Spatial Data Infrastructure – Africa Newsletter

GSDI
Global Spatial Data Infrastructure

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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
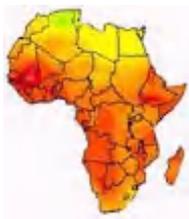
Input to this Issue

Thank you to Kate Lance, NASA/SERVIR-Africa (USA), Hussein Farah, RCMRD (Kenya), Harlan Onsrud, University of Maine (USA); Karen Levoleger, Patricia Solís, AAG (USA); John Schaeffer, Junipergis (SA) and Valérie Thébault, Geosystems (France) for their contributions to this issue of the newsletter.

SDI News, Links, Papers, Presentations

July 2012 GISCorps announcement for projects in Zimbabwe, South Africa, and Nigeria

The request for GISCorps volunteers came from Zimbabwe (Savetech Solutions, 2011-12 program), South Africa (Endangered Wildlife Trust, 2011-12), and Nigeria (Geographical Resources for Development Centre, , 2010-11 program). These are all GSDI projects and are either interested in developing a metadata Geo Portal (Zimbabwe and South Africa) or, already have one and would like to enhance it further (Nigeria). Due to similarities between these projects (all interested in an Open Source solution), we decided to form a team of four volunteers and provide assistance to them in a collaborative manner.

Following a thorough search, four volunteers were selected and they are Karl Tiller, a Technical Advisor in the GIS Centre of Makerere University, funded by Horizont3000 as the Project Manager. The other three GIS Specialists are from: Guatemala (Raul Calderon), Pakistan (Asmat Ali), and California (Chris Nicholas). Karl has created a wiki site and the team has been collaborating via that site. Information is on the GISCorps Web site. Link to GIM International July 2012 article "GSDI Small Grants Program"

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Committee of Experts on Global Geospatial Information Management: Special reports on regional and thematic activities, New York, 13-15 August 2012

The present paper summarizes the report1 transmitted by the Secretary-General to the Committee on the regional and thematic activities of the following five entities: the Permanent Committee on GIS Infrastructure for Asia and the Pacific, the Permanent Committee for Geospatial Data Infrastructure of the Americas, the Committee on Development Information, Science and Technology of the Economic Commission for Africa, EuroGeographics and the Joint Board of Geospatial Information Societies.

- The report submitted by the Permanent Committee on GIS Infrastructure for Asia and the Pacific describes the activities of the Permanent Committee's three working groups: (a) geodetic technologies and applications; (b) geospatial data management and services; and (c) spatially enabled Government and society. In addition, it describes the activities of the Economic and Social Commission for Asia and the Pacific. The report also addresses the growing concern and challenges in the Asia-Pacific region on geospatial information management.

- The report submitted by the Permanent Committee for Geospatial Data Infrastructure of the Americas describes the Permanent Committee's activities related to: (a) institutional capacity-building; (b) standards and technical specifications; (c) best practices and guidelines for the development of spatial data infrastructures; (d) innovations in national geospatial information authorities; (e) knowledge gathering on topics relevant to spatial data infrastructures for the region; (f) assessment of the status of developments in spatial data infrastructures in the Americas; and (g) technological means for discussion related to spatial data infrastructures. The report provides an overview of the progress of work under the seven thematic areas.

- The report submitted by the Committee on Development Information, Science and Technology of the Economic Commission for Africa describes the efforts to promote the United Nations Initiative on Global Geospatial Information Management in Africa through the Addis Ababa Declaration on Geospatial Information Management, which was adopted by a representative group of African geospatial information practitioners in August 2011. Central to the Declaration is the African Action Plan on Geospatial Information Management.

- The report submitted by EuroGeographics describes the regional activities in Europe with regard to: (a) the development of a technical infrastructure to deliver, as the European Location Framework, national reference data; and (b) the support from national geospatial information authorities to the European Commission's disaster and emergency management service by providing access to their national reference data, as stipulated in an agreement signed with the European Environment Agency.

- The report submitted by the Joint Board of Geospatial Information Societies addresses the issues identified by the United Nations Initiative on Global Geospatial Information Management working group on inventory of issues. It provides information on the support and input that the Joint Board, collaboratively through its member organizations, can offer regarding the issues identified.
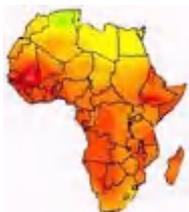
Mapping: the unexpected solution to business problems in financial services sector

Most people would be hard-pressed to explain "what is", but chances are: they are using it in their daily lives. From location-aware mobile tools to satellite imagery such as Google Maps or GPS driving directions, we are using geospatial data for a number of purposes every single day. Geospatial data refers to information associated with a particular location – simply put anything that can be put on a map. The volume of data is exploding, and technological advances have allowed businesses to store, catalogue, and display the information for business or personal purposes. Companies who are able to use this data effectively have a significant competitive advantage – particularly in the financial services sector.

Organisations like the World Bank have been using geospatial data for their projects surrounding the effects of climate change, urbanisation, public health and land use. This enables teams to view all other Bank projects in their country or region of interest and access historic information about the environmental and human living conditions in that particular area. This enables the organisation to make informed decisions regarding loans and relief across different territories. Geospatial data (through Geographic Information Systems, or GIS) has also come to forefront in South Africa, as the advancement in communication and need for dissemination of financial information and services have had a keen impact on the banking industry in particular. "GIS can provide any company with the ability to conduct market and competitor analysis, identify customers, plan for expansion, or to simply manage their assets," Mike Steyn, of Aspire Solutions
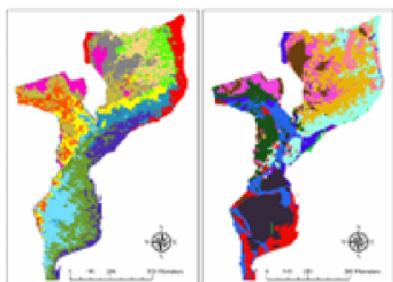
explains. Steyn believes that maps are the single most effective way to display complex information so managers can use it for decision making. "With a map, you can see in seconds what might otherwise take hours of combing through diagnostic information buried deep in complex multi-page tables," he says. "You instantly enhance your understanding of risk, customer interaction and economic decisions."

This is particular popular in the insurance and risk management industries, where GIS is used to discern risk patterns in clients portfolios. Risk levels are based on factors as such density of buildings, environmental disasters and property values – which are all clearly displayed with geospatial data. Disaster management services can use datasets such as satellite imagery and topographic and street maps to bring aid to communities during a catastrophic event. Steyn says "Humans are fundamentally visual thinkers, and seeing things mapped in space can help us to see patterns and connections that are otherwise obscured. Spatial systems are a great way to bridge the gap between data collection and business intelligence."
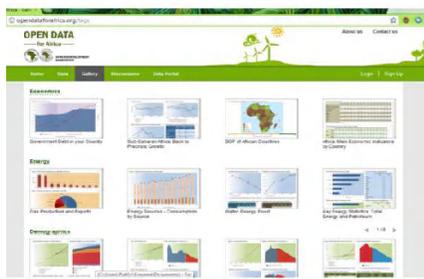
Geospatial data and weather risk mapping for agriculture risk management

Many regions experience shocks of severe weather variability and inter-seasonal volatility that affect cash crops, food security, and consequently damage livelihoods. Droughts; floods; extreme temperatures; changes in disease ranges; and the shifting timing of rain patterns are just a few of the risks agriculturalists face across the globe. In poorer countries these stressors can often cause significant hardships due to the strong socioeconomic dependency on agricultural production. All the while threats from weather variability are predicted to become more extreme due to climate change (higher impact and greater frequency). To address significant agricultural weather risk, stakeholders need more targeted geospatial decision support tools at appropriate scales for risk assessment, adaptation, and mitigation planning. The quality of these tools will largely be influenced by the availability and resolution of geospatial data, and the ability to put the data into easily accessible systems which can be utilized in an effective manner by actors in developing countries. Exciting developments are already underway showing how complicated data can, when made accessible, be used to greatly inform and improve agricultural risk management programs and strategies.
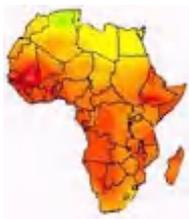
Understanding Risk – Open Data Source

In order to build resilient societies, policy-makers and the public must have access to the right data and information to inform good decisions - decisions such as where and how to build safer schools, how to ensure farmers against drought, and how to protect coast cities against future climate impacts. Too often, this data and information is fragmented across government ministries and the private sector and unavailable to decision-makers and at-risk populations. Sharing data and creating open systems promotes transparency, accountability, and ensures a wide range of actors are able to participate in the challenge of building resilience.

The joint UN/World Bank flagship publication, "Natural Hazards, Unnatural Disasters: the Economics of Effective Prevention," highlights the importance of data sharing to reducing vulnerability to natural disasters. Likewise, the Hyogo Framework for Action calls for governments to create and "widely disseminate risk maps and related information to decision-makers, the general public, and communities at risk." What are the specific challenges that the open data movement are facing in the disaster risk management context? What have we learned from early attempts at building open data initiatives around hazard, exposure, and risk information? What partnerships can be built at the international level to help countries open their own data? What challenges and opportunities will these efforts face in years to come?

Open Access to Geo-spatial Information - Geo-spatial information is fundamental to planning and decision making in most situations, including disaster and risk management. Fast and ready access to geo-spatial information helps in saving lives in times of disaster but preferably in preparedness and mitigation. There are numerous issues encountered to access this information, including restrictions to access or use and the affordability of the information. These issues are discussed from the perspective of the primary custodian of fundamental geo-spatial information, namely the National Mapping Agency, in South Africa and other African

countries. Many of which are issues being addressed in the Mapping Africa for Africa initiative. Dr. Derek Clarke, Chief Director, National Geo-spatial Information, South Africa.

