerability ratings. The second section presents an overview of the approach to vulnerability and a detailed review of our methodology, and the third section presents the findings. It identifies the confluence of vulnerabilities in African regions by using Geographic Information Systems (GIS) and multi-layered mapping. The study identified four main processes that encompass different aspects of vulnerability namely: (1) physical exposure to climatological disasters, (2) household and community vulnerability, (3) governance and political violence, and (4) population density. Each of these areas of vulnerability was given equal weight in the final vulnerability analysis. Within three of the four areas, a number of different indicators were identified that contribute to that dimension of vulnerability. Indicators within each area were assigned equal weight unless there were missing data for an indicator.

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Kenya's International Conference on Biodiversity, Land use and Climate Change, 15-17 September 2010, Nairobi, Kenya

Towards a Comprehensive Conservation Framework Kenya has a wealth of biodiversity vital to human wellbeing and planetary health. Despite the value of our biodiversity, we have yet to inventory all species or develop a national biodiversity framework that takes into account projected changes in land use and climate. The Kenya Wildlife Service (KWS), African Conservation Centre (ACC), National Museums of Kenya (NMK), Department of Resource Surveys and Remote Sensing (DRSRS), Regional Centre for Mapping of Resources for Development (RCMRD) and Kenya Forest Service (KFS) will host Kenya's International Conference on Biodiversity and Climate Change, 15 - 17 September 2010, as the country's contribution to the International Year of Biodiversity.

The conference will bring together conservation scientists, planners, managers and policy makers to coordinate species inventories and map Kenya's biodiversity. The working sessions will consider how to collate, integrate, analyze and share information using the best available mapping, data storage and analytical tools. Participants will discuss a national framework for conserving Kenya's biodiversity.

The conference will include the following thematic sessions: Biodiversity assessment; Biodiversity informatics; Climate change; Land-use and livelihoods; Policy implications; Poster sessions. The national conference will draw on international experience in biodiversity conservation and participants from neighbouring East African states. Broad public participation is invited.

Call for Papers: Map Africa 2010 - 5th nnual African Conference on Geospatial Technologies and Applications, 23-25 November in Cape Town, South Africa

The African geospatial community is invited to participate in and showcase their work at Map Africa 2010, the 5th Annual African Conference on Geospatial Technologies and Applications, organized in partnership with the Department of Rural Development, South Africa; the Regional Centre for Mapping of Resources for Development (RCMRD), Kenya; and UN Economic Commission for Africa (UNECA), Ethiopia. The theme of the conference is "Geospatial Readiness for Building Africa" which aims to highlight the significant role of geospatial technologies in the areas which are considered as the building blocks of a nation and contribute to its growth and development. The abstract (not exceed 250 words) should summarize and indicate the key research/points to be further presented and discussed in the Sessions of Map Africa. For queries related to paper submission, contact Akanksha Tyagi at papers.mapafrica@gisdevelopment.net or akanksha.tyagi@gisdevelopment.net.

Call for Registration: 2010 World Water Week, 5 - 11 September in Stockholm, Sweden

The World Water Week in Stockholm is the annual meeting place for the planet's most urgent water-related issues. Organized by the Stockholm International Water Institute (SIWI), it brings together 2500 experts, practitioners, decision makers and leaders from around the globe to exchange ideas, foster new thinking and develop solutions. The theme for 2010 is "Responding to global challenges: The water quality challenge - prevention, wise use and abatement". This year's program and Registration online can be explored through the interactive event finder on the World Water Week web.
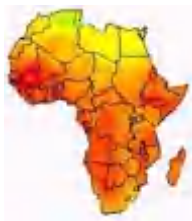
Practical SDI implementation materials from within and outside of Africa

Mapping community health in Kenya

The rural fishing village of Muhuru Bay, Kenya has a high rate of HIV and many AIDS orphans. Infant mortality and malaria are also very high. And only 5 percent of girls there go to secondary school. Duke researchers initially envisioned the map as an analytical tool for examining health issues such as how the local clinic served the population. But they quickly realized its broader potential to reveal relationships among diverse pieces of data. In addition to helping orient students, the map could provide a model for assembling similar information about communities around the world.

The project - collaboration between the Women's Institute for Secondary Education and Research (WISER) and Duke Classes in biology and Information Science + Information Studies - illustrates how multimedia and geospatial technologies can add a powerful new dimension to community development and student engagement. Key landmarks – schools, churches and beaches form the framework of the
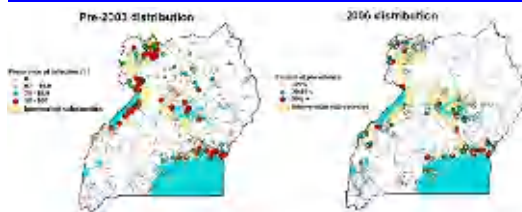
map, which also includes video interviews, audio recordings and photos that annotate specific locations. Different map "layers" focus on themes such as daily life in Muhuru, health and disease, and the WISER program, which opened a new boarding school for girls in January. One layer, for instance, maps households' knowledge about malaria transmission and prevention. Another showcase: Muhuru student writing, and community maps drawn by local children.

"The map is the main entry point to the content," said Victoria Szabo, an assistant research professor of visual studies and new media, and the director of Duke's Information Science + Information Studies program. "We're thinking about new ways to make this data available for data mining, and to make it easy for others to contribute and build collaborative knowledge."

In addition to providing a rich multimedia archive and gallery, the map introduces a new dimension to fieldwork methods and analysis.

Rapid mapping using LQAS reveals impact of treatment in Uganda

Rapid mapping of Schistosoma mansoni prevalence in Uganda, using the Lot Quality Assurance Sampling (LQAS) technique, was carried out over 31 districts during the month of February 2006. The survey involved four teams which were made up of three technicians, one of whom acted as the team leader, and one driver. The four teams were assigned different regions of the country (Eastern, Central, Northern and Western) with the aim of sampling 8 schools per day over 3 days per district.

The purpose of the rapid mapping exercise was to classify schools according to different prevalence thresholds: <20%, 20-50% and >50%, in order to direct the future treatment strategy for the country programme. The LQAS method is based on the random selection of only 15 children per school and identifying how many of these children are infected or not – with 2 and 7 being the critical numbers. This strategy was based on evidence from a study carried out in Uganda to investigate the validity, applicability and cost-effectiveness of the LQAS method as a rapid mapping tool of S. mansoni (Brooker et al., 2005)

- If all 15 samples are examined and less than 2 samples are positive then the school is defined as a low prevalence (<20 %) school.
- If all 15 samples are examined and less than 7 but 2 or more samples are positive then this school is defined as a moderate prevalence (>=20% and <50%) school.
- If 7 samples are positive then examination can be stopped since this school is already defined as a high prevalence (>=50%) school.
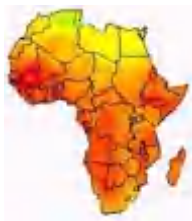
GPS readings for each school were also recorded which allowed, once all the data had been collected, the creation of prevalence maps using GIS software.

Community Carbon Forestry (CCF) for REDD using cybertracker for mapping and visualising

Many constraints are holding back the use of spatial information technologies, especially GIS, for local community mapping, measuring and monitoring forest carbon services. There is the poor availability of user-friendly methodologies which hampers the use of these technologies by laypeople. High-cost specialists from consultancies, universities, government agencies, etc are then required to control the information processes. Moreover, there are very few freeware computer applications available to acquire and manipulate geo-referenced information and databases. Most of the methods available make use of expensive software and mobile devices out of reach of the budgets of communities and local NGOs.

Community members utilising participatory mapping, measuring and participatory GIS for carbon stocks and changes also leads to strong benefits for capacity-building and management and planning initiatives by the communities:

- Skills development and capacity-building with the community;
- Associated with that, increased information and confidence in dealing with the carbon professionals;
- Improved reliable and deeper information on forest conditions, degradation, community forest management, and conflicts identification.
- Obtaining historical information
- Community ownership of the data produced, such as the stock and sequestration data and maps; which gives them at least a better opportunity to control the data;
- Heightened attitudes of community 'ownership' of, and entitlement to, the carbon project itself;

Spatial Data Infrastructure – Africa Newsletter

- Using the mapped data and the PGIS method for applying for other payment for environmental services (PES) finance in hydrological services, biodiversity, etc.
- Good potential for utilising the participatory mapping and PGIS techniques for other community purposes, such as making land claims, resolving land conflicts, and collaborative land use planning.

