



Spatial Data Infrastructure – Africa Newsletter



SDI-Africa Newsletter

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

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Please mention SDI-Africa as a source of information in correspondence you may have about items in this issue.



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](mailto:SDI-Africa_AT_gsdi.org) or sdiafrica@rcmrld.org or gojwang@rcmrld.org



Input to this Issue

Thank you to Kate Lance, NASA/SERVIR-Africa (USA) and Hussein Farah, RCMRD (Kenya); Karen Leveleger, Kadastre (Netherlands); Janneke Kalf, Faculty of Geo-Information Science and Earth Observation (ITC) (Netherlands); Ragnvald Larsen, Directorate for Nature Management (Norway); Steven Ramage, OGC (Norway); Lisen Runsten, Food and Agriculture Organization of the United Nations (Italy); Kenias Takavarasha, Institute for Capacity Development (Namibia); Dhanush Dinesh, International Ecosystem Management Partnership (China); Medani Bhandari, Syracuse University (USA); Temenoujka Bandrova, Local Org. Com (Bulgaria) and Ademola Braimoh, World Bank (USA) for their contributions to this issue of the newsletter.

Message from the Editor

Best wishes and happy New Year 2012 to all our esteemed readers. And thanks you to everyone who contributed news items and other geospatial information in 2011. For the year 2012, I request everyone who appreciates the content of the SDI-Africa newsletters to take a little time to share news items with the geospatial community, especially the concerns of Africa for upcoming issues. You just need a few minutes to send a useful URL, workshop summary, announcement of an upcoming event, or an article on research or practical implementation of GIS and remote sensing applications within your profession, organization or country or anywhere else. This will go along way in enhancing the gains already achieved by the geospatial community for sustainable development. Thank you, Gordon Ojwang'.



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SDI News, Links, Papers, Presentations

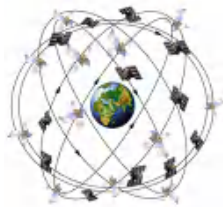
Free membership by the GSDI Association

The GSDI Association is offering free organisation memberships to government agencies in developing nations. Benefits of membership are available at http://memberservices.gsdi.org/files/?artifact_id=846. Qualifications for the GSDI Association free full membership include:

- Determine whether the national mapping, land administration, natural resource, or similar agency that is developing SDI capabilities is in a low or very-low income nation (<http://www.gsdi.org/RankingTable>).
- An authorised individual for the agency should register in the Geographic Information Knowledge Network at <http://giknet.org>.

After establishing an account, login and create an agency profile (See My Submissions and click on Enter Profile for Government Agency) After the agency profile exists, click Report SDI Implementation Experience and answer the questions. After completing the forms, fill out the GSDI Full Membership Application for the agency at <http://www.gsdi.org/fullmemshp#D>. Upon acceptance, the agency will be listed at http://www.gsdi.org/Mbrs_Spnrs and formal membership voted upon at the next GSDI World Conference (May 2012 in Quebec City, Canada).

Current and future Global Navigation Satellite Systems



Few tools have helped change and improve data collection within the field of Geographic Information Systems (GIS) more than the [Global Positioning System \(GPS\)](#). GPS has provided data collectors in the field with a simple and efficient means of highly accurate positioning. Before GPS, GIS data logging was not a precise science, as identifying exact positioning was reliant more on landmarks and map coordinates, leading to potential errors and broad estimations. Developments in GPS, however, have changed the use of GPS receivers for data collection. Now, with a hand-held GPS receiver, a GIS data collector can tell within a few feet exactly where they are in the

world. Most GPS systems can provide a precise location to within 10-50 feet, and advances and the development of new GNSS (Global Navigation Satellite Systems) means this precision will get ever more accurate.

Currently, the American NAVSTAR GPS system and the Russian GLONASS are the only fully functioning GNSS; however, several other systems are currently in development. The Global Positioning System was developed by the [U.S. Military in 1973 and became fully functional in 1995](#) with an original constellation of 24 satellites (there are now 24 satellites in continuous operation with additional spare satellites in orbit). The [Expandable 24 constellation](#) was completed in June of 2011 that optimized the geometry of the orbital planes in order to increase the navigation data by GPS users worldwide.

The Russians, who used to have a functioning GNSS called GLONASS during the Cold War only for it to fall into disrepair, fully restored the system in October of 2011 with 24 satellites in operation (21 operational and 3 spare satellites in orbit). The constellation has eight satellites on each of its three orbital planes.

The [Galileo constellation](#) is an effort by European Union (EU) and European Space Agency (ESA) and will consist of 30 satellites (27 active and 3 spares) organized into three orbital planes and each satellite will orbit the Earth once every 14 hours. Galileo should be fully functional by 2020, and will not only act as a rival to the American GPS, but also complement it. Future satellite navigation receivers will be able to receive both GPS and Galileo signal, and by using both sets of information, provide positioning that is even more precise.

The Europeans are not the only ones developing new GNSS. The Chinese are developing a new global system known as the Compass navigation system, which should also be fully functional by 2020. The constellation will hold 35 satellites. These next generation GNSS, combined with the GPS improvement plans currently in operation, mean the future of satellite navigation will result in increased accuracy, providing ever more precise GIS data logging.

Land Tenure Journal - Thematic issue on Climate Change

A thematic issue of the Land Tenure Journal is now available online. The articles can be accessed through: www.fao.org/nr/tenure/land-tenure-journal. This thematic issue brings together theories and practices related to land tenure and climate change both from the mitigation and adaptation perspectives. Articles look at the implications that REDD+ and Payments for Environmental Services pose to land tenure and administration,



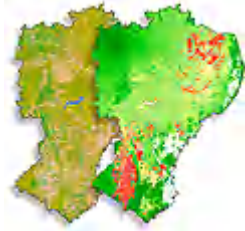
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propose approaches to deal with the new challenges and analyse the adaptation of local tenure systems and livelihoods to climate change.