Open Data for Africa Platform - The presentation gives a brief overview on data dissemination at the AfDB, the launch of the Open data for Africa Platform, the main functionalities of the system and future extension of the system to other African countries. Mr Beejaye Kokil, Division Manager, Economic & Social Statistics Division, African Development Bank.

New ILRI Report: Mapping of poverty and human-animal infectious disease hotspots

The maps reveal the extent of zoonotic diseases – i.e. diseases such as rabies, anthrax, or ringworm that can be transmitted from vertebrate animals to humans - and presents a 'top 20′ list of geographical hotspots. Animal-borne diseases pose a heavy burden for one billion of the world's poor: an estimated one-third of global diarrheal disease is thought to have zoonotic causes. The study, which was conducted by the International Livestock Research Institute (ILRI), the Institute of Zoology (UK) and the Hanoi School of Public Health in Vietnam, maps poverty, livestock-keeping and the diseases humans get from animals. It aimed to identify areas where better control of zoonotic diseases would most benefit poor people.

All zoonoses are not equal and a first step of the study was to categorise zoonoses according to epidemiology and impact. Three groups were considered:

- Endemic zoonoses are present in many places and affect many people and animals.
- Outbreak or epidemic zoonoses are sporadic in temporal and spatial distribution.
- Emerging zoonoses newly appear in a population or have existed previously but are rapidly increasing in incidence or geographical range. Many occur as outbreaks.

The researchers initially reviewed 56 zoonoses that together are responsible for around 2.5 billion cases of human illness and 2.7 million human deaths per year. A more detailed study was made of the 13 zoonoses identified as most important, based on analysis of 1,000 surveys covering more than 10 million people, six million animals and 6,000 food or environment samples. The analysis found high levels of infection with these zoonoses among livestock in poor countries. For example, 27 per cent of livestock in developing countries showed signs of current or past infection with bacterial food-borne disease - a source of food contamination and widespread illness. The researchers attribute at least one-third of global diarrheal disease to zoonotic causes, and find this disease to be the biggest zoonotic threat to public health.
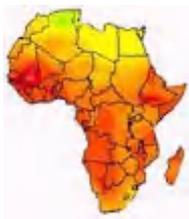
Mapping recent decadal climate variations in precipitation and temperature across Eastern Africa and the Sahel, Chapter 14 for "Remote Sensing of Drought: Innovative Monitoring Approaches". Chris Funk and Joel Michaelsen.

This chapter presents a novel interpolation approach that combines long-term mean satellite observations, station data, and topographic fields to produce grids of climate normals and trends. The approach was developed by the Climate Hazard Group (CHG) at the University of California, Santa Barbara (UCSB) to support food security analyses for the US Agency for International Development‟s (USAID) Famine Early Warning Systems Network (FEWS NET). The resulting FEWS NET Climatology (FCLIM) combines moving window regressions with geostatistical interpolation (kriging). Satellite and topographic fields often exhibit strong local correlations with in situ measurements of air temperature and rainfall. The FCLIM method uses these relationships to develop accurate and unbiased temperature and rainfall maps. The geostatistical estimation process provides standard error fields that take into account the density and spatial distribution of the point observations. These error fields are especially important when evaluating climate trends. Numerous climate change analyses present trend evaluations without assessing spatial uncertainty. In many of these studies the number of recent observations can be very low, potentially invalidating the results. This study presents analyses for the Sahelian and Eastern African rainfall and air temperatures. The results indicate significant rainfall declines in Sudan, Ethiopia and Kenya. Every country exhibits significant increases in average air temperatures, with Sudan warming the most. The chapter concludes with a short discussion of how these results are being used to guide climate change adaptation, with a case study focused on Ethiopia.

Challenges for drought mitigation in Africa: The potential use of geospatial data and drought information systems

Sergio M. Vicente-Serrano, Santiago Beguería, Luis Gimeno, Lars Eklundh, Gregory Giuliani,
Derek Weston, Ahmed El Kenawy, Juan I. López-Moreno, Raquel Nieto, Tenalem Ayenew,
Diawoye Konte, Jonas Ardö, Geoffrey G.S. Pegram
Abstract

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Understanding, monitoring and mitigating drought is a very difficult task as a consequence of the intrinsic nature of the phenomenon. In addition, assessing the impact of drought on ecosystems and societies is also a complex task, because the same drought severity may have different consequences in different regions and systems due to the underlying vulnerabilities. New technologies based on geospatial information are available to determine the risk and vulnerability of a system to a drought and to develop monitoring and early warning systems based on real-time information to support decision making. To improve drought preparedness and mitigation, geospatial datasets based on climate information, Earth Observation Systems and statistical and dynamical modeling methodologies can make a noticeably difference in mitigating drought impacts in Africa. In this article we illustrate how the development of drought information systems based on geospatial technology, that combines static and real-time information, could improve the possibilities of drought mitigation in Africa. We stress that it is necessary to go beyond past attempts to manage drought risk based on a reactive crisis-response approach, by promoting drought mitigation and preparedness at the national and regional levels. For this purpose the development of drought information tools is fundamental for the implementation of drought management plans and to support real-time decision-making. 2012 Elsevier Ltd.

Mapping African agriculture - a wealth of data comes online

Data of all kinds are notoriously scarce for Sub-Saharan Africa, and geospatial data - that is, maps - on agriculture, poverty, and the environment are no exception. The IFPRI researchers in HarvestChoice, a joint program with the University of Minnesota, have generated new spatial data, harmonized them with data compiled from a range of other sources, and made the entire collection available at a single website (www.harvestchoice.org), along with tools for exploring the information in creative ways.

In addition to being scarce, data to support agricultural policy and investment decisions in Sub-Saharan Africa have typically been too "coarse" - available only on a national or regional scale. "But there's actually lots of variation within countries in terms of the environment, farming practices, and market opportunities," says Stanley Wood, the leader of the HarvestChoice team at IFPRI. Rainfall, soil fertility, and access to infrastructure, for example, may be quite different for communities separated by just a few kilometers. "At a finer scale," he says, "you pick up more of the real-world variability that farmers and would-be service providers face." To better reveal the spatial distribution and patterns of farming in Sub-Saharan Africa, HarvestChoice created MAPPR, a tool for interacting with the core collection of detailed, high-resolution maps covering all aspects of agricultural production.
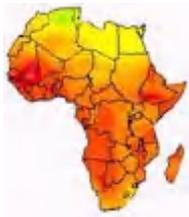
MAPPR divides the continent into 10-kilometer by 10-kilometer squares, allowing users to home in on any one of 300,000 squares or to summarize indicator values for all squares in a specified watershed, agroecological zone, or market area. There are currently map layers for more than 100 indicators, including population density, poverty, rainfall, crop harvested areas, and travel time to market. MAPPR allows users to combine indicators from multiple layers to produce customized maps, charts, and tables. Using MAPPR, a policymaker can identify regions of a country with high concentrations of both poverty and cropland, or an investor thinking about building a food-processing plant can search for locations that combine production of sufficient quantities of a particular crop with good access to markets. Besides maps and mapping tools, the HarvestChoice website provides datasets, working papers, presentations, and spatial and economic models - all at no cost.

Integration of World Bank's GeoNode into SERVIR-Africa's One-Stop portal

To provide users with a single point of access to geospatial information, SERVIR-Africa is showcasing the incorporation of web services from external data providers into its One-Stop Geospatial platform. We are now working with World Bank to provide seamless integration between the SERVIR portal and GeoNode - an open source GIS mapping platform that allows users quick and easy sharing of data and creating interactive maps.

The World Bank, through the Open Data for Resilience Initiative, has set up a GeoNode instance at RCMRD (available at horn.rcmrd.org) that aims at sharing all the data collected by humanitarian and development agencies working on the Horn of Africa (HoA) drought response.

GeoNode renders their services through Open Geospatial Consortium -compliant standards. As a proof-of-concept, SERVIR has 'plugged' into two main components of GeoNode. These two components are:

1. Complete metadata catalog – Through SERVIR's Data Catalog module at www.servirglobal.net/EastAfrica/MapsData/DataCatalog.aspx, users can dynamically search and access metadata records archived in GeoNode.

2. Web mapping server for publishing and sharing data – Through SERVIR's Interactive Mapper, layers hosted by GeoNode that show the food security outlook in East Africa for September 2011 - http://www.servirglobal.net/EastAfrica/MapsData/InteractiveMapper.aspx?SavedMapID=384e1d42-d610-4b92-8f00-73702aa5ad7d. See the same layers at http://horn.rcmrd.org/maps/3/view but with slightly different layer names in the table of contents in GeoNode.

The next steps will be to review the entire collection of GeoNode data, and to select a subset for incorporation into SERVIR One-Stop. A metadata synchronization scheme has already been developed that will allow for extended search of additional GeoNode metadata records. The integration of external web services into SERVIR's Geospatial One-Stop platform will not only make an increased amount and variety of spatial information available to end users, but will also enable users to easily integrate information from a variety of sources. This integration represents a tremendous improvement in access to geospatial information for decision making in Africa.

SERVIR to produce land cover datasets for East Africa

The US Environmental Protection Agency is working on a project to help quantify changes in green-house gas (GHG) emissions over time and across countries. For this, the agency needs standardized land use/land cover maps as inputs to their Agricultural Land Use (ALU) tool for their GHG inventory. The SERVIR platform will produce land cover maps (for 2000, 2005, and 2010) for each of six African countries (Malawi, Zambia, Rwanda, Tanzania, Botswana, and Namibia) for this purpose.