The positive benefits of this are manifold, aside from the reduced measurement costs, compared with the communities having to pay outsider's fees of professional agents, consultants or researchers.

GIS Tools, Software, Data

Connectivity analysis toolkit

Carlos Carroll and the Klamath Center for Conservation have a new tool called the Connectivity Analysis Toolkit available for free download. The Connectivity Analysis Toolkit provides conservation planners with newly-developed tools for both linkage mapping and landscape-level 'centrality' analysis. Centrality refers to a group of landscape metrics that rank the importance of sites as gatekeepers for flow across a landscape network. The Toolkit allows users to develop and compare three contrasting centrality metrics based on input data representing habitat suitability or permeability, in order to determine which areas, across the landscape as a whole, would be priorities for conservation measures that might facilitate connectivity and dispersal. The Toolkit also allows application of these approaches to the more common question of mapping the best habitat linkages between a source and a target patch.

MapServer version 5.6.5 released

MapServer is an Open Source platform for publishing spatial data and interactive mapping applications to the web. Originally developed in the mid-1990 at the University of Minnesota, MapServer is released under an MIT-style license, and runs on all major platforms (Windows, Linux, Mac OS X). The MapServer Project Steering Committee (PSC), sanctioned by OSGeo, manages and administers the project which is maintained, improved, and supported by developers from around the world. MapServer is not a full-featured GIS system, nor does it aspire to be.

GIS layers for Kenya and Somalia by ILRI

The International Livestock Research Institute (ILRI) has collected and generated an extensive range of spatial data layers for Kenya and Somalia. A number of these layers are directly related to livestock, such as distribution, health and production. Other layers, however, cover more general topics such as human population density, climate and infrastructure. Some of the datasets cover only specific project, while others are county-wide, regional, continental or even global. ILRI is now making these layers directly downloadable.
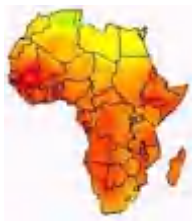
Water point mapping: Maps from baseline survey of Tanzania

Water point mapping is a tool for collecting data about the functionality and status of improved rural water sources. It has been used in a number of countries across Africa including Tanzania. In Tanzania, water point data has been collected for 13 districts (Igunga, Iramba, Karatu, Kondoa, Kongwa, Monduli, Ngara, Nzega, Sikonge, Singida Rural, Urambo and Uyui) and plans are underway to scale up the exercise nationwide. The data set presented contains information on (geo) location, type of waterpoint, its management, who constructed it, when, whether payments are made for water and whether or not the water point is functional. The dataset can be downloaded (XLS)

New OSource application ServiceCube

ServiceCube is the new name for the software formerly known as CatMDServices and available under an open source license. It is an initiative of the National Geographic Institute of Spain (IGN), which is the result of the scientific and technical collaboration between IGN and the Advanced Information Systems Group (IAAA) of the University of Zaragoza with the technical support of GeoSpatiumLab (GSL). ServiceCube is a Web application for describing and searching web services by means of metadata. The tool has been implemented with J2EE and GWT technology and has the following features:

- The application can be deployed in any platform with the requirements of having installed Tomcat and a Java virtual machine. On the client side users only need a web browser with Javascript support.
- The application has been developed following the Java internationalization methodology. Nowadays, there is support for Spanish, English, French, Portuguese, Catalan, Galician and the Basque language. With little effort, other languages can be supported.

- Description of services by means of metadata in compliance with the metadata implementing rules of the INSPIRE directive. The metadata model proposed follows the guidelines for mapping the metadata implementing rules to ISO 19115/19119.
- Web services searching of metadata stored in the local metadata repository according to different criteria such as the geographic extension of the data provided by the service, the keywords, the service type or the services provider.
- Automatic metadata generation from the "getCapabilities" operation supported by a service that complies with the OGC Specifications (WMS, CSW, WFS, WCS or WPS).
- Thesaurus and controlled list utilities to facilitate the edition of metadata. This enables metadata creators to use them in order to fill in some metadata elements. The use of controlled keywords facilitates the mapping between a selected vocabulary and a large collection of records.
- On-line help.

ServiceCube can be downloaded at http://spatiumcube.sourceforge.net/components.html.

New release of CatMDEdit

CatMDEdit is available under an open source license. It is a metadata editor tool that facilitates the documentation of resources, with special focus on the description of geographic information resources. It is an initiative of the National Geographic Institute of Spain (IGN), which is the result of the scientific and technical collaboration between IGN and the Advanced Information Systems Group (IAAA) of the University of Zaragoza with the technical support of GeoSpatiumLab (GSL). The features included in the new release are:

- Metadata edition in conformance with "ISO19115. Geographic Information – Metadata" following the new Implementing Rules for the NEM metadata profile. NEM ("Núcleo Español de Metadatos") is a recommendation defined by the Spanish National Geographical High Board ("Consejo Superior Geográfico").
- Description of services by means of metadata in compliance with the metadata implementing rules of the INSPIRE directive. The metadata model proposed follows the guidelines for mapping the metadata implementing rules to ISO 19115/19119.
- Automatic metadata generation from the "getCapabilities" operation supported by a service that complies with the OGC Specifications (WMS, CSW, WFS, WCS or WPS).
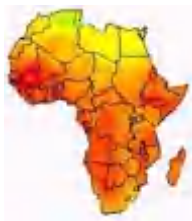
CatMDEdit can be downloaded from Sourceforge and OSOR at http://catmdedit.sourceforge.net/ or http://catmdedit.forge.osor.eu/.

Remotely sensed data available in the Ethiopian mapping agency

- Land sat - MSS (1973 - 1974) -Full coverage
- Land sat - TM (1986 - 1989) - Full coverage
- Land sat - ETM (1999 - 2002) - Full coverage
- SPOT - XS (1986) - Gambela Area
- SPOT - XS   (1988) - South Nations &Nationalities, peoples Regions: (Awassa and Arbaminch and its surrounding)
- SPOT - 5 (2006 - 2007) - Full Coverage
- IKONOS (2005 - 2006) - Specific towns of the country
- Quick bird (2005 – 2006) - Majority of the towns of the country

Geospatial Research, Applications, Reference Material

Using GIS to create an agro-climatic zone map for Soroti district

This project examines the use of GIS in creating an agro-climatic zone map. The map recognizes that the major aspects of climate that affect plant growth are moisture availability and temperature. The agro-climatic zones are therefore specific combinations of moisture availability zones and temperature zones. The project was undertaken following the variability of rainfall and recurrent droughts in the country that affects the lives of millions of people whose livelihood is mainly dependent on agriculture. The project is of much importance as it is aimed at showing areas that are climatologically suitable for particular crops and also as a guide to the work of planners and farmers. The goal of this study is to extrapolate empirical research findings from the map for agric-environmental experimental design and as a framework for assessment of the impact of climate change on Soroti region agriculture. The objectives were achieved using Idris32 software

incorporating various methods. A temperature map was created from a derived relationship (regression equation) between temperature and elevation using tabular temperature and elevation data obtained from four weather stations. The temperature zones were created by reclassifyng the temperature map. An evaporation map was created using a published relationship between evaporation and temperature. The moisture availability map was created by getting the ratio of rainfall map to evaporation. Moisture zones were created by reclassifying the moisture availability map. An agro climatic zone map was then created through a combination of the temperature zones with the moisture zones. The agro climatic zone map was classified using the Köppen and Thornthwaite agro climatic classification system. Finally crop growth in each zone was selected through a comparison of the temperature and moisture requirements for each crop based on published FAO data (climatic adaptability of crops) with the prevailing temperature and moisture conditions in each zone. The agro climatic zones were suitable for the growth of cassava, sweet potatoes, rice, sorghum, maize, millet and ground nuts. The results show that zones in the humid and dry-sub humid regions are highly suitable for agricultural production than those in the semi arid regions. The results are recommended for use on a lager scale only if they are accurate and representative of the climatic conditions in the selected region of the country. However, if many alternatives are to be included based on the stated criterion, an agro-ecological zone map should be created.