The Land Tenure Journal is peer-reviewed and aims to be an open, impartial and practice-oriented global forum for exchanging the latest knowledge in land tenure. It aims to be a leading publication in the areas of land tenure, land policy and land reform. The target audiences of the journal are land professionals and practitioners. The journal also allows room for relevant academic contributions and theoretical analyses. For further information, contact: Editorial Team, Land-Tenure-Journal@fao.org.

Satellites combat degrading lands



As the UN marked World Food Day earlier October, international representatives convened in Korea to discuss ways to curb the loss of productive land to desertification. Satellites play an important role in the monitoring and assessment of drylands. Desertification is the degradation of land in arid, semi-arid and dry sub-humid areas. It is caused primarily by human activities and climatic variations because dryland ecosystems are extremely vulnerable to over-exploitation, inappropriate land use and droughts.

This phenomenon has severely affected the livelihoods of farmers around the globe, causing food insecurity in many areas. Satellites have the capability to detect desertification and have seen active land degradation trends even in Europe. Findings were presented at the 10th Conference of the Parties to the UN Convention to Combat Desertification (UNCCD) held on 10-21 October in Changwon, Korea.

ESA organised a side event on the monitoring and assessing of land degradation using satellite data. The ESA-initiated DesertWatch project is developing a user-friendly information system based on Earth observation technology to support national and local authorities in responding to the reporting obligations of the UNCCD in monitoring land degradation trends over time. In their findings presented at the conference, DesertWatch indicated that nearly half of the land in the southeastern African country of Mozambique is degraded. Even more worrying is that 19% of its land is actively degrading. Mozambique is one of the poorest countries in the world, with some 30% of households facing food insecurity. Satellites have also detected desertification in Portugal: 33% of land is degraded. Across the ocean in the northeast region of Brazil, increased agricultural activities combined with severe droughts has reduced the quality of vegetation in some areas.

A global observation system fully dedicated to drylands is still not available. Although several techniques are available, further methodological development and integration are needed to meet the UNCCD requirements for the monitoring of desertification, land degradation and drought processes. Observation from space is the only technique that can provide spatially continuous and periodically updatable observations of variables related to desertification.

AfricaGIS 2011 - Suspended



The AfricaGIS 2011 conference was suspended. Unfortunately the Organizing Committee did not, despite great effort, been able to secure the support and endorsement of relevant Government Departments to host the conference. Without this endorsement and support the safety and security of all participants and exhibitors was going to be compromised and a risk too high for EIS-AFRICA to bear.

The conference has not been cancelled and discussions between the International and Local organizing committee regarding a possible postponement for early 2012 are currently being undertaken. You will be contacted shortly regarding a final decision regarding the AfricaGIS in Abuja, Nigeria. Secretariat, EIS-AFRICA.

Satellites reveal lost cities in Libya



Satellite imagery has revealed evidence of a lost Saharan civilisation in Libya's south-western desert. With the fall of Gaddafi opening the way for archaeologists to explore the country's pre-Islamic heritage, a British team has discovered more than 100 fortified farms and villages with castle-like structures and several towns, most dating from between AD 1



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and 500. The cities were built by a little-known ancient civilisation called the Garamantes, who turn out to be far more advanced and historically significant than ancient sources suggested.

The University of Leicester team has identified the mud brick remains of castle-like complexes, with walls still standing up to four metres high. They've also found traces of dwellings, cairn cemeteries, associated field systems, wells and sophisticated irrigation systems. "These settlements had been unremarked and unrecorded under the Gaddafi regime," says project leader David Mattingly. They were highly civilised, living in large-scale fortified settlements, predominantly as oasis farmers. It was an organised state with towns and villages, a written language and state of the art technologies. The Garamantes were pioneers in establishing oases and opening up trans-Saharan trade."

The professor and his team were forced to evacuate Libya in February when the anti-Gaddafi revolt started, but hope to be able to return to the field as soon as security is fully restored.

The Libyan antiquities department, badly under-resourced under Gaddafi, is closely involved in the project. Funding for the research has come from the European Research Council who awarded Professor Mattingly an ERC Advanced Grant of nearly 2.5m euros, the Leverhulme Trust, the Society for Libyan Studies and the GeoEye Foundation.

"It is a new start for Libya's antiquities service and a chance for the Libyan people to engage with their own long-suppressed history," says Mattingly. "These represent the first towns in Libya that weren't the colonial imposition of Mediterranean people such as the Greeks and Romans. The Garamantes should be central to what Libyan school children learn about their history and heritage." Similar satellite mapping techniques have also been used to identify [lost pyramids in Egypt](#) and archaeological sites in Saudi Arabia.

[Ministry of communication technology in Nigeria to address issues on satellite launch](#)

The House of Representatives Committee on Communication Technology has directed the Ministry of Communication Technology to immediately address all issues relating to the Nigeria Communications Satellite (NIGCOMSAT) satellite 1R for a hitch free launch in December. The committee chairman, Dr. Ibrahim Shehu Gusau said the ministry should start preparing for the backups of the satellite which would be launched in China on December 19 this year.

Earlier, the Managing Director of NIGCOMSAT Ltd, Engineer Timansanyu Ahmed Rufai, informed the committee that most of the projects are near completion or almost completed and that NigComSat 1R would be launched on December 19, 2011. He said by the time the satellite is launched, it will be a major backbone for the entire ICT requirements for both government and non-governmental institutions. According to him, most of the bandwidths requirement, particularly the ICT industry which is currently estimated at \$500 million per annum justifies the government investment in the NigComSat, to provide a domestic alternative, conserve foreign exchange and to enhance our national GDP. He said private telecoms, DTH and broadband service providers will have a sigh of relief upon the launch of the satellite. Engr. Rufai lamented that, "we operated for 18 months. The satellite was launched May 13 2007 and unfortunately it was de-orbited on November 10, 2008." "But I am happy to inform the committee that the contractors and the insurance companies took the responsibility of re-launching the satellite at no cost to Nigeria and December 19, 2011 barely 50 days from now, NigComSat 1R will be re launched into orbit."