The SERVIR platform will provide consistent, reliable, and relevant Land Use, Land Use Change and Forestry (LULUCF) maps and data for the GHG inventory by harmonising data compilation at national and regional levels. The maps will be based on Landsat data as well as historical maps from stakeholders. SERVIR will also compile auxiliary data and documentation and provide training in land use/land cover maps production. The East and South African countries are eager to assist in completing the baseline GHG inventories so they can learn to perform future inventories independently.
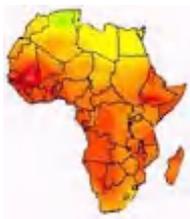
This project will produce land cover maps to feed into historical GHG inventories; stronger regional networking opportunities for land cover data sets to promote efficient use of limited resources such as forests; development of expertise in the region; and the new capacity of individual countries to accurately inventory GHG in the future. It is hoped that this project will help RCMRD (Regional Center for Mapping of Resources for Development) become a center of excellence in conducting such inventories so that other countries will follow their lead. Source: SERVIR

SERVIR and RCMRD hold Green House Gas inventory development workshop in Rwanda

On 19-22 June 2012, SERVIR-Africa and Regional Center for Mapping of Resources for Development (RCMRD) held a land cover mapping for Green House Gas (GHG) inventories workshop in Kigali, Rwanda. The event, held in support of the U.S. Environmental Protection Agency GHG Inventory Capacity Building project in East and Southern Africa, was officially opened by Dr. Hussein Farah, RCMRD Director General.

SERVIR-Africa, through RCMRD implemented this capacity building project to enable six African countries - Malawi, Zambia, Rwanda, Tanzania, Botswana, and Namibia - produce land cover and land use change maps as an input for their bi-annual communication towards the United Nations Framework Convention on Climate Change (UNFCCC). The project will provide training for national GHG teams and provide baseline data in the form of Landsat satellite imagery and land cover maps for 2000 and 2010. The maps are based on a classification of Landsat satellite data as well as ancillary data, which can include agricultural census, land use surveys, and forest maps and is used to guide and verify the classification of digital satellite imagery into land cover maps. The Rwanda workshop served as a venue for (1) explaining and discussing GHG inventory project objectives and methodology, (2) informing the RCMRD team of current land cover mapping efforts in Rwanda and gathering the existing data, (3) developing the description of land cover and land use categories, and (4) assessing capacity and training needs with respect to land cover mapping. Representatives from Rwanda

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government departments and the National University of Rwanda participated in the workshop, which was supported by USAID, RCMRD/SERVIR Africa, NASA, and the Rwanda Environment Management Authority (REMA).

Terrorist attacks in Kenya impeding scientific research

Safety concerns are affecting communities and researchers along the Kenyan coastline. Terrorist attacks and the kidnapping of foreigners could cause a serious blow to Kenyan marine research, forcing scientists to cancel projects in fear for their lives,SciDev.Net has heard from participants at the 12th International Coral Reef Symposium in Cairns, Australia (9–13th July).

Scientists have expressed concerns that armed terrorist groups linked to the Somalia-based Al-Shabaab terrorist group are making it difficult to conduct marine research and conservation in the area.

Tim McClanahan, a senior conservation zoologist at the Wildlife Conservation Society (WCS), told SciDev.Net that the activities of pirates have made the management of marine ecosystems in Kenya's coastal region challenging, with some scientists canceling their work in certain areas or withdrawing altogether.

McClanahan explained that due to the region's proximity to the Somali border and the lawlessness it was experiencing, it was difficult to enforce management schemes, carry out patrols, undertake research, or ensure the community appreciated sustainable resource exploitation. Al-Shabaab militants are suspected to be behind the surge in violence and kidnappings that have made the coastal area and other parts of Kenya insecure over the past few years. Innocent Wanyonyi, marine researcher at the Mombasa-based Coastal Oceans Research and Development in the Indian Ocean (CORDIO) said that the incidents have created a fear of further attacks, forcing scientists to factor in terrorism as a key risk when planning new research or coastal development projects. Last year, Nature reported that a surge of piracy off the coast of Somalia was preventing oceanographers and meteorologists from collecting data vital to understanding rainfall patterns and the Indian monsoon. Link to the story in Nature

SciDev reported in May 2011 that a major international research project in Africa was to lose vital data because of the suspension of fieldwork in Mali, Mauritania, and Niger, after the French government declared the area a 'no go zone' for its nationals,. The African Monsoon Multidisciplinary Analysis (AMMA) project, involving more than 400 scientists from 140 institutions in 30 countries, is led by French researchers in the three countries and depends on sophisticated monitoring equipment. It aims to provide scientific research on the West African monsoon and understand how it affects key issues such as food security and water availability. The ministry's decision came after French citizens and Africans working for French organisations were targeted by 'Al-Qaeda in the Islamic Maghreb' - a group thought to be behind the bombing of a café in Morocco, the previous month.
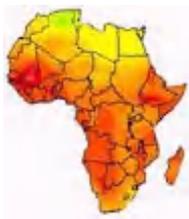
Google Maps adds live traffic for SA

Google uses crowd-sourcing to collect and analyse data from GPS-enabled devices running Google Maps to create real-time traffic updates. Google has expanded its live traffic coverage to SA, with the service now available for the Cape Town, Johannesburg and Pretoria areas. The traffic overlay on Google Maps shows current traffic conditions (with a colour-coded system that rates roads on a scale from fast to slow), and also provides estimated travel times based on traffic conditions.

The service uses crowd-sourcing technology and analyses data from GPS-enabled phones that have the Google Maps application installed. The anonymous data collected by Google includes the current speed at which the device is moving. Anyone can now view the current traffic flow in the covered areas by clicking on the "Traffic" widget in Google Maps online, or by selecting the "View Traffic" option in the mobile application.

SA is one of the seven new regions to receive the service, and Google has also been consistently expanding the service in areas that it already covers, so the inclusion of other local cities could be on the cards soon. Google recently announced a number of significant improvements to its Google Maps service, including offline mobile maps and the 3D imaging of metropolitan areas in Google Earth. Google is facing increased competition from Apple in the digital mapping space. Apple recently announced its plans to drop Google

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Maps from its iOS devices, opting instead for its own newly developed in-house solution for the next iteration of its mobile OS that will have turn-by-turn voice navigation and live traffic.

Call for Papers: A special issue on geospatial analysis of volunteered geographic information with Computers, Environment and Urban Systems

Volunteered geographic information (VGI), created by volunteers through crowdsourcing, represents a new phenomenon arising from Web 2.0 technologies. It constitutes one of the most important types of user-generated content, and is quickly becoming a new source of asserted geographic information, complementing the traditional authoritative geographic information collected by government agencies or private organizations. In the context of this call, VGI broadly defined as any georeferenced information that is freely distributable without copyright constraints for sharing among those interested. The increasing availability of VGI of various kinds such as OpenStreetMap, and digital traces of GPS, cell phones, Flickr photos, and tweets has dramatically transformed traditional geography to data-driven computational geography.

Call is for original papers that focus on geospatial analysis of VGI for a better understanding of geographic forms and processes, or of urban structure and dynamics in particular, as well as of human activities individually or collectively with various platforms of social media. Of particularly interest are papers that use VGI at a large scale to uncover hidden and surprising patterns.

Paper submission: Original papers with a length of 6000-7000 words. Follow the journal's Guide for Authors - http://ees.elsevier.com/ceus/. Please consider the option of supplementary data including raw data, derived data and source codes. Important dates: Paper submission due: 30 December 2012; Acceptance notification: 30 May 2013; Publication: 30 August 2013.

Editors for the special issue: Bin Jiang, Department of Technology and Built Environment, Division of Geomatics, University of Gävle, Sweden, Email: bin.jiang@hig.se and Jean-Claude Thill, Department of Geography and Earth Sciences, University of North Carolina at Charlotte, USA, Email: Jean-Claude.Thill@uncc.edu.

My Community Our Earth (MyCOE)/SERVIR accepting applications for student research fellowships in Africa

The My Community Our Earth (MyCOE)/SERVIR Initiative in East Africa is accepting applications for a new global fellowship program designed for undergraduate and graduate students in eligible countries to build regional research capacity for using geography and geographic information sciences. The first round of fellowships will be offered to students in eligible countries in Africa.

The MyCOE / SERVIR Initiative in East Africa is a 10-month fellowship program for undergraduate and graduate students who have ideas and plans for research addressing Climate Change, Agriculture, or Food Security using geographic technologies. The students must be currently enrolled (in any field) at an institution of higher education in an eligible country. Students are invited to propose a research project and will be competitively selected on the basis of their long-term potential to contribute to these topics in the region. The MyCOE / SERVIR program will provide students with customized capacity training in GIS, remote sensing, GPS, and/or spatial techniques to help them enrich their research proposals. They will also receive professional development, have access to additional mentoring by international experts, and engage in an online community with other fellows.
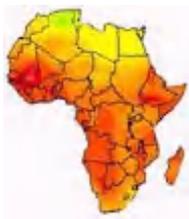
For details on how to apply, eligibility, and more - http://www.aag.org/mycoe.servir/eastafrica.

Submissions must be received by August 31, 2012. Official language for this initiative is English. For information on previous MyCOE/SERVIR projects and their results, see http://servirglobal.net/Global/Articles/tabid/86/Article/464/2009-2010-mycoe--servir-biodiversity-initiative-in-africa.aspx and http://www.servirglobal.net/EastAfrica/Articles/tabid/242/Article/576/results-from-mycoeservir-biodiversity-initiative.aspx. You can contact Dr. Patricia Solís at psolis@aag.org if you still need more information.

Geospatial World Forum 2013 dates announced

Zandaam, The Netherlands: Geospatial Media and Communications announced the fifth edition of its flagship conference – Geospatial World Forum. The conference will be held from 13-16 May 2013 at Beurs-World Trade Center, Rotterdam, The Netherlands. With the theme

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Monetising Geospatial Value and Practices the conference aims to assess ways in which each geospatial stakeholder community, be it the government decision makers, end-users or technology developers/providers can extract the maximum utility and benefits out of their investments into geospatial infrastructure and carry forward the value created by this industry. Abstracts are invited on relevant topics, last date of submission being 15th October, 2012. Online submission can be done at www.geospatialworldforum.org.