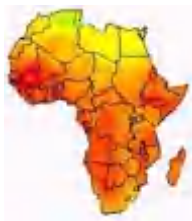## Namibia stresses Chinese space centre's earthly uses

Namibian science received a boost last month when China's first man in space, Yang Liwei, visited the country as part of a delegation to the China Space Tracking, Telemetry and Command Station, which Namibia hopes will lift its development effort. The visit, by six astronauts and space officials from the Chinese manned space programme, was their first to Africa, according to the Chinese Ministry of Foreign Affairs. The group attended the opening of an exhibition hall at the station, which lies on the edge of the desert in the coastal town of Swakopmund, and also helped open Namibia Science Week a few days later (5 July).

The station is part of a global network of flight control centres that monitors communications with Chinese spacecraft orbiting the Earth or re-entering the atmosphere. Hosting the station will help Namibia learn how to use space technology for development applications, according to Alfred van Kent, director of research, science and technology at the Namibian Ministry of Education. The country also hosts the High Energy Stereoscopic System, a gamma ray detection system owned by Germany's Max Planck Institute. These centres also have considerable technological spin-offs for Namibia, such as expertise in supercomputers, engineering and design skills, sensor development, advanced communication systems and robotics.

Since 2008, 11 Namibians have studied space science and technology in China under a bilateral agreement, out of which six are now enrolled in master's degrees. By 2015, the country could have its own technicians operating the China Space Tracking, Telemetry and Command Station. "Namibia is not starting a space programme, but hopes to add work relevant to the country at this Chinese centre." Such work will include the use of remote sensing technology to detect minerals and water reserves, land and town planning, agricultural surveys, and disaster and flood management, said Natascha Cheikhyoussef, science and technology officer at the Ministry of Education.

Crop insurance in Kenya ensures farmers hunger no more

Known as *Kilimo Salama*, the insurance policy is the first one in Kenya to insure farmers against the vagaries of weather. Syngenta Foundation for Sustainable Agriculture, UAP Insurance and Safaricom have joined hands to create the Agricultural Insurance Initiative that uses mobile phone technology and weather monitoring stations to give farmers updated information on expected weather conditions before they take the policy. The Swiss foundation, a non-profit organisation, collects weather data from unmanned weather stations mounted in all farming areas where the insurance policy is being introduced. Syngenta staff analyse the data, make weather prediction and relay it over mobile phones to subscriber farmers and UAP Insurance. Based on the information, the insurer makes a decision on whether to insure crops in certain area and for how much. Farmers are also advised on when and what to plant. Agricultural dealers registered and trained by Kilimo Salama have been equipped with a camera phone that scans a special bar code at the time of purchase of inputs, which immediately registers the policy with UAP Insurance over the Safaricom's mobile data network. This mobile phone application then sends a text (SMS) confirming the insurance policy to the farmer's mobile phone. Some 30 mini weather stations in targeted regions have been erected with automated, solar-powered systems capable of broadcasting regular updates on weather conditions and rainfall qualities. "The weather stations relay information that shows the amount of rainfall and detects either excess rainfall or none at all then signals the need for the insurance company to compensate the registered

farmer". "This is the first project to use mobile phones to set up insurance contracts and issue payouts to small-scale farmers in Africa, deploying both our vast data infrastructure and MPesa".

Elsewhere, a local insurance firm, APA Insurance, has announced plans to introduce a New insurance products targeting crops and livestock sectors. They are conducting a study on how to implement the new Radio Frequency Identification technology that uses micro chips to document information. A chip is placed in the stomach of the insured animal to keep track of its health information. "Each chip has different settings and goes with different characteristics of the individual animal".

Scientists show waves of deforestation across region

A new study documents waves of forest degradation advancing like ripples in a pond 120km across East Africa in just 14 years. Scientists from 12 organisations in Europe, Africa and the US demonstrated that forest exploitation begins with the removal of the most valuable products first, such as timber for export, followed by the extraction of less valuable products such as low value timber and charcoal in strict sequence. This 'logging down the profit margin' in tropical forests follows the same pattern of removal seen for fish in unmanaged oceans.

The study, published in Proceedings of the National Academy of Sciences recently, tested an economic model that predicts the sequential removal of products from high to low value. Researchers visited forests at varying distances up to 220km from Tanzania's largest city, Dar es Salaam, in 1991 and again in 2005, tracking the trees that remained. They found that waves of degradation moved, on average, 10km a year out from the city. For example, charcoal extraction extended 50km from Dar es Salaam in 1991, but in 2005 it was found up to 170km from the city. Most logging in Tanzania is illegal and causes major financial losses. A trade survey by a wildlife trade-monitoring network, estimated that in 2005 some 96 per cent of harvested timber was exported illegally, losing the Tanzanian government an estimated $58 million (Sh4.6 billion) of revenue. Charcoal burning is also mostly illegal, but carried out by local people who have no alternative means of income. Poor people in towns use charcoal to cook their food.
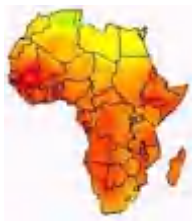
"The degradation waves have spread rapidly. Urban migration and rising demand for timber, particularly in China, are amongst the major reasons for this," said lead author Dr Antje Ahrends of the Royal Botanic Garden, Edinburgh. "By the end of the study, high value timber logging production took place over 200km from the city. This is very likely to be unsustainable." The ability to predict forest degradation is essential if new market-based incentive programmes to protect forests are to be successful. The authors recommend that policy interventions should be carefully tailored to the type of degradation activity.

Science and Technology Resources on the Internet - Implementing geospatial web services: A resource webliography

This paper is designed as a research tool for information specialists and science technology librarians seeking to build and understand geospatial web services (GWS). GWS permit users to dynamically access, exchange, deliver, and process geospatial data and products on the World Wide Web, no matter the platform or protocol. They are compliant with Open Geospatial Consortium (OGC) standards to advance interoperability. The paper briefly describes select GWS, OGC interoperability demonstrations, and software tools and applications that are fully or partly OGC compliant. Courses, cookbooks, and tutorials helpful to those seeking to build their own GWS are described. The use of GWS in geoportals is discussed briefly, particularly in those servicing spatial data infrastructures and scientific communities. Finally, challenges pertaining to the interoperability of GWS are noted in select publications and presentations.

Distributed geospatial analysis through web processing service: A case study of earthquake disaster assessment

Web Processing Service (WPS) is a new standard approved by Open Geospatial Consortium (OGC), which is aimed to define a standardized interface facilitating the publishing of geospatial processes, and the discovery of and binding to those processes by clients. WPS also acts as a middleware service that obtains geospatial data from an external resource in order to run a process on a local implementation. Consequently, it can be used to wrap other existing OGC geospatial standards designed to provide geospatial services, such as Web Map Service (WMS), Web Feature Service (WFS), and Web Coverage Service (WCS) so as to achieve distributed geospatial analyses. This paper demonstrates three approaches of using WPS to chain geospatial services. The methods are illustrated through a prototype online system for conducting Earthquake Disaster Assessment.

Spatial Data Infrastructure – Africa Newsletter

Have you signed up to receive **SDI-Africa Newsletter** notices? It only takes a minute, and then the GSDI Association can notify you when a new issue of the SDI-Africa newsletter is available, plus alert you to particular GSDI announcements (like a call for GSDI grants, or a call for papers for a GSDI conference).

The GSDI Association also hosts an **SDI-Africa E-mail Discussion List** with intermittent news and announcements of opportunities (this discussion list is separate from the SDI-Africa Newsletter list).

- The **SDI-Africa E-mail Discussion List** is open and available to anyone to read on the web. To submit messages or to receive submitted comments or notices by e-mail, one first must register.
- To see the collection of prior postings to the list, visit the **SDI-Africa E-mail Discussion List Archives**.
- To post a message to the list, send an email to sdi-africa@lists.gsdi.org.