[Agreement signed for receipt of CBERS satellite data in Gabon](#)



Gabon will receive data from CBERS-3, which will be launched by Brazil and China in 2012, according to agreement between the National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais - INPE), the China Centre for Resources Satellite Data and Application (CRESDA) and the Gabonese Agency for Space Studies and Observations (Agence Gabonaise d' études et d'observations spatiales - AGEOS), signed Tuesday, Nov. 8.

INPE's goal is having stations covering all Africa, allowing the countries to have free access to satellite data. In Gabon, a station in Libreville is already being built.

Similarly, stations are being installed in Egypt and Kenya, while in South Africa and in the Canary Islands the infrastructure for receiving CBERS images is already complete.

Due to CBERS, Brazil and China can provide developing countries with benefits of using orbital data. Satellite information is indispensable to the forest monitoring, biodiversity conservation, disaster management and forecasting, mapping of agricultural areas and urban growth, among other applications.



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The director of INPE Gilberto Câmara, director of CRESDA Xu Wen, and President of the South African National Space Agency (SANSA) Sandile Malinga, ratified the agreement at the annual meeting of the Committee on Earth Observation Satellites (CEOS), performed in Lucca, Italy, Nov. 7-9.

[Environmental monitoring programme for the Albertine Graben](#), Uganda (PDF 7.71mb)



This report summarizes the process at and the results from an ecosystem indicator scoping workshop (Environmental Monitoring Programme for the Albertine Graben) held in Kasese, Uganda, April 2011- NINA Report 706. 118pp.

Uganda plan to start oil and gas exploration and development in the Albertine Graben in the Rift Valley. The area is a global biodiversity hot spot, and the oil and gas development activities can potentially have severe impacts on the ecosystem and the society. As part of management actions in connection with the planned activities, Uganda will establish an environmental monitoring programme in the Albertine Graben covering ecological and societal issues.

Funded by the Norwegian Government under the environment pillar of the Uganda oil for development program, a participatory process has been initiated to build up a monitoring program with indicators. One important step in this process was to arrange a scoping workshop attended by various major stakeholders. The workshop was conducted in Kasese, Uganda from 11th to 14th April 2011. The Norwegian Institute for Nature Research (NINA) was contracted by the Directorate for Nature Management, Norway, to facilitate the workshop. The National Environment Management Authority (NEMA) in Uganda is the lead agency in developing and managing the monitoring program, including the process of establishing it.

The main objectives of the Kasese scoping workshop was to identify focused measurable indicators to be used in the environmental monitoring programme for the Albertine Graben. The Adaptive Environmental Assessment and Management (AEAM) method was used as a working approach to the scoping in identifying and prioritizing main focal issues (Valued Ecosystem Components (VECs)), the major associated drivers (impact factors from the oil and gas development), cause-effect charts where VECs and drivers are seen in a context, impact hypotheses, and monitoring recommendations including measurable indicators.

Five major themes namely: aquatic ecological issues; terrestrial ecological issues; physical/chemical issues; society issues; and management and business issues were identified prior to the workshop. A total of 42 VECs and 78 drivers were identified, 31 cause – effect charts were constructed. According to the results the ecosystem indicators will be concentrated around wetlands and water, fish, flagship (mammals, birds, wetland animal species and floral ecosystem components). Focus was also put on indicators on diversity below ground, physical and chemical on water, air, soil and micro climate. Society indicators include settlements, food, water and sanitation, health, energy, infrastructure, education, culture and archeological sites. Recommendations concerning management and business issues were given on tourism, fisheries, agriculture and forestry, transport and construction materials.

[Algorithmic incorporation of Geographical Information technologies in road infrastructure maintenance in Uganda](#)

Geographical Information Technologies (GITs) are underutilized for Road Infrastructure Maintenance (RIM) in Uganda, thus the necessity to rationally incorporate their use as decision support tools in the participating organizations. GITs herein include: Remote Sensing, Global Positioning Systems (GPS), Geographical Information Systems (GIS) and web based tools such as Google earth.

This paper is rooted in research undertaken to assess the use of GITs as decision support tools in RIM in Uganda. Basing on results from interviews, field visits & measures and participant observations, the gaps and limitations to the usage of GITs for RIM in Uganda are discussed. Data requirements for RIM are stipulated. The paper suggests an algorithmic approach to accentuate the usage of GITs in the RIM process. This involves: a policy on data collection guidelines emphasizing the use of GPS, satellite imagery and GIS, capacity building in the theory and use of GITs, establishment of local spatial data infrastructures for road maintenance data and setting aside yearly budgets for the defined activities. The dynamic segmentation data model is considered a superior data storage strategy within the GIS.

[UNU-INRA visiting scholars program 2012](#)

The United Nations University Institute for Natural Resources in Africa announces its visiting scholar's programme 2012 and a call for the submission of proposals from interested candidates from Africa and the



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world. The main objective of the program is to provide qualified scholars an opportunity to undertake research on topics related to the development and management of natural resources in Africa, to participate in UNU-INRA activities, and to contribute to UNU-INRA publications. The program is also designed to enhance the dissemination of UNU-INRA research and to contribute to the UNU-INRA's outreach program. The program will NOT support any field work aimed at collecting data. It is suitable for researchers who have data available and need workstation facilities and financial support to analyze and publish the results of their research.

UNU-INRA will provide a monthly stipend of \$US1, 500 as a contribution towards travel, accommodation, medical, and other out-of-pocket expenses. Interested candidates should please read the announcement and all other relevant documents attached to this call CAREFULLY before applying (<http://inra.unu.edu/d1/strat%2020110911.pdf>) and UNU-INRA Strategic Plan 2011-2014 (<http://inra.unu.edu/d1/2011-07-26%20african%20green%20economy%20initiative.pdf>).