7th Annual AFREF & GNSS Data Processing Course, 3-14 September 2012, Nairobi, Kenya

The RCMRD in conjunction with the Center of Geophysics of the University of Lisbon (CGUL), Portugal and HARTRAO South Africa have been conducting a course on African Reference Frame (AFREF) and Global Navigation Satellite System (GNSS) Data Processing at RCMRD offices in Nairobi Kenya annually since 2006. This year the training is scheduled to take place from 3rd September to 14th September 2012 in Nairobi, Kenya. The Objectives of the course is to provide technical skills in the installation and management of GNSS base stations, data handling, dissemination and processing towards AFREF realization. Registration is currently going on. For more information, contact Mr. Muya Kamamia at muyack@rcmrd.org.

AARSE 2012 International Conference, 29 October- 2 November 2012, El Jadida, Morocco.

The Conference Theme: Earth Observation & Geo-information Sciences for Environment and Development in Africa: Global Vision and Local Action Synergy.

The 9th AARSE International Conference, AARSE 2012, on Earth Observation & Geo-information Sciences for Environment and Development in Africa: Global Vision and Local Action Synergy will be held in El Jadida, Morocco, at the Faculty of Science, Chouaib Douakkali University from October, 29 to November 2, 2012. The conference will be a major event in the African and international community of Earth observation and geo-spatial information science in 2012; organized by the African Association of Remote Sensing of the Environment (AARSE) and the Chouaib Douakkali University, Faculty of Sciences (CDU_FS), in partnership with the International Islamic Organization for Education, Science and Culture (ISESCO) and the Moroccan Association of Remote Sensing of the Environment (MARSE).

Paper selection is based on abstract and full paper peer review following the guidelines provided in the "Call for Paper" document downloadable from the conference website: www.aarse2012.org. Questions regarding abstracts should be e-mailed to abstracts@aarse2012.org.

- **AARSE AWARDS** - All presenters are invited and encouraged to enter the AARSE award-winning competition for best paper presentation and best poster.
- **IEEE GRSS/AARSE TRAVEL FELLOWSHIPS** - To support travel costs, accommodation and registration fees to attend conferences of the two societies in the field of Earth observation by remote sensing. The beneficiaries of these conference fellowships shall be African scientists or students who have their paper accepted for oral or poster presentation at the AARSE biennial conference.
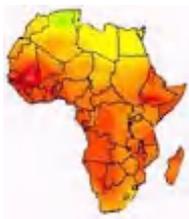
Practical SDI implementation materials from within and outside of Africa

Research explores links between rainfall and migration

"Where the Rain Falls," a project led by the development non-governmental organization CARE, working with the United Nations University (UNU) and CIESIN, has released a new set of case studies and associated maps examining the interplay between rainfall patterns, food security, and human mobility. Field research was conducted in eight countries - Bangladesh, India, Guatemala, Peru, Ghana, Tanzania, Thailand and Vietnam - using participatory research, household surveys, and expert interviews.

The research aims to answer the question, under what circumstances do households use migration as a risk management strategy in response to increasing rainfall variability and food insecurity? This is the second time that CIESIN has partnered with CARE and UNU to produce maps that complement findings from ground-based research on climate change and migration. In 2009 they produced the maps and data visualizations for In Search of Shelter. The integration of data from multiple sources in visually attractive maps helps tell the story about migration in a way that written narratives alone cannot accomplish. See: Where the Rain Falls Map Viewer Map Collection

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World Bank report: Africa using ICT, GIS to combat disasters

African countries are increasingly turning to ICT and GIS technologies to protect their citizens against natural disasters, observed a report titled, 'Municipal ICT Capacity and its Impact on the Climate-Change Affected Urban Poor: The Case of Mozambique'. The report is authored by Gaurav Relhan, ICT specialist in the World Bank's Africa Region. The report highlighted how African countries are utilising ICT for disaster preparedness. The report stated that GIS technologies are helping local governments in identifying flood zones on maps, measure communities' vulnerability to flooding, and plan for new flood-prevention infrastructure like drainage systems. Through mobile phones, citizens are being alerted via SMS texts to coming floods or cyclones. And Early Warning Systems (EWS) are simulating weather patterns and predicting disasters in advance. These tools, according to Relhan, can play a pivotal role in ultimately saving lives and lowering recovery costs.

The World Bank is working with the government of Madagascar and Mozambique to scale-up the use of ICTs. Projects in Mozambique and Madagascar join similar projects like 'Taarifa', a smart phone-based tool being applied in Uganda and Zimbabwe that allows citizens to alert governments of local sanitation and drainage concerns; and the 'Map Tandale' initiative in Tanzania, which provides local residents with GPS devices to map their communities. As former World Bank Chief Economist Justin Yifu Lin said in a recent blog post, "ICT innovations are powerful tools to help democratise development and make donor and government programs more inclusive and sustainable."

AAAS Geospatial Report: Ethiopian "villagization" policy is displacing farmers in Gambella region

Satellite images confirm that villagers living within the Gambella region of Western Ethiopia have been relocated to smaller and less desirable plots of land, possibly to make way for large foreign-owned commercial farms, according to a new report by AAAS. The study by the AAAS Geospatial Technologies and Human Rights Project details the apparent destruction of dozens of small homes and other structures, most occupied by small-scale subsistence farmers. At the same time, satellite images collected by the project show construction of hundreds of new buildings, and at one location, a new, large-scale industrial farm.
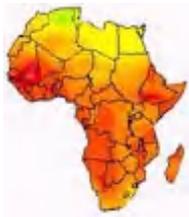
The AAAS report was prepared in support of an extensive study released by Human Rights Watch. The satellite images complement testimony from distraught local residents who were moved under Ethiopia's "villagization" program. They were told that they would be compensated with lots of three to four hectares; instead, the reports say, each new dwelling comes with about a quarter-hectare of land. "Using satellite imagery, we came up with the same result as people on the ground," said Susan Wolfinbarger, the senior program associate for the AAAS Geospatial Technologies and Human Rights Project.

The Ethiopian government plans to resettle 1.5 million people by 2013. Resource-rich Gambella, on the western border by Sudan, 42% of the land is marketed for lease, or has already been awarded to foreign investors, according to their report. Still, pictures hold parties accountable for their actions, said Horne. "The satellite images are a powerful tool for illustrating these violations. They provide irrefutable evidence." Compared to satellite imaging projects in areas ravaged by war, the transformations in Ethiopia will take longer to document from space. "In Libya, we see craters in the road and buildings destroyed over a period of just a few days," explained Wolfinbarger. "These smaller-scale processes happening over a long time-frame are not obvious in satellite imagery." For this reason, she said, partnership with an organization on the ground is vital.

Brazilian football club uses GPS to map players' performance

Brazil: Nautico, a Brazilian football club, is using GPS technology to track players during matches and training session. The technology enables the club to gather data about players' speed and distance covered by them during a match. This innovation was first put into practice by Nautico in a match against football club Botafogo. The technology was then used again in a match against club Guild. The data collected from these two games is being used by the technical committee to draw a profile of players' performance. This profile helped coach Alexandre Gallo in training his team. "Gallo has trained a team which has strength and speed. This data is very important for the committee as it helps players' trainig," said physiologist Cléber Queiroga.

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A player's performance between the first and second sets of the game can be evaluated with the help of a GPS device. "It is important to measure performance of the athletes during the match. A comparison can be drawn out on players performance," said Queiroga. Each player carries a small GPS unit inside his pocket which maps his displacements and velocities during the match. The data collected is then analysed by the department of physiology after the match.

National Geospatial-Intelligence Agency: Mapping Africa one country at a time

Two Geospatial Analysts from Stuttgart, Germany mapped out the terrain for African Lion 2012 in southern Morocco. AL-12 is a bi-lateral spreading across four geographically varied locations, to include flat deserts, vast mountain ranges, and miles and miles of coastline. It was during January's AL-12 planning conference when the needs and overall scope of the exercise were drawn out. Jacquie Snyder, one of the two analysts from Stuttgart, attended the conference and came away with a solid foundation of what her team would need to create. "To be able to work in this environment is just awesome. We've got civilians and military working together, we're supporting the needs of the Marines and Army Reservists in the field, and during all of that we're in Morocco working with the Moroccan military.

I've learned so much during this experience." It's also been an eye opening experience for Cox. "I never knew just how incredibly similar the civilian counterpart of our job actually is. It's interesting, both sides get the same results. The analysts did face a few challenges along the way. "Limited imagery is probably the biggest challenge when working in Africa," said Davis. "Some countries are covered better than others, and satellite imagery for the overall continent, that's always good, but if someone wants to pinpoint specific buildings and streets, well that's going to be harder to see. That's where we come in." The team also relied on some commercial products they could buy. According to Snyder, "we use a lot of tourist maps for research to incorporate into our other sources and build up products in order to provide complete mission communication."

And with upcoming exercises in Senegal and Botswana, the geospatial team is able to create some of the first fully detailed maps ever produced over training areas in these countries. African Lion 12 wrapped up in April 17, with the NGA team leaving with some highly detailed maps of Morocco's southern coast, mountain ranges and desert landscape.