UNESCO-Institute for Water Education Short Course on GIS Modelling 2010- Soil and Water Assessment Tool, 1-12 November 2010, Delft, The Netherlands

UNESCO-Institute for Water Education Short Course on GIS and Remote Sensing 2010, 1-12 November 2010, Delft, The Netherlands

Institute for Capacity Development (ICD) - Short Courses Registration, Victoria Falls & Windhoek (September - December 2010)
The Institute for Capacity Development (ICD) is conducting capacity training short courses in the months of September - December, 2010. Registration is on and institutions are invited to nominate participants from among their officers to attend these capacity enhancing courses. The Training Venues are Windhoek (Namibia), Pretoria (South Africa) and Victoria Falls (Zimbabwe).
The major objective of the courses is to develop and enhance staff effectiveness, sound management and Leadership skills for staff in the specific areas of training. The courses can also be conducted specifically for organizations and customised to specification requirements. Further information and Registration Online, see website: www.icdtraining.com or 2010 Training Calendar. Contact: Clemence Chiduwa, Training coordinator at coordinator@icdtraining.com.

Training Course: Climate change adaptation in agriculture and natural resources management, 28 February - 11 March 2011, in East Africa
The course is designed for mid-career professionals who are engaged at higher levels and deal with policy making either from the research side (as advisor), government side, or from civil society who aim to have a full understanding of climate change adaptation concepts, be able to effectively and meaningfully contribute to the debate on climate change adaptation, either in the policy process and/or in providing knowledge to the policy process. For details, contact: Terwisscha van Scheltinga (Catharien), Wageningen University at Catharien.Terwisscha@wur.nl or www.ess.wur.nl/UK/People/Catharien+Terwisscha+van+Scheltinga/, http://portals.wi.wur.nl/climatechange, www.genderandwater.org.

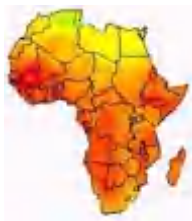**Online Courses: Community-centered adaptation to climate change**
The Center for Sustainable Development (CSDi) specializes in providing sound, evidence-based information, tools and training for humanitarian development professionals worldwide. The Center announces a pair of online field courses on community-centered adaptation to climate change. Participants work with real communities to develop projects ready to present to donors. Urban participants can partner with participants in developing nations to gain community contact.
- Adapting to Climate Change 2: Sustainable Implementation, September 7 - October 18 (Six Weeks).
Visit the adaptation professional group at CSDi's Development Community and join colleagues in sharing resources & collaborating online. Contact: Tim Magee at tim.magee@csd-i.org or Online.Learning@csd-i.org for further information.

Training Workshops for PCSWMM/SWMM5, South Africa
Every year Computational Hydraulics Int. (CHI) hosts a number of SWMM5 and PCSWMM Modeling Workshops in South Africa. At these professional workshops, attendees are trained in the use of both the latest US EPA Stormwater Management Model (SWMM), and the new PCSWMM 2009 graphical decision

support system. By attending a workshop, participants become proficient in the use of the software and learn how its application can enrich stormwater drainage and sanitary system modeling and design.

- Cape Town, October 12, 2010
- Kimberley, October 19, 2010
- Kruger National Park, October 26, 2010
- Durban, November 02, 2010
- Gauteng, November 09, 2010

Free ESRI Courses
Free online course modules from ESRI's Virtual Campus site. Learn the basics of many of their software packages and extensions or take some concept courses such as a review of projections.

ESRI Eastern Africa Hands-on Training for GIS Professionals

The following courses are offered at the ESRI Authorized Learning Centre in UpperHill, Nairobi, Kenya.

Fundamentals of ArcGIS Desktop	Duration (Days)
ArcGIS Desktop 1: Getting Started with GIS	3
ArcGIS Desktop 2: Tools and Functionality	4
ArcGIS Desktop 3: Workflows and Analysis	3
Data Production and Editing with ArcGIS	
Field Data Collection Using ArcPad and ArcGIS Desktop	3
Building Geodatabases	4
Data Production and Editing Techniques	4
Analysis with ArcGIS	
Performing Analysis with ArcGIS Desktop	4
Cartography with ArcGIS	
Creating and Publishing Maps with ArcGIS	4
Enterprise GIS	
Introduction to ArcGIS Server	3
Introduction to the Multiuser Geodatabase	3
Managing Editing Workflows in a Multiuser Geodatabase	4
Programming with ArcGIS	
Introduction to Programming ArcObjects using .NET	4
Introduction to Geo-processing using Python	3

Added new courses focusing on ENVI: the Image Processing Software for processing and analyzing geospatial imagery.
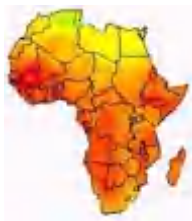
Introduction to Remote Sensing with ENVI	3
ENVI for GIS	3
Exploring ENVI	5
ENVI for Defense and Intelligence	4

Contact: ESRI Eastern Africa at: training@esriea.co.ke, telephone: +254 20 2713630/1/2 or fax: +254 20 2713633.

ESRI South Africa course schedule for September – December 2010
Contact: Midrand: Queen Mofokeng, qmofokeng@esri-southafrica.com; Durban: Patricia van Schalkwyk, pvanschalkwyk@esri-southafrica.com; Port Elizabeth: Queen Mofokeng, qmofokeng@esri-southafrica.com; Cape Town: Kathi Wöhl, kwohl@esri-southafrica.com.

L'Ecole Régionale post-universitaire d'Aménagement et de gestion Intégrés des Forêts et Territoires tropicaux (ERAIFT) [Regional School on Integrated Management of Tropical Forests and Territories] – **Promotion : inscriptions ouvertes**, Kinshasa, République Démocratique du Congo. Le cursus de l'ERAIFT aboutit à l'obtention d'un Diplôme d'Etudes Supérieures Spécialisées (DESS). Ce diplôme est l'équivalent d'un Master du système « LMD » (Licence, Master, Doctorat) des Accords de Bologne. Il est reconnu par le Conseil Africain et Malgache pour l'Enseignement Supérieur (le CAMES). Le programme du DESS comprend 16 chaires dont l'enseignement s'étend sur une période de 12 mois. L'étudiant dispos ensuite de

6 mois pour rédiger son mémoire. Le contenu de ce dernier repose sur l'approche systémique, et s'inscrit dans le cadre de l'aménagement intégré du territoire, du développement humain, durable et écologiquement viable, de la lutte contre la pauvreté et de la gestion rationnelle de l'environnement. L'autre grade décerné par l'ERAIFT est le Diplôme de Philosophiae Doctor (Ph.D.) en Aménagement et gestion intégrés des forêts et territoires tropicaux. Bourses disponibles, mais limitées en nombre. Contact: info@eraift.org.

Short-courses offered by RECTAS in 2010, Ile-Ife, Nigeria

The Regional Centre for Training in Aerospace Surveys (RECTAS) is offering a number of three-week courses. Also note that RECTAS is able to package and deliver customised training for intrested organisations. These could be either advanced or other certificate programs. Contact: info@rectas.org or thontteh@rectas.org.