Workshop: Modernization of Cadastres



The Faculty of Geo-information Science and Earth Observation at the University of Twente and the Netherlands Kadaster - together with the UNU School for Land Administration Studies conducted a joint workshop on “Modernization of Cadastres” with the Regional Centre for Mapping of Resources for Development (RCMRD). The UNU School for LA sponsored the joint event with the Regional Center for Mapping of Resources for Development (RCMRD) and Geospatial Media and Communication (formerly known as GISDevelopment). The UN School for Land Administration Studies aims to participate as a partner in even more

regional initiatives in Tanzania and Namibia. The event took place on 4-5 September in Nairobi Kenya, occurring back-to-back with the Africa Geospatial Forum.

Twenty surveyor generals and/or directors of surveys from RCMRD member states in southern, eastern and central Africa assembled together with experts from RCMRD, UT/ITC, the Netherlands Kadaster, and the private sector in Eastern Africa (Trimble and ESRI). Ms Aida Opoku Mensah of the UN Economic Commission for Africa (UNECA) called the workshop an opportunity for the current challenges in cadastres. The workshop addressed new developments in geo-information management and geo-information technology relevant to land administration organisations.

Some topics of the workshop included, amongst many others, country experiences in modernising mapping organisations and cadastres, land information infrastructure development, e-government and land administration, inter-organisational cooperation through data sharing and open cadastres. The country presentations emphasized four questions:

- In which context of land tenure system does modernization take place in each country?
- Which modernization of cadastres is currently taking place in each country and in each organization?
- Which modernization is needed (yet currently not possible/feasible)?
- Which issues would require further research and capacity building for each country and organization?

In most of the represented countries, the context of modernization includes dual systems of land tenure systems. This duality concerns the simultaneous operation of systems inherited in colonial times with mostly local systems of communal and customary tenure. These historical contingencies still complicate modernisation efforts. In many cases, the modernization efforts aim at legal harmonization of these two systems, together with the adoption of more sophisticated or more adaptive technology. However, implementing new laws, new organisational structures, new data-collection technologies and new information architecture at the same time remains a big challenge in practice. The workshop also presented a number of developments, challenges and difficulties caused by modernisation in other countries.

In terms of capacity in the cadastral survey and mapping field, there is still a need for more surveyors, photogrammetrists, land registration officers, system developers and system managers, SDI specialists and people who are more acquainted with the developments of modern and low-cost technologies.

In the near future, RCMRD is planning a similar workshop for the Permanent Secretaries from 17-18 November 2011, where the UNU School of Land administration (ITC/Kadaster) is going to attend as well. The Geospatial Media and communication will organize a conference together with Dutch Kadaster in Amsterdam on SDI, taking place in April 2012 (www.geospatialworldforum.org/). Faculty ITC remains actively involved in both the educational and research areas of modernization. Research into the needs of modernization remains rooted in both the laboratory environment, building knowledge on theory building,



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prototyping, modeling and testing, and the organizational reality of management, including actions and examining the bottlenecks and problems.

Take the 'Business Value of OGC Standards' Survey!

The OGC Business Value Committee will use a summary of the results of the 'Business Value of OGC Standards' Survey to help better understand the effectiveness of the value of OGC's open standards and improve its programs for geospatial standards development, compliance testing and outreach. Everyone involved with geospatial or location data, software and services to complete the survey. This is an opportunity for technical and commercial colleagues to work together and highlight their business needs and requirements around open standards. OGC membership is not a requirement, and you can participate even if the software you use or provide does not implement OGC standards. The survey takes about 10 to 15 minutes to complete. An executive summary will be provided to survey respondents.

The researchers have prepared two versions of the online survey. To take the survey, if you are a technology user, visit <http://uncc.surveyshare.com/s/AQAIJDC>. If you are a technology provider (a vendor or a system integrator) or a consultant, visit <http://uncc.surveyshare.com/s/AQAIZBC>. Please also forward this message to others who might be interested in completing the survey. The survey period is 1st November through 18th December 2011.

Prizes will be awarded at random to three individuals who complete the survey. The first person whose name is drawn after the survey has closed will receive an iPad 2 (16GB, WiFi), the second will receive an iPod Touch (8GB, 4th Generation) and the third will receive a set of Bose AE2 headphones.

For further information, contact: Steven Ramage, Mobile: 0047 9862 6865, Email: sramage@myogc.org, <http://no.linkedin.com/in/stevenr>, Skype: ogc-steven, Twitter: ogc_steven.

Liberia national seminar on census data analysis, 12-14 December 2011, Monrovia



The United Nations Statistics Division (UNSD) in collaboration with the Liberia Institute of Statistics and Geo-Information Services (LISGIS) will organize a National Seminar on Census Data Analysis in the context of the 2010 World Programme for Population and Housing Censuses. The purpose of the Seminar is to assist the LISGIS on undertaking in-depth analysis of census data to produce an analytical report on the selected topics. The national seminar will cover the following topics:

- Youth and internal migration; and
- Employment and education.

During the national seminar, the staff of LISGIS will attend the lectures on the topics of focus and engage in preliminary data analyses of 2008 census data. After the seminar, participants are expected to produce thematic analytical reports, based on analyses generated during the seminar. For further information, contact: Meryem Demirci, Tel. +1 212 963 3471, e-mail: demircim@un.org. The Liberia Institute of Statistics and Geo-Information Services (LISGIS) website: <http://www.tlcafrica.com/lisgis/lisgis.htm>.

National workshop on census information, 5-9 December 2011, Kampala, Uganda,

Organized by UNSD in collaboration with Uganda Bureau of Statistics (UBOS), the workshop is designed to demonstrate through in-depth, hands-on experiences, the potential of census information as a platform for disseminating census data at any geographical level.

The participants of UBOS will learn various processes involved in the adaptation of census information including preparation of Census Info template and database, importing data, language translation and customization of the software package. The sessions will include hands-on training on using census information User Interface and Database Administration applications as well as an introduction in the process of web-enabling the census information database. The objective of the training is to create a first version of a Uganda census information application including maps and a subset of data/indicators based on data of the 2002 census and earlier censuses if available. Contact: Jan Beise, Tel. +1 212 963 4966, e-mail: beise@un.org.