Satellites and Fairy Circles: Orbital imagery of ring-shaped features aims to solve a desert mystery

The eastern boundary of the Namib Desert is home to tens of thousands of "fairy circles," barren patches within the grassland. They are typically concave, although some are flat, and they are often surrounded by a ring of unusually tall grass.* Scientists are still unsure what causes fairy circles, but a paper published today in Public Library of Science ONE describes the life cycle of the formations, using both field data and satellite images.
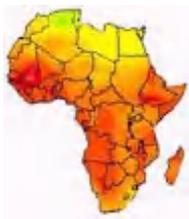
Walter Tschinkel, a biologist at The Florida State University, compared satellite images of the circle-strewn area in 2004 with images from 2008, noting whether the formations were present in both years and what changes had occurred in size, shape or vegetation. He also studied ground photographs of circles and images from Google Earth for a more detailed look at the sizes and locations of circles as well as how they changed over time.

Previous research had indicated that the fairy circles were not static, but Tschinkel's work was the first to document the details of the life cycle:birth, maturation, enlargement and death or revegetation. His paper describes the different phases and estimates the life span of a fairy circle to be 23 to 75 years, depending on size. The picture here shows a fairy circle in its birth stage: the grass in the ring is dead but has not completely disappeared, and the circle is still flat rather than concave.

Hypotheses for what causes these formations have focused on termite activity; presence of a toxin or absence of a nutrient in the soil; competition for water between plants; gas deposits; and even radioactivity, among others. So far, there is little evidence to support any of these theories, and data to discount some, but nothing is known conclusively.

Tschinkel says, "The man who founded the Namib Rand nature reserve [where the research took place] hopes that nobody ever solves the mystery of the fairy circles, and I can understand that." Tschinkel assured him not to worry; science is still a long way from the answer.

GIS Tools, Software, Data

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South Africa. National Spatial Information Framework

A Directorate in the Department of Rural Development and Land Reform (DRLR) under Chief Directorate: National Geospatial Information, it is a national initiative to co-ordinate the development of infrastructure needed to support the utilization of spatial information in decision making. http://nsif.dla.gov.za/

Checklist of Online vegetation and plant distribution maps

Has links to vegetation/forest maps of Africa, South Africa, and other countries. Links to a Southern Africa forest & protected area map. Compiled by Claire Englander of the Univ. of California-Berkeley, University & Jepson Herbaria/SMASCH Project, and Philip Hoehn from the Stanford University Branner Earth Sciences Library and Map Collections. http://www.lib.berkeley.edu/EART/vegmaps.html.

HarvestChoice MAPPR

HarvestChoice's MAPPR tool can present many layers of data at once. MAPPR divides the continent into 10-kilometer by 10-kilometer squares, allowing users to home in on any one of 300,000 squares or to summarize indicator values for all squares in a specified watershed, agroecological zone, or market area. There are currently map layers for more than 100 indicators, including population density, poverty, rainfall, crop harvested areas, and travel time to market. MAPPR allows users to combine indicators from multiple layers to produce customized maps, charts, and tables.

Online Map Creation

Creates a map if you know the longitude and latitude of the geographic entity. You can put in national boundaries, rivers and channels. You can also save the map in Postscript (EPSF) or Adobe Illustrator format. The files download in .zip format. In English and German. [KF] http://www.aquarius.geomar.de/omc/omc_intro.html.

The RCMRD Data Centre

The RCMRD Data Centre has a large LandSat Data Archive, dating back to 1972, for all African Countries. It is also a Reseller Agent in Africa for Digital Globe for QuickBird and WorldView 1/2 High-Resoultion Satellite imagery. The Centre also supplies data from GeoEye (GeoEye 1/2, Ikonos & Orbview Imagery), SPOT Image (SPOT 2.5m, SPOT 5m & SPOT 10m), USGS (Landsat MSS, Landsat TM & Landsat ETM+) amongst other active and passive satellite imagery products Datasets for Africa archived at the Centre are available at subsidized rates. Other low resolution imagery datasets (90m SRTM, NOAA, MERIS, MODIS), scanned maps and vector data for Africa are also available. The center in collaboration with European Space Agency (ESA) and EUMESAT has established a facility for direct satellite reception for MERIS, MODIS, NOAA and EUMESAT Second Generation Meteosat data.These datasets amongst others can be accessed online via: http://www.rcmrd.org/geonetwork or via email to remote sensing(at)rcmrd.org.

Training Opportunities

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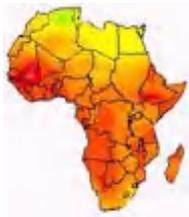- The **SDI-Africa E-mail Discussion List** is open and available to anyone to read on the web. To submit messages or to receive submitted comments or notices by e-mail, one first must register.
- To see the collection of prior postings to the list, visit the **SDI-Africa E-mail Discussion List Archives**.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

Training session on remote sensing with ERDAS IMAGINE, 1-5 October 2012, Lome Togo

GEOSYSTEMS France and ABSYS TOGO are organizing a training session on remote sensing with ERDAS IMAGINE from October 1st to 5th, at Lomé, Togo. The training session will be held in French.
Formation en télédétection ERDAS IMAGINE, Lomé, du 1er au 5 Octobre 2012
Objectif : amener les participants à maîtriser (i) les concepts théoriques de télédétection et (ii) les outils de traitements disponibles dans ERDAS IMAGINE Professional. Caractéristiques des capteurs - Les principales

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fonctionnalités d'ERDAS IMAGINE seront abordées telles que la manipulation d'images, les prétraitements, les corrections géométriques, le mosaïquage ainsi que des fonctions avancées de classification et d'analyse diachronique.

Renseignements, Inscriptions & Informations : ABSYS TOGO (Lomé, Togo) : M. Serge Douhadji , sdouhadji@afitg.com - Tél : +228 99 58 59 18 ou +228 90 76 30 75 EOSYSTEMS France (Montigny le Bretonneux, France) Mme Valérie Thebault, thebault@geosystems.fr - Tel : +33 1 78 94 76 85 (www.geosystems.fr)

GIS Class at Kruger National Park

Juniper GIS is offering a five and a-half day conservation oriented GIS class at the South Africa Wildlife College, near Kruger National Park, October 28 - November 3, 2012. The cost is only $575 USD, including lodging and all meals if you sign up before September 1. This class is confirmed, but there is still a few seats available. This is a unique opportunity to learn critical GIS skills in a great setting at an incredibly low price. For more details see http://www.junipergis.com/training/destinations/south-africa-gis-training/. Contact: John Schaeffer, GISP, 541-389-6225, cell 541-390-4996.

7th Annual AFREF & GNSS Data Processing Course, 3-14 September 2012, Nairobi, Kenya
The RCMRD in conjunction with the Center of Geophysics of the University of Lisbon (CGUL), Portugal and HARTRAO South Africa have been conducting a course on African Reference Frame (AFREF) and Global Navigation Satellite System (GNSS) Data Processing at RCMRD offices in Nairobi Kenya annually since 2006. This year the training is scheduled to take place from 3rd September to 14th September 2012 in Nairobi, Kenya. The Objectives of the course is to provide technical skills in the installation and management of GNSS base stations, data handling, dissemination and processing towards AFREF realization. Registration is currently going on. For more information, contact Mr. Muya Kamamia at muyack@rcmrd.org.

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The class, working with ArcGIS for Environmental Analysis is appropriate for new GIS users and for experienced GIS users wanting more in-depth instruction. Juniper GIS courses are based on real projects, with an emphasis on the skills needed to successfully complete your projects.
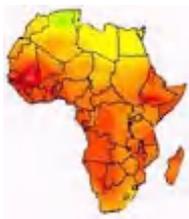
Students will learn key GIS skills including compiling and organizing data, understanding projections, using symbology and labels, working with tables, editing data, performing analysis, and creating finished maps while working through realistic, conservation oriented, GIS projects. Students will also be introduced to some advanced skills – working with Spatial Analyst, using ModelBuilder, and using Google Earth. Students will earn 40 hours of education credit towards the GIS Professional (GISP) certificate. For more information on the course, contact John Schaeffer at John@junipergis.com or Mervyn Lötter at mervyn.lotter@gmail.com.

Call for application for postgraduate diploma in applied Geo-Information

The National University of Rwanda through its centre for GIS and Remote Sensing (CGIS-NUR) wishes to call for 2012 intake application for its Postgraduate Diploma Programme in Applied Geographic Information Science: Geographic Information System, Remote Sensing, and their various applications. Further information, visit: www.nur.ac.rw and www.cgisnur.org. The program is run at Kigali or Butare, as evening or day program depending on the availability of students. All about postgraduate diploma programme or guidlines for filling and submitting the application: http://www.nur.ac.rw/spip.php?article30.

Institute for Capacity Development: 2012 Training Workshops

The training courses are held in Namibia (Head Office); South Africa and Zimbabwe. For the past years, ICD has been conducting international capacity building workshops for national, provincial and local officials, elected representatives, members of boards, personnel of projects as well as bilateral & multilateral agencies. A large number of high profile persons have participated in the programmes in the past and you are welcomed to one or more of the upcoming programmes in 2012. For the full 2012 training calendars or check out the website on www.icdtraining.com. Institutions sending at least 5 participants qualify for group discounts. Contact Mr. Kenias on coordinator@icdtraining.com.

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ESRI Technical Certification

ESRI has set the industry standard for GIS technology and is now establishing benchmark standards for individuals who use Esri software with the recently launched Esri Technical Certification Program. The ESRI Technical Certification Program recognizes qualified individuals who are proficient in best practices for using Esri software and are awarded in different areas of expertise at both an Associate and Professional level. The program is open to ESRI users worldwide and consists of 13 certifications recognizing expertise in desktop, developer, or enterprise use of ArcGIS. Users achieve certification by successfully completing computer-based examinations, which are offered in more than 5,000 testing locations in 165 countries. Users are able to test for five certifications. Establishing an industry recognized benchmark of expertise in using ESRI software will:

- Improve success with GIS by creating a community of professionals proficient in using ESRI software.
- Help organizations maximize their investment in ESRI products by employing a workforce certified in using best practices.
- Create professional development opportunities.
- Provide an opportunity for individuals, partners, consultants, and other organizations to distinguish themselves among their peers.
- Assist hiring organizations in assessing candidate skills and abilities.
- Workplace experience, combined with GIS education and ESRI training courses, is the best preparation.