ITC Distance Learning - Certificate
- Spatial Decision Support Systems (8 weeks). Starting date: 11 October 2010. Dealine for application: 20 September 2010. Register.
- Learning IDL for Building Expert Applications in ENVI. Starting date: 25 Oct 2010. Deadline for application: 4 October 2010.
- Digital Terrain Model extraction, processing and parameterization for Hydrology (3 + 3 weeks). Starting date: 29 November 2010. Deadline for application: 8 November 2010. Register.
- Principles and Applications of Remote Sensing and GIS in Natural Resources Management at KNUST, Kumasi, Ghana (12 weeks). Starting date: 20 September 2010. Register.
- Principles of Geographical Information Systems
- Modern Techniques for Environmental and Sustainable Development of Earth Resources, Ethiopia, 2 weeks
- Geoinformatics, with ARU, Dar es Salaam, Tanzania With specialisation modules: Digital Photogrammetry and Remote Sensing, GIS Operation, Cartography and Geo-Visualisation, Tanzania, 9 months
- Geoinformatics with GSSM, Accra, Ghana With specializations: GIS Operations and Cartography and Visualization, Ghana, 9 months
- The Application of GIS and Remote Sensing to Geologic Mapping and Mineral Resources Exploration, Tanzania, 2 weeks
- Participatory Approaches to Slum Upgrading and Management, Kenya, 2 weeks
- Digital Terrain Model extraction, processing and parameterization for Hydrology, 3+3 weeks

ITC Refresher Courses 2010
Refresher courses, which are certificate of attendance courses (mostly of two-week duration) organised for alumni in their home countries or regions, are meant to increase the impact and prolong the effect of earlier training. In 2010, ITC will co-organise the following refresher courses:
- Participatory Approaches to Slum Upgrading and Management (Kenya)
- Modern Techniques for Environmental and Sustainable Development of Earth Resources (Ethiopia)
- GEONETCast-Toolbox for natural and water Resource Management (Ethiopia)
- Preparing for Adaptations to Climate Change in West Africa (Burkina Faso)
- Strengthening Local Land Governance (Tanzania)
- Application of GIS and Remote Sensing to Geologic Mapping and Mineral Resources Exploration, 8 - 21 November 2010, Tanzania

The course is open to:
- Earth scientists (geologists, geomorphologists, and engineering geologists) employed in survey departments, mining companies, universities and other organizations, which in one way or other are engaged in earth science fields.
- Participants holding a BSc degree in geology, geography, or related fields.

Registration deadline: 1 October 2010. Register online.

ITC Education Brochure 2011-2012 online
Read the new ITC Education brochure with all the degree, diploma and certificate programmes in geo-information science and earth observation starting in 2011. More information will be available soon at www.itc.nl/Pub/Study/CourseFinder

Programme de Formation au CRTS 2010, Maroc

Spatial Data Infrastructure – Africa Newsletter

Le Centre Royal de Teledetection Spatiale est l'Institution Nationale responsable de l'utilisation, de la promotion et du developpement de la teledetection spatiale au Maroc. Il est charge de coordonner et de gerer les programmes nationaux de teledetection spatiale en partenariat avec les ministr̈res, les universites et les operateurs privates.

Geoinformatics (GFM.4) joint education diploma course of ITC and ARU, September 2010 - June 2011 (9 months), Dar es Salaam, Tanzania

The course is run at Ardhi University (former UCLAS) campus in Dar es Salaam, Tanzania. The aim of the course is to provide participants with the theoretical education and practical training needed to contribute to the digital production of maps and geoinformation using appropriate, state-of-the-art technology with in-depth knowledge in one of the specific aspects of the production process. GFM4 Course Application Form, Contact: Head Geomatics Department, Ardhi University at geomatics@aru.ac.tz.

Funding Opportunities, Awards, Support

UNEP Sasakawa Prize 2011 Nominations

The United Nations Environment Programme (UNEP) is now accepting nominations of sustainable environmental initiatives in emerging and developing countries for the 2011 UNEP Sasakawa Prize. The UNEP Sasakawa Prize awards a cash prize of $200,000 and the 2011 prize will be given out at the ceremony and reception held in Nairobi, Kenya to be held in February 2011. Innovative, groundbreaking and sustainable grassroots environmental initiatives in emerging and developing countries can be nominated for the prize. Socio-environmental projects that promote the following themes can be nominated:

- Promote the conservation and sustainable management of forests
- Contribute to a meaningful reduction in carbon emissions caused by deforestation and forest degradation
- Maintain forest ecosystems to improve resilience to climate change
- Support pro-poor development, especially among forest-dependent communities
- Conserve biodiversity and help secure ecosystem services

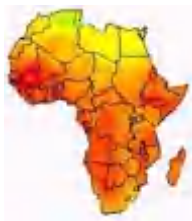The deadline to submit nominations: 30 September 2010.

International Climate Protection Fellowships, Alexander von Humboldt Foundation

The Alexander von Humboldt Foundation's Climate Protection Fellowship programme promotes prospective leaders from emerging and developing countries, who are engaged in climate protection and resource conservation in academia or business, government or non-governmental organizations. Each year up to twenty fellows are scheduled to be funded. They will come to Germany for a year to collaborate with a host they have selected themselves on a joint project dedicated to the exchange of knowledge, methods and techniques. Fellowship specifications include a monthly fellowship amount between 2,150 -2,750 Euros; group programme events: several-week introductory seminar, training courses, final meeting; one to two month intensive German course; and family allowances, lump sum for travel expenses. Deadline for Applications: 15 December 2010.

Research Fellowship Program (RFP), Wildlife Conservation Society (WCS)

The WCS Research Fellowship Program (RFP) is a small grants program administered by the Wildlife Conservation Society (WCS) Institute which, from 1993 to 2007, funded over 300 proposals totaling more than $3 million. The RFP grants help build research capacity for the next generation of conservation practitioners worldwide. The Program supports individual field research projects that have a clear application to conservation. In 2010, the RFP was re-designed and re-launched with a new focus of supporting work directly related to WCS priority land/seascapes, species, and/or the global challenges of wildlife health, climate change, human livelihoods, and natural resource extraction. The Program seeks to support the field work of graduate-level students (Masters, PhD, DVM, or equivalent) who will work with WCS staff in Asia, Africa, Latin America, and in special cases, North America (limited to Native Americans and First Nations, Métis, or Inuit). Collectively, the professionals receiving RFP grants will apply field-tested conservation science to the challenges facing the natural world. The application deadline: 5 January 2011. The maximum award is $20,000. For more information, contact: fellowship @wcs.org.

Bill Gates Foundation Grant Award for Access to Learning

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Bill & Melinda Gates Foundation is currently seeking applications for its Access to Learning Award (ATLA). The Award is part of the Foundation's Global Libraries initiative and honors institutions like public libraries and similar organizations that provide communities, especially the poor and the disadvantaged in developing countries with free access to computers and the internet. Only organizations outside of the United States can apply. The Award will specially recognize those efforts which are innovative in providing the following key services to the needy people:

- Free public access to computers and the Internet.
- Public training to assist users in accessing online information that can help improves their lives.
- Technology training for library staff.
- Outreach to underserved communities.

The Award provides the winning organization with a cash amount of US $1 million. This amount is one-time prize and it can be used by the organization "towards furtherance of the charitable, educational, scientific, or literary purposes." Applications have to be submitted online in English. The deadline to submit applications is 30 September 2010.

Grants for Research on Microinsurance Issues
This third round of research grants has a focus on the following issues and projects proposed should reflect them. However, MIF also welcomes proposals on other topics as well:

- Value from existing microinsurance products for low-income clients
- Impact of health microinsurance on health-seeking behaviours, access, utilization and quality health care
- Understanding factors behind low take up and renewals in conjunction with effectiveness of various sales, marketing, loyalty building and branding approaches
- Public-Private Partnerships in health and agriculture microinsurance
- Efficiency and profitability of comprehensive health microinsurance products
- Efficiency of various distribution channels and methods
- Incentive systems for agents and other front-line staff promoting and selling insurance
- Affordable pricing and the role of subsidies

Proposals should reach MIF by 30 September 2010.

Ashden Awards for Sustainable Energy
Grants for projects in sustainable energy in Africa, Asia, and Latin America. Past grant winners include projects in solar lighting and heating, biogas, small hydro plants, and other renewable energies. Applications for the 2011 Awards are due by 19 October 2010.

Global Agriculture and Food Security Program (GAFSP)
GAFSP is managed by the World Bank on behalf of four government donors and the Bill and Melinda Gates Foundation. GAFSP made its first five awards, and has a second call for proposals in 2010. Applications are invited from the governments of IDA (i.e., lowest-income) countries. Selection of proposals is based on an assessment of need, policy environment, and readiness. Submissions to the GAFSP Coordination Unit at GAFSPCoord@worldbank.org before 1 October 2010.

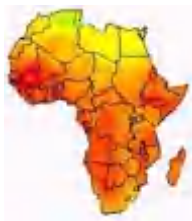## King's School Foundation -Small Grants for Community Forestry
The King's School Foundation (Netherlands) makes small grants for community-based forests and forestry in developing countries. Application deadlines are 01 April and 01 October.