Workshop on environment statistics, 5-9 December 2011, Yaounde, Cameroon

The United Nations Statistics Division (UNSD), in collaboration with the Economic Commission of Africa, is organizing a Workshop on Environment Statistics for the francophone Central African countries which will take place in Yaounde, Cameroon from 5 to 9 December 2011. The main objectives of the Workshop are to:

(a)



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- Adopt a list of environmental statistics and indicators for the Central African region for national and regional reporting;
- Review methodologies for the ECOWAS regional core set of environmental indicators for use in this region;
- Develop a way forward for a draft regional programme on environment statistics;
- Train participants from national statistical offices and environmental ministries/agencies on basic concepts, methods and best practices in environment statistics; and
- Provide a forum for exchange of information on the status of national environment statistics.

Contact: Karen Cassamajor Tel. +1 212 963 4561, e-mail: cassamajor@un.org.

[International Conference on Sustainable Management of Africa's Natural Resources](#), 5-8 December 2011, Accra, Ghana

The United Nations University Institute for Natural Resources in Africa (UNU-INRA)'s mission is to strengthen the capacity of Africa's universities and research institutions to conduct research and produce well-trained, well-equipped and motivated individuals. These individuals should be capable of developing, adapting and disseminating technologies that advance food security and promote conservation and the efficient use of the continent's natural resources for sustainable development.

To this end, UNU-INRA is organizing an international conference to highlight new research and community engagement on sustainable natural resource management and use. In addition, INRA will showcase its past achievements in the past 25 years and look at new areas of research for the sustainable development of Africa's natural resource management.

This four-day bilingual (French/English) conference is a landmark event focusing on evolving approaches, tools, methods and principles addressing the challenges associated with increasing natural resource use and sustainable development in Africa. It will feature keynote speakers from across the continent and from other parts of the world.

The conference will also provide the space for creative exchange of ideas, for networking and for forging collaboration between African researchers, corporate leaders, policy makers, media, and civil society groups. Contact: andoh@inra.unu.edu or andoharris@gmail.com.

[Seminar: Analysis and measures to prevent land grabbing in Tanzania](#), 18 November 2011, Dar es Salaam

Large scale land acquisition, also referred to as land grabbing, is taking place in many African countries. Driven by the need for large areas of land for food and biofuel production, the purchase or lease of vast tracks of lands by international and national investors has become a widespread phenomenon. Although these investments are considered to stimulate the economy in developing countries, they compete with local communities who are losing access to the resources on which they depend for food and their livelihoods.

The Land Administration Unit (LAU) at Ardhi University, Dar es Salaam, Tanzania, and its partners: the UNU School for Land Administration Studies (ITC) of the University of Twente, the Netherlands; and MKURABITA, President's Office, Tanzania; organized a one day national seminar on Land Grabbing in Tanzania.

The seminar is expected to stimulate a number of discussions among professionals and decision makers on massive land grabbing in Tanzania and the consequences notably on the threat of creating landless communities and the likelihood of fomenting land based socio-economic cum political crises. It will explore the existing weaknesses in the institutional framework and the laws governing land acquisition and ownership and prepare ground for research work on land grabbing pattern and large scale land acquisition in Tanzania. Prof. Jaap Zevenbergen, from the UNU School of Land Administration Studies, of the University of Twente was invited to give a key note speech on land registration and titling approaches to avert land grabbing. Other key speakers were Prof. I. Shivji, Prof. J.M.L Kironde, Eng. L. Salema, Dr. Felician Komu, and Mr. Issangya.

The outcomes of the seminar will be published in the new Journal of Land Administration in Eastern Africa. The Seminar will further generate inputs into the curriculum for the Postgraduate Diploma Course in Land Administration being jointly developed by the Land Administration Unit (LAU) at Ardhi University and the UNU School of Land Administration Studies of the University of Twente.

[Research Opportunities: Sensors, Empowerment, Accountability in Tanzania \(SEMA\)](#)



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The research programme "[Sensors, Empowerment, Accountability in Tanzania \(SEMA\)](#)" is funded by the Netherlands Organisation for Scientific Research under the WOTRO-Global Science for Development Programme. In the framework of this programme, the following will be recruited:

- [3 PhD candidates](#);
- [1 Postdoctoral Scientist](#) and
- 1 Software Developer to be advertised in due course.

The research focuses on how ordinary citizens in Tanzania can directly exact accountability from water and public health providers with the human sensor web. The programme entails collaboration with stakeholders from government, community based organisations, and non-governmental organisations especially during the “deploy and learn” cycles of the SEMA prototype software. Detailed information on the research programme can be found in the open-access article "[Sensors, Empowerment, Accountability in Tanzania: A Digital Earth view from East Africa](#)".

The research programme is jointly implemented by the University of Dar es Salaam (Tanzania) and the University Twente (The Netherlands). The Principal Investigators (PIs) are Dr. Juma Hemed Lungo, College of Information and Communication Technologies of University of Dar es Salaam (TZ) and Prof. Dr. Yola Georgiadou, Faculty of Geo-information Science and Earth Observation (ITC), University Twente (NL). The deadline for applications is 31 December 2011.

For further information, contact: Janneke Kalf, Faculty of Geo-Information Science and Earth Observation (ITC) (Netherlands); Tel: +31 (0)53 4874411, Fax: +31 (0)53 4874554 Email: kalf@itc.nl:www.itc.nl and www.utwente.nl/en.

New Papers of Interest

- Inputs for Rio+20 Compilation Document -The conceptual problems of Green Economy and Sustainable Development - <http://www.uncsd2012.org/rio20/content/documents/138apec.pdf>; <http://www.uncsd2012.org/rio20/index.php?page=view&type=510&nr=138&menu=20>;
- Brechin, Steven R. and Bhandari, Medani P. (2011) Perceptions of climate change worldwide, WIREs Climate Change 2011, Volume 2: 871-885. - <http://onlinelibrary.wiley.com/doi/10.1002/wcc.146/pdf>;
- Mathiason, John and Bhandari, Medani P. (2010) Getting the Facts Right: The Intergovernmental Panel on Climate Change and the New Climate Regime, Journal of International Organization Studies, Volume 1, Number 1, (September 2010) 58-71: <http://www.journal-iostreams.org/sites/journal-iostreams.org/files/JIOS1014.pdf>

[Earthzine Third Annual Essay and Blogging Contest on Sustainability](#)



Earthzine invites undergraduate and graduate students from around the world to submit an essay for its 2011 Third Annual College and University Student Essay and Blogging Contest. This year's contest theme is “How Can Earth Observation Help Us to Build a More Sustainable World?”