The ESRI Technical Certification Web site lists specific skills that will be assessed in each exam, as well as training courses that aid in acquiring and improving these skills. ESRI is available to advice you on the best training for a particular certification and also offer you the training that you need to prepare for your certification. Read more.

ESRI South Africa presents a full spectrum of GIS courses: August 2012

The course covers GIS theory and functionality: The desktop products (ArcView, ArcEditor, and ArcInfo; Server products (ArcGIS server and ArcSDE); Programming to enable customization of the product, ArcGIS extensions, as well as Introductory and advanced courses in ERDAS Imagine Remote Sensing Software'

Various training venues are available at Esri South Africa, for further information contact: 011 238 6300 email the training team

GIS and Remote Sensing courses at Esri Eastern Africa

ESRI Eastern Africa is now offering update courses to conform to improvements in ArcGIS 10 and ENVI 4.8, conducted with skilled and experiences instructors together with conducive and state-of-the-art training facilities. Courses in the following tracks are offered:

- Fundamentals of ArcGIS Desktop
- Data and Map Production
- Geoprocessing and Analysis
- Enterprise GIS
- Multi-user Geodatabases
- Remote Sensing

Make plans and take advantage of the courses offered at the Authorized Learning Centre in Nairobi, Kenya. Arrangements can also be made for client's site training on request for 12-16 students. Download our course catalogue and current class schedule at http://www.esriea.co.ke/index.php/instructor-led-training. To register, visit http://esrieatraining.cloudapp.net/. For more information, contact by email: training@esriea.co.ke, telephone: +254 20 2713630/1/2 or visit the offices located on 3rd floor, KUSCCO Centre, Kilimanjaro Avenue, Upper Hill, Nairobi, Kenya.

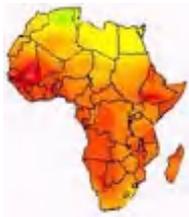## University of Twente - ITC Faculty of Geo-Information and Earth Observation: Registration for courses (2012-13)

Apply online for courses starting in the academic year 2012-2013. Browse by programme (degree, diploma, and certificate), course domain (disaster management, earth sciences, geoinformatics, governance, land administration, natural resources, urban planning and water resources) or location in the course finder at www.itc.nl/CourseFinder. For printed copy of the study brochure, email: (alumni@itc.nl).

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GSDI
Global Spatial Data Infrastructure

Short-courses offered by RECTAS, 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.

RCMRD - Courses offered by the department of Remote Sensing, GIS and Mapping

The Centre offers the following courses in geo-information. The courses last between one week to three months, and offered through out the year.

- Introduction to Remote Sensing & Image Processing
- Introduction to Geographic Information Systems (GIS)
- Introduction to Global Positioning Systems (GPS)
- Application of Remote Sensing & GIS in natural resources management.
- Application of Remote Sensing & GIS in Early Warning Systems for Food Security Application of RS & GIS in Disaster Risk Management
- Geospatial database development and management for use in planning process and decision making
- Principles of Digital Cartography
- Application of GPS technology in resource surveys and mapping
- Integrated Water Management
- Application of GIS in poverty mapping, health care & good governance
- Land Information Management Systems
- Service and Repair of Survey equipment

Funding Opportunities, Awards, Support

The United Nations - Nippon Fellowship Programme

The United Nations - Nippon Fellowship Programme is now accepting applications. Successful applicants will benefit from a 9-month fully funded research fellowship which includes a 3-month placement at the United Nations in NY. The 9-month Fellowship Programme is composed of two consecutive phases which provide Fellows with advanced and customized research and training opportunities in their chose fields:

- Phase One: 6-month Advanced Academic Research and Study - undertaken at one of the prestigious participating Host Institutions and under the guidance of subject matter expert(s) who have recognized in-depth expertise in the Fellows' chosen field of study.
- Phase Two: 3-month Research and Training - normally undertaken at DOALOS at the United Nations Headquarters in New York.

Application deadline is 15 September 2012.

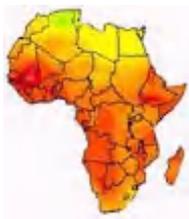**Academy of Sciences for the Developing World (TWAS) – COMSTECH-TWAS Research Grants 2012**

Grants up to US$15 thousand are available to individual young scientists in countries belonging to the Organization of the Islamic Conference. Renewable energy is among the eligible subject areas. The application deadline is 31 August each year.

Academy of Sciences for the Developing World (TWAS) - Fellowships 2013

Each year, TWAS coordinates with participating research institutions in the developing world to host visiting research fellows. The fields of research include biotechnology, natural sciences, chemical and biological sciences, and others. Partner (host) organizations are located in Brazil, China, India, Iran, Kenya, Malaysia, Mexico, Pakistan, and Thailand. For fellowships in 2013, application deadlines range from 28 June 2012 to 15 September 2012 - depending on the program.

Acumen Fund - East Africa Fellows Program 2012-2013

The Acumen Fund's program for East Africa seeks to harness the power of social innovation to create solutions to the region's most pressing problems. The East Africa Fellows Program is designed to develop the Fellows' leadership skills and strengthen the projects of social change that they drive. The first round of fellows (2011-2012) included several in smallholder agriculture, renewable energy, waste management, fair trade, and other areas. Applicants should have at least 2-3 years of experience leading social change projects in Kenya, Rwanda, South Sudan, Tanzania, or Uganda. The application deadline is 5 August 2012.

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Africa Enterprise Challenge Fund (AECF) - Tanzania Window, Round 2
AECF's Tanzania Agribusiness Window seeks innovative and commercially viable business ideas for commercial agriculture in Tanzania. The competition is open to for-profit companies across all aspects of Tanzanian agriculture, e.g., farming; plantation and ranching companies; outgrower schemes; suppliers of agricultural inputs; agro-processors; traders and merchants; and other private service providers in support of agriculture. Winners of the competition receive grants and interest-free repayable grants up to a maximum of US$ 1 million. Companies from anywhere in the world can apply, but the business idea must be implemented in Tanzania. NGOs can participate if they are included in a partnership led by a private sector entity. Initial applications are due before 5 August 2012.

Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) - Research Calls for Proposals with Deadlines in August 2012
ASARECA makes research grants to improve agricultural productivity in Eastern and Central Africa. It invites research in the following topics, all of which have August deadlines for concept notes: (1) diseases of fodder grasses; (2) feed quality of ruminant livestock; (3) environmentally-friendly tick control for livestock management; (4) response farming (i.e., adapting to rainfall predictions); (5) control of porcine cysticercosis; (6) harmonized standards for production and marketing of root and tuber crops; and (7) harmonized seed policies, laws, and regulations in Eastern and Central Africa. Applicants will find details about the research topics, eligibility criteria, and other supporting information in ASARECA's announcements. The closing date for most concept notes is 10 August 2012, with one exception on 15 August.

Climate and Development Knowledge Network (CDKN) - Innovation Fund, Round 2 (Africa Focus)
Round 2 of the CDKN Innovation Fund supports innovative thinking and action on climate-compatible development in the Africa region. CDKN invites innovative ("game changing") project proposals, learning materials, best-practice tool kits, policy briefs, and implementation strategies. Applicants are invited from African government institutions and other African partners. Round 2 will support two awards of up to £100 thousand each. Subsequently, CDKN may provide awards of up to £200 thousand each for implementation. The deadline for applications is 31 August 2012.

CRDF Global - Zoonotic Diseases in Sub-Saharan Africa
The U.S. Department of State and the African Biological Safety Association announce the Sub-Saharan Africa Biosafety and Biosecurity Grant Competition. The competition will provide financial assistance for biosafety/biosecurity upgrades at biological labs in Sub-Saharan Africa, with preference given to labs focusing on zoonotic diseases. Up to five recipients will receive grants of US$10 thousand each. The application deadline is 31 August 2012.

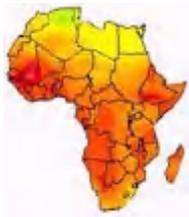### Critical Ecosystem Partnership Fund (CEPF) - Maputaland-Pondoland-Albany Hotspot
The Wildlands Conservation Trust, on behalf of the CEPF, invites proposals from civil society organizations for small and large grants in support of biodiversity conservation in the Maputaland-Pondoland-Albany "hotspot" of southern Africa. The call identifies the specific themes and geographical areas in this fourth call for proposals. The deadline for submitting letters of inquiry is 24 August 2012.

European Commission (EC) -- Management of Natural Resources in Chad
The EC will support Chad to strengthen the management of natural resources at local levels in the eastern part of the country, contributing towards improved food security. The funding will be provided in three lots by departments, with grants ranging from CFA 65 million to CFA 200 million. The program is open to nonprofit organizations in EU member states and ACP countries (including Chad). Reference EuropeAid/132868/M/ACT/TD. The closing date is 28 August 2012.

Global Water Forum - Awards for Articles on Water Resources
The Global Water Forum sponsors the Emerging Scholars Award to enable early-career scholars and practitioners in water-related fields to publish brief articles that present their research, projects, or opinions to a global audience. Themes are water security, water economics, and transboundary water governance. The Global Water Forum offers three cash prizes in addition to publication opportunities. Participants should be PhD recipients or candidates under 36 years of age. The submission deadline is 27 August 2012.