United Nations Permanent Forum on Indigenous Issues - 2011 Call for Proposals
The UNPFII's Trust Fund for the Second Decade gives priority to several issues of central importance for the world's indigenous peoples, including environment. The 2011 call for proposals has been announced for grants of up to US$10 thousand each. The application deadline is 1 October 2010.

Support for International Scientific Meetings
The Academy encourages the organization of international scientific meetings in Third World countries by providing financial support in the form of travel grants for principal speakers from abroad and/or participants from the region. Important: TWAS can only provide support to organizers of scientific events held in developing countries to enable scientists from developing countries to attend their meetings. In other words, TWAS does not provide support to individual scientists wishing to attend a scientific event, even if the event

is taking place in a developing country. Deadline for applications: 1 December 2010 for meetings to be held during July-December 2011.

Employment Opportunities

Vice-President, International Relations, Abidjan, Côte d'Ivoire

The Regional African Satellite Communications Organization (RASCOM) has launched a vacancy for the post of Vice President – International Relations of the Executive Organ of RASCOM. The major responsibilities are:

- Create and maintain the awareness and familiarity with the RASCOM System of a wide range of agreed bodies and authorities throughout the world;
- Ensure relationships between RASCOM and its parties and Signatories are of a high quality;
- Demonstrate the benefits and capabilities of the RASCOM System to African countries (signatories and non-signatories) in order to sensitize non-members;
- Maintaining, updating and upgrading the RASCOM website continuously as part of RASCOM's information communication platform;
- Develop and maintain high quality relationships with key regional and international Organisations (such as ITU, ATU, ECOWAS, ECCAS, SADC, COMESA);
- Maintain a strong relationship with the African Union;
- Design, develop and implement full Public Relations/Communications process and procedures;
- Direct the coordination necessary in the preparation, production and distribution of all documentation for conferences and meetings.
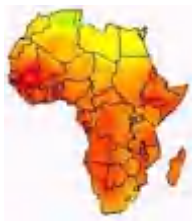
The incumbent should possess: Postgraduate degree in public relations, communication, law, administration or related field and management; Public relations management, Administration and Legal competence and appropriate experience at the top managerial level of at least 8 years in big companies or organizations; Experience of at least 3 years in relationships management at the top managerial level in the field of telecommunications or related field; Mastery of English or French languages, a good understanding of the others useful; Good knowledge of RASCOM Programme is an asset; Good knowledge in computer as working tool. The candidate should be an African; should not be more than 55 years old and must be medically fit and be available for very frequent travels. Applications must reach RASCOM Headquarters no later than 15 October 2010 to The Director General/CEO, RASCOM, 2, Avenue Thomasset, 01 B. P. 3628 ABIDJAN 01, Cote d'Ivoire. The envelope should be marked: "VP/IR - CONFIDENTIAL EXECUTIVE ORGAN".

Research Assistant, Remote Sensing and Geographic Information System (GIS), Cotonou, Benin

The Africa Rice Center (AfricaRice) is looking for a highly qualified Research Assistant Remote Sensing and Geographic Information System (GIS) to join its Remote Sensing and GIS Unit. It is a GSS (General Support Staff) level position based at the temporary headquarters of the Institution in Cotonou, (Republic of Benin). The incumbent will attend to all activities related to Remote Sensing & GIS at AfricaRice and is responsible and reports to the remote sensing & GIS specialist, the Research Assistant will perform Remote Sensing and GIS analysis in the field of water resources and agriculture; assist in mapping rice in Africa; develop methods to map and classify (a-) biotic stresses in rice growing ecologies; assist in preparing presentations and publication of research results; and assist in developing research proposals. The successful candidate should have:

- MSc in Geography, Ecology or Agriculture with specialisation in GIS & Remote Sensing or an MSc in Geo-information Science (remote sensing) with strong background in agriculture and environment.
- At least 2 years post MSc experience in using remote sensing software (ERDAS Imagine or ENVI).
- Experience is handling large hydrological and land use datasets.
- Experience in use of satellite images including IKONOS/QuickBird, Spot, Landsat, Aster and MODIS.
- Strong analytical skills as well as knowledge of spatial statistics.
- Knowledge of rice, rice ecologies and rice-based systems in Africa as well as an appreciation of challenges confronting farmers in the region is an asset.
- Communication skills and good working knowledge in either English or French.

Submit your application by e-mail, fax or mail a detailed CV and a cover letter with the names and addresses of three professional references to: HR Manager, 01 BP 2031 Cotonou (Bénin), Tel (229) 21 35.01.88, Fax: (229) 21 35 05 56, E-mail: AfricaRice-hr@cgiar.org. Applications deadline: 24 September 2010.

Chief Technical Advisor - Gola Forest Programme, Sierra Leone

The Gola Forest Programme is an exciting and pioneering long-term project to conserve the globally important Gola Rainforest National Park in Eastern Sierra Leone. The Programme employs 100 national protected area staff and manages the forest from Kenema Town, 2 hours drive for the Gola forest. The RSPB seeks an experienced and enthusiastic protected area specialist to support the Programme to deliver its objectives over the next 2 years. The post holder should have a relevant degree, extensive experience of protected areas in Africa and an exemplary track record of protected area work.

For complete details of this post (including an application form) download an application pack and include reference number *1270810* on any correspondence. For further information, contact: AlexHipkiss at alex.hipkiss@rspb.org.uk and send application forms to Heather Mitchell at heather.mitchell@rspb.org.uk. Application deadline: 10 September 2010, Interview date: 17 September 2010.

Project Manager - Food Security and Livestock, El Fasher, Darfur, Sudan

COOPI looks for a PM in charge of the Operational coordination for a Food Security and Livestock intervention in rural areas of North Darfur. The incumbent shall:

1. To coordinate and monitor the activities foreseen for the project.
2. Closing monitoring of project activities in the implementation areas.
3. To implement ordinary contacts with institutional and operational interlocutors involved in the project. To take part at coordination meetings.
4. Supervise and monitor tasks and activities carried out by the personal working in the project.
5. Elaborate, in cooperation with the local administrator, the monthly budget for the funds to be received from the HQ in Milan
6. Identify and supervise the financial and economic commitment required for the project implementation
7. Constant monitoring of the security issues in the implementation areas through, OCHA and other organization's security repots, taking part at security meetings, maintaining constant relationship with local authorities and population, informing timely and constantly the Country coordinator about security issues

The incumbent should have: University Degree, a minimum of three years of relevant working experience, of which two in programming and project management, relevant experience in project writing, capacity in preparing reports and updates, fluency in English language, demonstrated ability to work in stressful environments and under pressure, computer literate, confidentiality and diplomacy. Closing date: 13 September 2010. Submit your CV at: http://www.coopi.org/it/lavoroformazione/offertedilavoro/lavoro/545/, Reference Code: RW_88VBX7-90

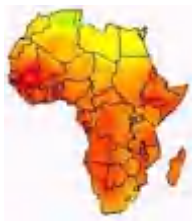**Postdoctoral Researcher in Geophysics**, Earley Gate Campus, UK

The incumbent will work with a novel ground-based radar interferometer to measure and model the deformation of the erupting volcano on Montserrat. This NERC-funded, 2-year project requires someone with a physics/geophysics background and proven ability to make field measurements and use them in numerical models. Experience with radar remote sensing or volcanoes would help but is not mandatory. Informal contact details - Project PI, Professor Geoff Wadge, and Phone: +44 (0)118 378 6412, email: gw@mail.nerc-essc.ac.uk. If you wish to apply using a hardcopy form please email recruitment@reading.ac.uk. Application deadline: 16 September 2010.

Other

Governments don't know how to buy Free Software

For the last ten years, web-based communities have achieved significant advancement in productivity by using collaborative work practices, such as open source software, open standards, and organic data sharing. Open source offers a diverse range of applications which are robust, feature-rich and compliant with current standards. Indeed, the government has publicly recognised its benefits for years. For example, the 2005 release of the Guide to Open Source Software for Australian Government Agencies notes that "[Open Source] has the potential to lead to significant savings in Government."