Earthzine, an online publication dedicated to promoting the societal benefits of Earth observation and Earth information, is conducting a competition to encourage students to explore the role of Earth observation in creating a sustainable world.

Students are invited to submit original essays that describe, reflect upon, or envision roles for Earth observation in improving [sustainability](#) around the globe. Earth observation includes technological solutions such as satellite observation, navigation and positioning systems; in situ observations, international web-based collaboration and data sharing initiatives; and social perspectives that address sustainability through a better understanding of our planet.

Winners will share \$1,200 in prizes, with \$500 for the first prize. They also will receive certificates. All finalists will receive an Earthzine T-shirt.

Eligibility: Enrollment in any (e.g. American, European, African, Asian, etc.) undergraduate or graduate degree program at an accredited college or university, attending full or part-time at the time of essay submission. Please indicate your anticipated year of graduation and the contact email of your registrar.

The submission deadline is December 22, 2011. Winners will be announced on March 20, 2012. Essays should be no longer than 2,500 words and should conform to Earthzine's [Writer's Guidelines](#). Queries and final essays should be sent to Dr. David Mullins, Associate Editor for Education at dmullins@sf.edu.

[Call for Applications: Master of Marine Management degree](#), Dalhousie University, Canada



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The Master of Marine Management (MMM) is a one year professional, non-thesis and interdisciplinary graduate program designed for students who want to address solutions for marine management problems with interdisciplinary synthesis and integration through teamwork in research and planning. The student body, approximately 20 per annum, comprises a remarkable diversity of professionals and recent graduates from many backgrounds and disciplines. Faculty members associated with the Marine Affairs Program offer world class expertise from fifteen departments across two university campuses, several federal government agencies, non-governmental organizations, and private sector companies, all focused on the ocean, coastal, and maritime sectors. Applications are due 31 January 2011: <http://marineaffairsprogram.dal.ca/>. Please direct enquiries to our Administrator, Becky Field at: marine.affairs@dal.ca or +1 902 494 3555.

Free Webinar: Land use planning & analysis with LiDAR

Now, more than ever before, GIS professionals are embracing 3D data for use within the GIS environment. To date, the ability to handle and extract meaningful information from LiDAR point cloud data has lagged behind the ability to capture point cloud data over large areas.

This presentation will cover the use of a new tool that dramatically increases the utility of LiDAR point cloud data through increased performance in data handling, as well as tools to classify and extract meaningful information from the data that can then be incorporated in your GIS. Join us for a one hour webinar and learn about land use planning and analysis with LiDAR data as we review a case study on identifying ideal building roofs for solar panel installation.

To begin the webinar, an overview of LiDAR data will be provided, including its capabilities, advantages, and popular applications. Then, using the new LiDAR data analysis software, E3De™ from Exelis Visual Information Solutions, you will learn how to easily extract elevation layers and building footprints from a LiDAR data set. After extracting relevant elevation and building footprint information, demonstration will be done on how you can fuse results with satellite imagery for further analysis using ENVI image analysis software. The final product will show residential and commercial building locations and sizes, including information on roof slope and direction, allowing you to determine which buildings is best suited for solar panel installation. Date: Tuesday, December 6, 2011, Time: 10:00 a.m. EST | 7:00 a.m. PST | 4:00 p.m. CET Duration: 1 hour, Cost: FREE. [Register Now](#).

Information briefs prepared on different aspects of climate change and agriculture:

- [Gender and Climate Change Research in Agriculture and Food Security for Rural Development](#) - an information brief on new research methods and training materials, prepared by FAO and CCAFS
- [Increasing Agriculture's Climate Smartness](#) - an information brief from the Workshop on Agriculture Development and Climate Smart Agriculture in Developing Countries, Copenhagen, February, 2011 funded by the FAO and the European Union and organized by Aarhus University, ICROFS, CCAFS, the University of Copenhagen and the FAO
- [Monitoring and Assessment of GHG Emissions and Mitigation Potentials in Agriculture](#) - an information brief prepared by the FAO-MICCA Programme

For more information, please see: <http://www.fao.org/climatechange/micca/en/>.

Tiger Workshop 2011 Programme, 12-13 December 2011, South Africa

The TIGER workshop 2011 will take place on 12-13 December 2011 at the Glenburn Lodge, Kromdraai Road, Swartkops, Muldersdrift, 1747, South Africa (www.glenburn.co.za). The workshop aims at highlighting the status of the initiative almost 3 years after the beginning of its second phase. It will be organised around invited speeches and selected contributions presented by the on-going TIGER-2 projects. The event will offer an opportunity to:

- Analyse the potential use of EO technology in the African water sector from high level contributions from key African stakeholders,
- Review the latest findings and results from the TIGER activities and its projects,
- Discuss on the next steps and future evolution of the initiative.

This forum is open to African and international participants. All institutions involved in the execution of the TIGER Capacity Building Facility will be present; Principal Investigators and selected staff members of the TIGER Projects; Principal Investigators and selected staff members of the Regional Offices; Representatives of the TIGER Capacity Building Consortium member institutions.

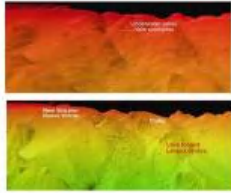


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Practical SDI implementation materials from within and outside of Africa

Mapping the formation of an underwater volcano



On the 9th October, scientists of Spain's National Geographic Institute (Spanish Ministry of Development) detected the initial seismic movements that gave way to the birth of the underwater volcano in waters off El Hierro Island in the Canaries, Spain. Then, by the 24th of the month, scientists on board the Spanish Institute of Oceanography (IEO, Ministry of Science and Innovation)'s ship Ramón Margalef had already completed the bathymetry (mapping of the sea bed) with unprecedented precision.