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International Elephant Foundation - Elephant Conservation and Research 2012-2013

The International Elephant Foundation makes grants for conservation and research of elephants. Eligibility extends to organizations and individuals internationally - including students, scientists, and institutions. The current call for applications has three categories: (i) African elephant conservation *in situ*; (ii) Asian elephant conservation *in situ*; and (iii) *Ex situ* elephant conservation and research. The Foundation prefers grant requests of less than US$10 thousand. The application deadline in all categories is 17 August 2012.

International Tropical Timber Organization - Fellowships Second Cycle 2012

ITTO administers the Freezailah Fellowship Fund to promote human resource development, and to strengthen professional expertise in tropical forestry and related disciplines. Twice a year, the program makes fellowship grants to participate in international conferences, training courses, and study tours. Funding can also be used to prepare manuals and monographs, and for post-graduate study. The maximum grant is US$10 thousand. Eligibility to apply is restricted to nationals of ITTO's member countries. Grants are awarded mainly to nationals of developing countries. The closing date for the 2012 Autumn Cycle of applications is 24 August 2012.

TWAS Fellowships for Research and Advanced Training for Developing Country

The academy of science for developing country (TWAS) offers fellowships to young scientists in developing countries to enable them to spend between three and twelve months at a research institution in a developing country other than their own. The purpose of these fellowships is to enhance the research capacity of promising scientists, especially those at the beginning of their research career, helping them to foster linkages for further collaboration. The fellowships are for research and advanced training. They are offered to young scientists holding at least an MSc or equivalent degree. Eligible applicants for the fellowships are young scientists working in any area of natural sciences who are citizens of a developing country and are employed by a research institution in a developing country. There is no age limit however preference is given to young scientists at the beginning of their research career and those working in Least Developed Countries. The deadline for applications: 1 October 2012.

Call for Applications- TED Fellowships

TED is looking for an eclectic, heterogeneous group of young thinkers and doers from the fields of technology, entertainment, design, sciences, engineering, humanities, the arts, economics, business, journalism, entrepreneurship and NGOs. TED can take risks on unconventional innovators, value achievement over credentials - making and doing over merely talking.
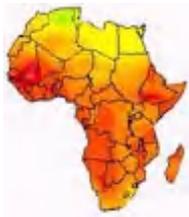
Applicants of ages 21-40 from five target regions: Africa, Asia/Pacific, the Caribbean, Latin America, the Middle East. However, anyone over the age 18 from around the world is welcome to apply. Deadline for application is 22 October 2012.

Employment Opportunities

Global GIS analyst position

A 12-month position for a GIS analyst is available in the BirdLife Secretariat to support a 'Global Gap Analysis' project. The project will develop a robust, comprehensive, multi-scale, spatial and temporal analysis of the degree to which the current global protected area network covers biodiversity, and will help to set priorities for filling remaining gaps. This will allow decision makers to measure progress toward reaching the Aichi Biodiversity Targets, and inform strategies for meeting the commitments made through these targets.

The project's objectives are: 1. To assess the current coverage (and recent trends in this) by the global protected area network of (a), ecosystems; (b) ecoregions; (c) countries; (d) the distributions of terrestrial, freshwater and marine vertebrate species (mammals, birds, amphibians, and some reptile clades); and (e) key biodiversity areas (specifically, Important Bird Areas and Alliance for Zero Extinction sites). 2. To incorporate the spatial and temporal distribution of threat as measured by the 'Human Footprint' index. 3.   To integrate scenario-based projections of future land-use change and threat drivers. 4. To prioritise, using Marxan, the identified protected area gaps based on their contribution to improving representation of biodiversity at multiple scales, and potential feasibility of creating new reserves (based on current threats and

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future scenarios). 5. To synthesise the above analyses into a scientific paper and a set of policy-relevant products, which can feed into the policy opportunities identified above.

A GIS analyst is sought to carry out the analyses that are integral to this project.

Essential: Masters degree in a relevant scientific subject and/or relevant experience. A high level of competence and significant experience of working with Arc GIS. Care and attention to detail. Good skills in scientific writing. Ability to work to timeframes and under pressure. Good team worker.

Desirable: GIS qualification. Experience in running large-scale analyses in Arc GIS involving sizeable datasets. Expertise in programming and scripting in ArcGIS, e.g. Python, AML or similar. Experience in publishing scientific papers and/or producing technical reports. Experience with working in collaborations.

Please send a cover letter and CV to recruitment@birdlife.org by 15 August 2012. To read the full job description.

Nyungwe Project Director, Gisakura, Rwanda

WCS seeks a field conservationist and manager to run our USAID-funded project supporting park management, education, and tourism in Nyungwe National Park, Rwanda. Nyungwe (with the adjoining Kibira Forest in Burundi) is a spectacular 1,000 km² montane forest with globally important populations of chimps, monkeys and other wildlife, excellent facilities, and a growing ecotourism industry. The Nyungwe Project Director will oversee the implementation of project activities and supervise project staff, partners and management systems in and around Nyungwe National Park.

Experience and Skills required:

- Experience with management of biodiversity conservation projects, including USAID awards, as well as funds from other public and private donors.
- Experience and skills in technical areas related to the project might include: wildlife ecology research methods, natural resource management, GIS and land use planning and/or protected area management, community education and outreach.
- Strong management and interpersonal skills, ability to work with people at all levels in a multicultural setting.
- The candidate would require a postgraduate degree in biology or related subject and at least 5 years experience working in similar field, preferably in Africa. Fluency in English is essential and knowledge of French an advantage.

Interested candidates should send cover letter and CV to Graeme Patterson at: gpatterson@wcs.org, with copies to Pamela Watim (pwatim@wcs.org) and Mandy Tshibangu (mtshibangu@wcs.org). This should include description of your salary history and salary expectations in this position. Please include the following in your email subject line: <Nyungwe Project Director application yoursurname>. If you have particular specific questions about the position please email Graeme Patterson (and include your CV).
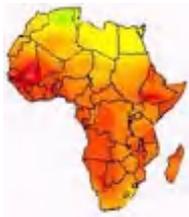
There is no application deadline for this posting - it will remain open until filled and therefore we very much encourage prompt response to this advertisement.

Field Manager, South Africa

This project was established by Landmark Foundation in response to human - predator conflict on South African farms. Conventional management of livestock losses to predation occurs through lethal means, which can affect conservation of the predators but also have effects on the ecology and biodiversity of landscape. The goal of this project is to understand habitat selection and landscape use by leopards in an environment dominated by livestock and agriculture in the Western and Eastern Cape.

- Highly motivated and independent;
- Degree in conservation, environmental management or equivalent
- At least two years field work experience,
- Interest in wildlife management,
- Ability to interact amicably with local land owners and resource users (Be able to speak Afrikaans and English),
- Experience using geographic information systems,
- Valid driver's licence (equivalent to a South African Code EB driver's licence),
- Be physically fit as walking and travelling is an important element in the position,

Duties include (but are not limited to): Introduce the project to new landowners within the study area Maintain relationships with existing landowners (feedback) Undertake data collection (camera trap survey establishment and monitoring, leopard data capturing, interviewing landowners, data storing and analysis)

Public and scientific talks (Farmers associations, interested parties, conferences); Developing mitigation actions and research trials thereon; Traveling long distances in remote areas; Administration and report writing (Monthly accounts such as fuel, log monthly distance traveled for work, monthly review such as stakeholder interactions, data collection etc.); Monthly planning (as the successful applicant will need to be flexible and available for rescues etc., this monthly plan should undertake major tasks to complete for the month)

Interested individuals should send a letter of intent, CV (including names and contact details of three references). Interested applicants can contact Jeannine McManus at: jeannine@landmarkfoundation.org.za or ziggy@landmarkfoundation.org.za. Closing date: 31 August 2012 or as soon thereafter as a suitable candidate is found.

Environment/NRM Expert, Program Support Services, Nairobi

MSI is seeking subject matter experts in environment and natural resources management for an upcoming USAID-funded support services program in Kenya. The project will focus on providing USAID/Kenya with programmatic support, analytical information and technical assistance in a variety of technical offices.

The Environment/ Expert will be a long-term technical support position. S/he may provide technical assistance in areas such as biodiversity and environmentally-based enterprises - working closely with USAID/Kenya. S/he will provide technical assistance nationally and in particular coastal, Nyanza and Rift Valley provinces/counties. Specific assignments, locations, and duration will be determined according to programmatic needs.

Responsibilities:

- Provide technical assistance and monitoring, evaluation and verification support in environmental topics including, but not limited to: policies, laws and regulations governing wildlife, forests and land management; Sustainable natural resource management Conservation planning and ecosystem monitoring; Climate change adaptation and mitigation; Nature-based enterprises, including eco-tourism
- Travel as needed in-country; and
- Coordinate with other USAID projects to achieve maximum impact.

Qualifications:

- Significant experience with donor-funded environment projects in Kenya is desired. USAID experience is a plus;
- Experience working in challenging political environments;
- Technical knowledge of the environment sector in Kenya above mentioned topics required;
- Expertise in performance monitoring, evaluation design and/or statistical analysis preferred;
- Strong management experience is a plus;
- Ability to travel within Kenya;
- Experience fostering cooperation among donor, government, private sector and NGO entities is a plus;
- Ability to work well with a team, mentor staff and counterparts;
- Advanced degree in environmental science or relevant field preferred; and must be fluent in English.

To apply, please visit our website: www.msiworldwide.com. Closing Date: 24 August 2012. This is a local position. Only Kenyan citizens are eligible to apply.
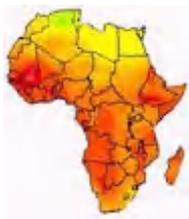
Regional Senior Expert, Environment and Climate Change, Nairobi

Dutch development cooperation programmes in the priority sectors of water and food security need to significantly contribute to sustainable development results by taking environmental and climate change considerations into account. Currently, environmental expertise is insufficiently available at the Dutch embassies. As a result, the intervention strategies in water and food run the risk of being 'sustainability blind' i.e. not taking into account environmental and climate change considerations.