Despite the potential benefits, however, government uptake of open source is surprisingly low. Why? Because government purchasing practices inadvertently hinder the procurement of open source. Government purchasing guidelines favour business models that build closed systems and apply lock-in

tactics over the sharing and collaborative business practices used by open source communities. Development costs for open and proprietary software are similar – the difference is in the sales model. Once written, open source software is free! Gratis! Costs nothing! This does not mean that geek-fairies write beautiful software in the middle of the night out of the goodness of their hearts for no money at all (although that does happen). With the standard open business model, vendors are paid to maintain, improve and support the software. Upon completion, the software is free for everyone to use and improve – including the vendor's competitors. Consequently, open source vendors tend to charge their first client the full development cost.

Habitat fragmentation

Habitat fragmentation
Michae Hogan

Habitat fragmentation refers to habitat being altered and resulting in a spatial separation of habitat units from a previous state of greater continuity. This phenomenon occurs naturally on a geologic time-scale or in unusual and catastrophic events. However, since the Holocene era, humans have produced dramatic and swift transformation of landscapes throughout the world, resulting in a level of habitat fragmentation that has induced worldwide reduction in biodiversity and interuption of sustainable yields of natural resources. Activities which cause this habitat fragmentation are mainly from agricultural land conversion, urbanization, pollution, deforestation and introduction of alien species. Prior to the dominance of mankind, long term changes engendered by geologic processes or climate oscillations contributed to habitat fragmentation. You can read the rest of the article from the Earth Portal site.

Forest trends report on legal and policy constraints to REDD+ in Ghana

This Forest Trends/Katoomba Group report presents an analysis of the legal and policy framework for tree and forest carbon in Ghana - key elements for REDD+. It shows how the current legal and regulatory structure for forestry and lands in Ghana provides indications and precedents for how carbon rights and benefits might be managed and distributed. But it also highlights significant hurdles and challenges that will need to be addressed. It argues that realizing the full ecological and economic potential of REDD+ will require meaningful legal reforms and innovative application of existing mechanisms in order to effectively address the real drivers of deforestation and ensure permanence in any REDD+ activities.
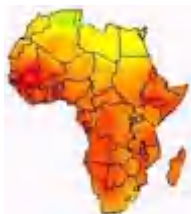
Nile River row: Could it turn a major transboundary water resource issue?

In June, five of the nine Nile countries - Ethiopia, Uganda, Tanzania, Rwanda and Kenya signed a deal to share the water that is a crucial resource for all of them. But Egypt and Sudan, who are entitled to most of the water and can veto upstream dams under a 1929 British-brokered agreement, refused. The Democratic Republic of the Congo and Burundi have not signed yet either and analysts are divided on whether they will or not. Six Nile countries must sign the agreement for it to have any power but Egypt says even that wouldn't change its mind. The five signatories - some of the world's poorest countries have left the agreement open for debating and possible signing for up to a year.

 "Egypt is a gift of the Nile," people like to say in a country that worshipped the river as a God in ancient times. "If Egypt is a gift of the Nile, then the Nile is a gift of Ethiopia," Ethiopians shoot back with growing confidence. And they have a point. More than 85 percent of the waters originate in Ethiopia, which relies on foreign aid for survival and sees hydropower dams as a potential cash cow and central to its plans to become one of Africa's only power exporters. But Egypt is not for turning. Almost totally dependent on the Nile for its agricultural output (a third of its economy) and already worried about climate change, it is determined to hold onto its 55.5 billion cubic metres of water a year, a seemingly unfair share of the Nile's total flow of 84 billion cubic metres. The Egyptians point out that they don't benefit from rains like the upstream countries. Everybody, it seems, has valid points. Nobody is budging. Now some regional analysts are even saying the row could turn into the world's first major water war and similar thoughts are being expressed in cafes from Cairo all the way upriver to Dar es Salaam. The nine countries are due to meet again in Nairobi sometime between September and November.

Comesa backs carbon trade plan

The Common Market for Eastern and Southern Africa (Comesa) will roll out a $50 million (Sh70 billion) initiative to support carbon trade projects. Governments, the private sector and farmers wishing to involve
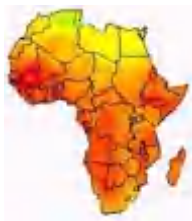
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themselves in carbon trade investments in forestry and other related land uses will get grants. Comesa climate change coordinator Chikakula Miti told The Citizen in Dar es Salaam that the bloc's member states had decided to increase anti-pollution campaigns. "In line with response to climate change impacts in the region, we will start with $50 million, but we hope to have $1 billion in the next three years. We are establishing an organisation that will guide the initiative, which should be operational before the end of this year," said Mr Miti. Carbon trading is an administrative approach used to control pollution by providing economic incentives for achieving reductions in pollutant emissions. There are many similar projects by African countries, but they are not well developed partly due to lack of funding. Certification and verification processes usually need technical experts from abroad that most indigenous farmers wishing to invest in carbon trade cannot hire. According to Mr Miti, the initiative will assist investors aspiring to enter into the lucrative carbon trade projects by developing them, provide them with technical assistance and later on link them to the carbon market.

Farmers have been complaining about unsuitable mitigation programmes such as the carbon financing schemes that include the Clean Development Mechanism and the voluntary carbon markets for being for failing to support smallholder farming and pastoral systems. "This is mainly because these programmes entail complex qualification requirements", Eastern Africa Farmers Federation president Philip Kiriro told journalists recently in Dar es Salaam. "In the second commitment period, we call for their reform to be responsive to African realities and to have a business sense for smallholder farmers."

> Items newly added to this listing of events since the last SDI-Africa issue are marked * NEW *
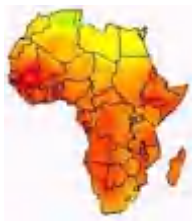
Conferences, Events

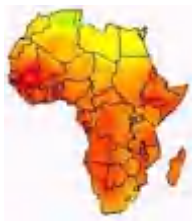| Date	Location	Event
September 2010		
6-8 September 2010	Gaborone, Botswana	**3rd IASTED African Conference on Water Resource Management (AfricaWRM 2010)** Theme: Science and Technology Applications for Health and Sustainable Development.
6 - 9 September 2010	Barcelona, Spain	**International Conference on Open Source Geospatial Software (FOSS4G 2010)**
10-12 September 2010	Singapore, Singapore	**2010 International Conference on Environmental Science and Applications**
13-14 September 2010 * NEW *	Lerici, Italy	**International Conference on Synthetic Aperture Sonar and Synthetic Aperture Radar (SAS/SAR 2010)**
13-15 September 2010	Ghent, Belgium	**8th International Conference on Geostatistics for Environmental Applications (GeoENV 2010)**
14-17 September 2010	Zurich, Switzerland	**GIScience 2010**
15-17 September 2010 * UPDATED *	Nairobi, Kenya	**Kenya's International Conference on Biodiversity, Land use and Climate Change**
15-17 September 2010	Skopje, Macedonia	**International Conference on Spatial Data Infrastructures 2010**
22 September - 2 October 2010	Rotterdam, The Netherlands	**International Conference on ˜Deltas in Times of Climate Change** Contact: o.van.steenis@programmabureauklimaat.nl.
26-29 September 2010 * NEW *	Hong Kong, China	**International Conference on Image Processing (ICIP 2010)**, **Future** Generations of Quality Image & Video Processing.
27-29 September 2010	Johannesburg, South Africa	**Africa FOSSGIS 2010**
27-30 September 2010 * NEW *	Johannesburg, South Africa	**Spatially Enabled Government Southern Africa 2010**