In 1998, within the framework in Spanish Exclusive Economic Zone, researchers of the IEO and Spain's Marine Hydrographic Institute (Spanish Ministry of Defence) also mapped the same area from within the oceanographic ship Hespérides. Using a geographic information system, these images have now been superimposed onto those just taken and thus the birth of the volcano has been confirmed. Acosta says that "it is spectacular to see how what was once an underwater valley is now a volcanic cone with its descending lava tongue."

Scientists have also created graphs of the gas plumes that are consistently coming out of the main crater and the surrounding cracks. However, at present the possible development and risks of the volcano have not been officially declared. Their mission is to provide data to those in charge of the Special Civil Protection Plan for Emergency Volcanic Risk in the Canary Islands (PEVOLCA) as a way of aiding them in the decision making process.

Up until the 31st October, photographs and videos were taken of the volcanic cone with an array of high resolution cameras aboard the remote observation submarine, Liropus. A further stage will involve the analysis of the currents and the physicochemical properties of the columns of water that surround the new volcano. For more information visit: www.ieo.es.

Professional support for GIS software developers building web- and cloud-based applications

Geosparc, the company professionally supporting the open source GIS development software Geomajas, today unveils its Geomajas Developer Support Packs. More and more developers are using Geomajas to develop web- and cloud-based GIS applications. These developers are looking for professional support for technical matters during development and when bringing an application into production at the customer's site. With the new Developer Support Packs Geosparc provides a simple way of addressing those needs in a timely, qualitative and efficient manner.

Aimed at software developers working with Geomajas, the Developer Support Pack comes in 4 flavours: 10 hours, 20, 40 and 100 hours. As part of the offering Geomajas experts provide support services to assist with the diagnosis of technical issues when using Geomajas including troubleshooting, configuration issues, reproducing software defects and specific assistance in development projects. All support requests are logged into a web-based issue tracking system to which Geomajas experts respond within one business day.

GPS 'collars' camels in the Gobi



Prof. Chris Walzer and Dr. Gabrielle Stalder, veterinary scientists at the Research Institute of Wildlife Ecology at the Veterinary Science University, Vienna, and successfully attached GPS satellite collars to endangered wild Bactrian camels in the Mongolian desert. Their efforts are part of the long-term Gobi Research Project on wild horses, Asiatic wild asses, and other animals that make this unique environment their home.

The range of the wild Bactrian camel (*Camelus ferus*) has been reduced to only three locations world-wide: two in China (Lop Nur and Taklamakan desert) and one in Mongolia (Great Gobi A Specially Protected Area). The Great Gobi Protected Area was established in 1975 to protect a unique desert environment that is home to several rare or globally threatened mammal species, such as the wild Bactrian camel, the Gobi bear (*Ursus arctos gobiensis*), the snow leopard (*Uncia uncia*), the argali wild sheep (*Ovis ammon*) and the Asiatic wild ass (*Equus hemionus*).

However, habitat deterioration due to increasing human demand for livestock pastures and water resources, illegal hunting, and recently also a marked increase in illegal placer mining (mining valuable minerals by washing or dredging activities) in the protected area region have become a conservation concern.



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“Increasing incidences of resource extraction in the area seriously jeopardize the integral protection of the camel’s and other species’ habitat,” says Chris Walzer, a senior veterinary scientist at the Research Institute of Wildlife Ecology (FIWI) of the Veterinary Science University, Vienna, who has a long-standing landscape-level commitment to conservation research in the Gobi.

The wild Bactrian camel is listed by the International Union for Conservation of Nature (IUCN) as critically endangered. About 600 animals are estimated to remain in China and between 350 and 1,950 in the Great Gobi a protected area in Mongolia. It is difficult to estimate population size more precisely because of the remoteness and large size of the area, compounded by the inherent difficulty of estimating population size for low density “clumped” populations. There are large knowledge gaps relating to the movement patterns, habitat use, behaviour, ecology, population dynamics, and veterinary aspects of wild camels. One tool for finding out more about where they go and how they use their habitat is the use of GPS collars.

This information is important for the development of appropriate conservation strategies. According to Chris Walzer, it is especially important to protect suspected migration routes between Mongolia and China. “But to do so, we first need to establish exactly where the camels tend to roam.” In October 2011, Chris Walzer and Gabrielle Stalder (FIWI) and their Mongolian colleagues were able to capture and collar four wild camels. Between October 2002 and June 2007, Chris Walzer and other scientists had radio-collared and monitored 7 free-ranging wild camels, but those collars are no longer operational and data from more individuals was urgently needed to reveal habitat and space use patterns. Now there are four more individuals whose GPS signal will provide essential locational data.

Using Unmanned Aerial Systems (UAS) for remote sensing of archaeological sites



Unmanned vehicles are becoming more widely available both in the military and civilian sectors for their usefulness for remotely acquiring a variety of data. Unmanned Aerial Systems (UAS), previously referred to as Unmanned Aerial Vehicles (UAV), are integrated ground, air, and data systems in which an aircraft (fixed wing or rotary) are either remotely piloted or operates autonomously and can perform a number of missions, including reconnaissance and remote sensing.

Beyond the military’s interest in UAS’s, the civilian sector has become increasingly aware of these systems and due to lower tech options; UAS’s have become useful in a number of scientific discipline studies.

Archaeological researchers are an early adopter of remote sensing technology but until the early part of the twenty-first century data was primarily limited to aerial/satellite imagery and photogrammetry. These methods were rather successful for a number of projects, most notably investigations of the geoglyphs of Nazca, Peru, but were still rather limiting in many ways. Examining the Nazca case study, these archaeological features are highly unique and unusual and have been a bit of a mystery for the last century, largely due to the difficulty of recording these large features. The Nazca lines are huge, some measuring 200 meters, and are combinations of lines, trapezoids, stars, human figures, and animal figures. The geoglyphs are made by removing reddish pebbles of the high desert plateau and exposing the light colored ground underneath.