DME seeks a secondee from WRI to work as a Senior Advisor on integrating environment and climate change in development plans and programmes supported by the Dutch government in Africa. The projected start date of the secondment is January 2013, and its duration will be 3 years. The position will be based in the Royal Netherlands Embassy Nairobi, Kenya and will support at least the following tasks:

1) Strategic, analytical and advisory functions
2) Training and capacity development
3) Communication and engagement

The Senior Expert will have dual reporting lines, to the Deputy Head of Mission at the Netherlands Embassy in Nairobi and to the 'sustainability unit' in DGIS.
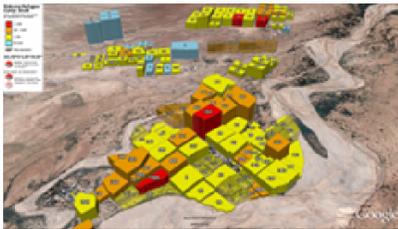
Advanced degree in economics, international relations, development studies, environmental studies, engineering, or a related field.

- At least ten years of relevant professional experience in Africa.
- A sound understanding of and demonstrated interest in development issues, with an emphasis on integrating environment and climate change into programming in water and agriculture sector.
- Interest and experience in Africa is a key requirement, as well as a willingness to undertake significant travel in Africa.
- Strong English writing and oral communication skills. French language skills are a significant plus.
- Demonstrated capacity to work well under pressure and successfully manage multiple deadlines and competing demands.
- Commitment to MoFA's development policy

Qualified applicants should apply online at www.wri.org/careers. All applications must be submitted online through this career portal in order to be formally considered.

Other

What it means to think spatially

Geovisualization is an emerging field that draws upon approaches from several disciplines such as cartography, information and scientific visualization, and geographic information systems (GIS) to provide theories, tools, and methods for the presentation of geographic or spatial data. In some cases this may mean creating data with coordinates from global positioning systems (GPS) and then using the established methods and tools to display them in print or digital form. In other cases it may mean teasing out the geographic or spatial component of data that already exist, such as statistics about countries, cities, or administrative units, to allow them to be displayed on a map or in some other form that highlights spatial relationships. These relationships, in turn, can give us new insights into problems that we are trying to solve. Spatial thinking moves beyond asking where to asking why.

Development is, inherently, a place-based activity: It takes into account the differences between places. We work in specific places for specific reasons. Our programs have spatial, or geographic, impact. The effects of a school, a road, or a well are meant to radiate beyond the physical object itself to affect humans and the spaces they inhabit.

By thinking spatially we can analyze socio-economic, demographic, health, education, agricultural, or environmental data to highlight spatial and temporal trends that are difficult or impossible to detect on spreadsheets or in official reports. By thinking spatially about our current and future strategies, programs and projects, we can increase our ability to target at-risk or neglected populations. And the presentation and communication of these observations can be enhanced and easily comprehended using geovisualization.
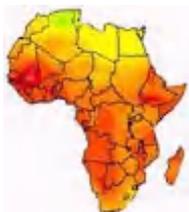
It's important to remember that thinking spatially doesn't require a computer, GIS skills, or even Google Earth. While all of these things can facilitate the process, thinking spatially starts with the brain. Noting the location of a stakeholders meeting or where people are traveling from to get there does not require technical tools, nor does wondering why a program works better in one area than another.

USAID can already boast some good examples of spatial thinking. It can be seen in projects such as the Famine Early Warning Systems Network - a data analysis system that looks at multiple aspects of food availability and affordability in Africa; and in a small number of missions and the Bureau for Democracy, Conflict and Humanitarian assistance where there are dedicated GIS staff.

Increasingly, missions and bureaus say they are interested in geographic thinking and geospatial tools. Specifically, nearly half of USAID's missions have requested support for developing their own GIS centers. To this end, USAID is in the process of establishing a geospatial center that will serve as the focal point for the Agency on matters concerning geospatial information technology. This center will be used to implement mission-based Geo-MIS a hybrid integration of geospatial analysis and management information systems to do spatial analysis, map visualization, GIS training, and, generally, to build the Agency's geospatial capacity.

EuroGEOSS Broker offers open access to vast amounts of environmental data

Researchers have designed a tool that integrates all the information on forestry, drought and biodiversity produced by different European systems of Earth observation. This unique technology developed by the

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EuroGEOSS FP7 Project combines official sources and interactions from the Web 2.0 communities and aims to offer relevant multi-disciplinary data that will improve environmental monitoring.

Millions of sensors continuously record parameters such as air quality, light pollution, noise, vegetation density, biodiversity or water quality. This data provides valuable information on the state of our planet both to the scientific community and to society and is used for sending alerts and promoting research projects and public policies. Given the proliferation of such sources, GEOSS (Global Earth Observation System of Systems) was launched in 2003 as an international attempt to deveolp an open register of all existing systems. However, until now there was no connection between these different systems.

The European Commission considered the added benefits of interoperable systems and applications that would provide a wider picture of complex issues such as the effects of climate change or natural disasters. Professor of Computer Languages and Systems at the Universitat Jaume I de Castellón (Spain) Joaquín Huerta Guijarro explains the relevance of this interoperability: "If we integrate systems related to weather, soil quality and water, we may develop an efficient agriculture or reforestation project."

EuroGEOSS, therefore, aims to contribute to GEOSS with an inventory of European systems, resources and environmental monitoring services, focusing especially on the three strategic areas of Forestry, Drought and Biodiversity. The partners have developed the search engine EuroGEOSS Broker and hope it will contribute to better decision-making, especially for the prevention and management of natural disasters. EUROGEOSS (European environment Earth observation system), adds Prof. Huerta,"has served to test the efficiency of GEOSS and demonstrate that the benefit of this programme far exceeds the investment, as well as the intangible benefits it poses to the environment and sustainability." An extension of the project is already underway through GEOWOW (GEOSS interoperability for Weather, Ocean and Water).

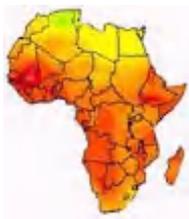## Climate scientists and communities can find common ground

Fruitful dialogue in Africa shows the gap between climate scientists and decision makers can be bridged, says adaptation specialist Arame Tall. African countries face a growing threat of hydro-meteorological disasters such as droughts, floods, pest infestations, water-related epidemics, storms and cyclones. Whether correlated with anthropogenic climate change, a result of increased human vulnerability or merely the outcome of better disaster reporting, the number of reported hydro-meteorological disasters in Africa has been rising since the mid-1990s.

African policymakers can make informed decisions about climate-change adaptation if climate researchers can provide them with the relevant data, including an explanation of the uncertainties inherent in climate and weather forecasting. But such substantive dialogue between climate scientists who produce forecasts and warnings, decision makers in government planning agencies, and vulnerable communities will not happen in a vacuum. Several barriers prevent available climate and weather information (forecasts) from filtering down to potential users. They include scientific jargon, inadequate dissemination channels to reach the most vulnerable people, and poorly formalized institutional frameworks at a national level. Readmore….

Conferences, Events

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

Date	Location	Event
August 2012		
2-10 August 2012	Brisbane, Australia	**34th International Geological Congress**
5-7 August 2012	Kampala, Uganda	**8th Annual International Conference on Computing and ICT Research**
5-10 August 2012	Brisbane, Australia	**34th Session of the International Geological Congress (IGC 34)** Enquiries: info@34igc.org.
22-25 August 2012	Freiburg Germany	**Experience-based Geography Learning, IGU-CGE Precongress**

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GSDI
Global Spatial Data Infrastructure

26-30 Aug 2012	Köln, Germany	**32nd IGU International Congress**, University of Cologne, Theme: 'Down to Earth'
29-31 August 2012	University of Basel, Switzerland	**Third International Sustainability Conference ISC 2012**, Theme "Strategies for Sustainability: Institutional and Organisational Challenges"
September 2012		
3-5 September 2012	Gaborone, Botswana	**2nd IASTED African Conference on Health Informatics**
4-5 September 2012	University of Nottingham, UK	**4th Open Source GIS Conference (OSGIS 2012)**
5-7 September 2012	Gaborone, Botswana	**International Conference on Water Resources Management**
16-18 September 2012	Columbus, Ohio, USA	**AutoCarto 2012, an international research symposium on computer-based cartography**
30 September–5 October 2012	Columbus, Ohio, USA	**EcoSummit 2012, Ecological Sustainability: Restoring the Planet's Ecosystem Services**. Abstract submission deadline, 20 January 2012
October 2012		
2-4 October 2012	Gauteng, South Africa	**GISSA Ukubuzana 2012: Conference and exhibition of geo-informatics, ICT, surveying, remote sensing and location-based business**
3-5 October 2012	Naivasha Sopa Lodge, Kenya	**Esri Eastern Africa User Conference**
15-19 October 2012	Chengdu, China	**International Conference on Mountain Environment and Development**
22-23 October 2012	Guayaquil, Ecuador	**CfP – First Latin America Congress of Free and Open Source GIS (Latin OSGIS)**
29 October-2 November 2012	El.Jadida, Morocco	**AARSE 2012 International Conference**, Theme: Earth Observation & Geo-information Sciences for Environment and Development in Africa: Global Vision and Local Action Synergy. Abstract submission - 2 January to 30 April 2012.
November 2012		
December 2012		
2013		
13-16 May 2013	Beurs, Rotterdam	**Geospatial World Forum 2013**
8-12 July 2013	San Diego, USA	**ESRI International User Conference**
2015	Durban, South Africa	**14th World Forestry Congress for SA**
1-31 August 2016	Cape Town, South Africa	**35th International Geological Congress**. Registration deadline: 30 June 2016.

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