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27 September – 1 October 2010	Ouagadougou, Burkina Faso	**9th EUMETSAT User Forum in Africa**
30 September -1 October 2010	Cape Town, South Africa	**6th International Conference on E-Government - ICEG 2010**
October 2010		
12-14 October 2010 *** NEW ***	Bonn, Germany	**4th United Nations International UN-SPIDER Bonn Workshop on Disaster Management and Space Technology 2010**, The 4C - Challenge: Communication - Coordination - Cooperation - Capacity Development.
13-15 October 2010	Nairobi, Kenya	**East African Project Management Conference - 'EAPMC 2010'**, Deadline for abstracts/proposals: 15 September 2010.
13 - 15 October 2010	Nairobi, Kenya	**Announcement and Call for Papers: 5th ESRI Eastern Africa user conference**, Abstract submission deadline: 15 July 2010.
12-14 October 2010	Cape Town, South Africa	**International Conference on Information and Communiction Technology for Development (ICT4D 2010)**
14-15 October 2010	Niamey, Niger	**Capacity building, professional ethics and organization of the surveying profession in West Africa**. Workshop for West African countries organised by FGF in collaboration with UN-Habitat and GLTN. Co-sponsored by FIG.
17-19 October 2010	Arizona State University, Arizona, USA	**Global Land Project Open Science Meeting: Land Systems, Global Change and Sustainability**
17-22 October 2010 *** NEW ***	Querétaro, Mexico	**8th International Symposium on Land Subsidence (EISOLS 2010)** - Land subsidence, associated hazards and the role of natural resources development.
19-22 October 2010	Singapore	**GSDI-12 World Conference**, Theme: Realizing Spatially Enabled Societies. In conjunction with the 16th PCGIAP Annual Meeting.
24-27 October 2010	Cape Town, South Africa	**22nd CODATA International Conference - Scientific Information for Society: Scientific Data and Sustainable Development**. Organised by the International Council for Science: Committee on Data for Science and Technology.
24-27 October 2010	Cape Town, South Africa	**22nd International CODATA Conference** Theme: Scientific Information for Society: Scientific Data and Sustainable Development
25-29 October 2010	Fez, Morocco	**6th World FRIEND Conference (Flow Regimes from International Experimental and Network Data)** Theme: Global Change: Facing Risks and Threats to Water Resources. Contact: friend2010@msem.univ-montp2.fr.
25-29 October 2010	Addis Ababa, Ethiopia	**8th International Conference of the African Association of Remote Sensing of the Environment (AARSE2010)**. Contact: dozie@ezigbalike.com, info@aarse-africa.org.
November 2010		
1-7 November 2010	Hamburg University	**3rd worldwide online climate conference CLIMATE 2010/KLIMA 2010** Contact: info@klima2010.net.
3-5 November 2010	Cape Town, South Africa	**4th International Development Informatics Association Conference: IDIA 2010**
8-11 November 2010	Sede Boqer Campus, Israel	**3rd International Conference on Drylands, Deserts and Desertification** Contact: Dorit Korine, desertification@bgu.ac.il.
8-11 November 2010 *** NEW ***	Anchorage, Alaska	**Ecosystems 2010: Global Progress on Ecosystem-based Fisheries Management**
8-12 November 2010	Hulshort, The Netherlands	**Dynamic Interlinkages between Social and Ecosystem Changes: Towards a Europe Africa Partnership**

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10-12 November 2010 *** NEW ***	Wageningen, The Netherlands	**Scaling and Governance Conference 2010** "Towards a New Knowledge for Scale Sensitive Governance of Complex Systems.
11-12 November 2010	Mombasa, Kenya	**FIG Africa Task Force Workshop**. Organised by FIG Africa Task Force.
11-12 November 2010 *** NEW ***	Groningen, The Netherlands	**1st International UrbanFlood Workshop on Dike Monitoring and Flood Safety 2010** - Safer dikes are not only stronger but also smarter dikes: Sensing; ICT; Modelling; Trials.
19-21 November 2010	Munyonyo, Kampala Uganda	**2010 Pilot International Conference on Global Sustainable Development**. Theme: Climate Change, A challenge to Businesses in the 21st Century. Abstract deadline: 30 May 2010.
22-25 November 2010 *** NEW ***	Djibouti, Republic of Djibouti	**3rd East African Rift GeoThermal Conference (ARGEO-C3 2010)** - Exploring and Harnessing Renewable and Promising GeoThermal Energy.
23-25 November 2010	Cape Town, South Africa	**Map Africa 2010**
24 November 2010	Venice, Italy	**ICGSE 2010: International Conference on Geological Sciences and Engineering**
24-26 November 2010	London, UK,	**Invitation: expressions of interest to attend the "Commonwealth Climate Change Communication Conference" (C5)**,
29 November - 3 December 2010	Tunis, Tunisia	**5th Session of the International Conference Geotunis 2010** Theme: The use of GIS and remote sensing for sustainable development. Contact: atigeo_num@yahoo.fr.
22-24 November 2010	Cape Town, South Africa	**Leadership & Management Studies in Sub-Sahara Africa 2010 Conference**
December 2010		
5–7 December 2010 *** NEW ***	Riyadh, Saudi Arabia	**4th International Conference on Water Resources and Arid Environments (ICWRAE 2010)** - Water Resources; Water Conservation; Arid Environments; Utilization of New Technologies in the Study of Arid Environments and their Natural Resources.
5-9 December 2010	**Bielefeld, Germany**	**Environmental Degradation and Conflict: From Vulnerabilities to Capabilities**, Deadline for application: 15 August 2010.
13-16 December 2010	Abu Dhabi	**Eye on Earth Summit**
14-16 December 2010	Benghazi, Libya	**International Arab Conference on Information Technology (ACIT 2000),** Deadline for paper submission: 30 June 2010.
2011		
8-14 January 2011	Johannesburg, South Africa	**23rd Colloquium of African Geology**
10-14 January 2011	Hyderabad, India	**International Forestry Resources and Instituions panels for the 13th Biennial Conference of the International Association for the Study of the Commons (IASC)**
1 January - 31 December 2011	Worldwide	**International Year of Forests 2011**
18-21 January 2011	Hyderabad, India	**Map World Forum 2011**
21-25 February 2011	Nairobi, Kenya	**26th Session of the UNEP Governing Council/Global Ministerial Environment Forum**
26- 28 February 2011	Singapore, Singapore	**2010 3rd IEEE International Conference on Signal Acquisition and Processing (ICSAP 2011)**
6- 8 April 2011	Stellenbosch, South Africa	**4th IUPAP International Conference on Women in Physics**

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10-15 April 2011	Sydney, Australia	**34th International Symposium on Remote Sensing of Environment (ISRSE2011)** Contact: Ian Dowman, idowman@cege.ucl.ac.uk.
18- 21 April 2011 *NEW*	Exeter, UK	**8th International Symposium on Weather Radar and Hydrology (WRaH 2011)** - User applications of weather radar for flood forecasting and water management
9-13 May 2011	Sun City, South Africa	**5th International Wildland Fire Conference (WildFire 2011)** Contact: info@wildfire2011.org.
18-22 May 2011	Marrakech, Morocco	**FIG Working Week & XXXIV General Assembly** Contact: FIG Office, fig@fig.net.
20 - 22 May 2011	Agadir	**Climate Change, Agri-Food, Fisheries, and Ecosystems: Reinventing Research, Innovation, and Policy Agendas for an Environmentally and Socially-Balanced Growth**, Deadline for abstract/proposal submission: October 15, 2010. Contact: Dr. Mohamed Behnassi at behnassi@gmail.com.
20- 25 March 2011	Cape Town, South Africa	**2011 African Conference on Software Engineering and Applied Computing**
18-22 May 2011	Marrakech, Morocco	**Bridging the Gap between Cultures**. FIG Working Week and General Assembly.
22- 26 May 2011	California, United States	**World Environmental and Water Resources Congress**, Deadline for abstracts/proposals: 7 September 2010.
3-8 July 2011 *NEW*	Paris, France	**25th International Cartography Conference (ICC 2011)**
22-26 August 2011 *NEW*	Wellington, New Zealand	**5th International Symposium on GIS/Spatial Analyses in Fishery and Aquatic Sciences**
4 - 8 September 2011	Cape Town, South Africa	**The 6th Science Centre World Congress**
October 2011	Cairo, Egypt	**AfricaGIS2011 Conference**
28 November - 9 December 2011	South Africa	**17th Conference of the Parties to the UNFCCC and 7th Meeting of the Parties to the Kyoto Protocol** Contact: UNFCCC Secretariat, secretariat@unfccc.int.
8-12 July 2012	San Diego, California USA	**ESRI User Conference**
8-12 July 2013	San Diego, USA	**ESRI International User Conference**

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Gordon Ojwang', Editor, SDI-Africa AT gsdi.org or sdiafrica@rcmrd.org
or gojwang@rcmrd.org

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