In a study published in 2000, Grün et.al used digital photogrammetric technology and integrated their data into vector and raster GIS data. This was the first time that these archaeological features were recorded using a GIS approach. A few years later, in 2004, Eisenbeiss published a study in which a mini unmanned aerial vehicle was used for photogrammetric recording and documentation of a previously identified heritage site in Peru, Pinachango Alto. This study used a Copter 1B from Survey-Copter equipped with GPS/INS stabilized system, an onboard Cannon D10/D60 camera, and a ground control station by weControl. In more recent years, a wide variety of UAS systems have been developed to address these early problems of duration, payload weight, and computer memory. In addition, GPS, LIDAR, photography, and wireless data integration have also improved allowing for viewing of real-time imagery from UAS’s for a period of several hours. Thermal infrared photography from UAS’s is another improvement that has allowed archaeologists to see previously unknown and subtle features on top and beneath the surface landscape. Linear features such as prehistoric roads and canals can be easily detected as well as some subsurface features and burials using thermal infrared photography. Due to these improvements in the technology a number of archaeological survey and recording projects around the globe have used unmanned aerial systems to locate and map archaeological sites. In fact, the technique is becoming so widespread it has earned the name “aerial archaeology.”



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GIS Tools, Software, Data

[World Bank soil carbon sequestration geodatabase](#)

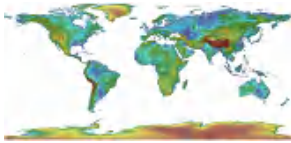
Soil carbon sequestration through sustainable land management technologies offers triple win by enhancing agricultural productivity and reducing rural poverty, offering effective solutions for limiting greenhouse gas concentrations in the atmosphere, and building natural soil capital and minimizing the variability of agricultural ecosystems to climate change and variability.

This geodatabase provides per hectare estimates of soil carbon sequestration under different improved land management practices for a period of 20-25 years. The method is based on Rothamsted soil carbon modeling to 30 cm soil depth to conform to Intergovernmental Panel on Climate Change (IPCC) guidelines. The soil C stock change due to change in management practices results from addition of organic inputs and their decomposition over time as influenced by environmental factors specific to different parts of the world.

The land management practices for the global database include agro-forestry, composted manure, direct manure, green manure/cover crops, no-tillage, and residue management under sorghum, maize, millet, barley, pulses, rice, soybean and wheat cropping systems.

Information on carbon sequestration potential of a location can be derived by point-and-click or by searching using place name. The database allows user to download and integrate Geographical Information System data with other information to estimate soil carbon stock changes for different agricultural projects.

[New Global Elevation Data Available to Download: Global Multi-resolution Terrain Elevation Data 2010](#)



The U.S. Geological Survey ([USGS](#)) and the National Geospatial-Intelligence Agency ([NGA](#)) have released an updated and more accurate global elevation model that pulls data from Digital Terrain Elevation Data (DTED) from the Shuttle Radar Topography Mission (SRTM); Canadian elevation data; SPOT 5 Reference 3D data; data from NASA's Ice, Cloud, and land Elevation Satellite (ICESat); and updated Antarctica and Greenland terrain models. This new elevation data called Global Multi-resolution Terrain Elevation Data 2010 (GMTED2010), replaces the thirty year old GTOPO30 terrain model.

GMTED2010 is a suite of seven raster data products: minimum elevation, maximum elevation, mean elevation, median elevation, standard deviation of elevation, systematic subsample, and breakline emphasis. The spatial resolution of GMTED2010 ranges from 30, 15 and 7.5 arc-seconds (approximately 1 kilometer, 500 meters and 250 meters, respectively). The data was created by aggregating the highest resolution data available in a given geographic area. At this spatial resolution, the data can be appropriate for GIS analysis at the regional, continental, and global level.

GTOPO30 is geo-referenced to the World Geodetic System 1984 (WGS 84) horizontal datum and, in most cases, to the Earth Gravitational Model 1996 (EGM96) geoid as the vertical datum. More details about this global elevation data can be found at [USGS Open File Report 2011-1073](#). The data can be downloaded to for free and without restriction from the [USGS EROS center](#).

Training Opportunities

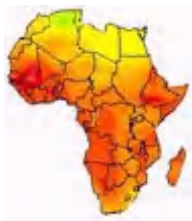
Have you signed up to receive [SDI-Africa Newsletter](#) notices? It only takes a minute, and then the GSDI Association can notify you when a new issue of the SDI-Africa newsletter is available, plus alert you to particular GSDI announcements (like a call for GSDI grants, or a call for papers for a GSDI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

[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



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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](#).

ICD has provided training to United Nations Agencies, African Union, ECOWAS and staff for most ministries in African countries' governments. 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. Submit your training requests by email or contact by phone or request sms call back. Contact Mr. Kenias on coordinator@icdtraining.com.

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. Beginning in January 2011, users will be able to test for five certifications. The remaining eight are still in development and will be available later in the year. 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: December 2011, January and February 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://esrietraining.cloudapp.net/>. For more information, contact by email: training@esriea.co.ke,



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telephone: +254 20 2713630/1/2 or visit the offices located on 3rd floor, KUSCCO Centre, Kilimanjaro Avenue, Upper Hill, Nairobi, Kenya.

Training at Oakar Services

Oakar Services continues to building capacity for geospatial solutions within Eastern Africa. The following courses are available in 2011, which are offered at Oakar’s Training Centre or client’s site.

GIS based courses	Duration (Days)
• Introduction to GIS	2
• Fundamentals of ArcGIS	5
• Managing Water Utilities Using ArcGIS	3
• Introduction to Web Mapping	3
• GIS for Natural Resources Management	3
• Using GIS for Resource Planning and Management	3
• Working with ArcGIS 3D Analyst	2
GPS based courses	
• Data Collection Using GPS	2
• Mobile Mapping Using MobileMapper Field software	2
• Mobile Mapping Using ArcPad	2
Remote Sensing based	
• Introduction to Remote Sensing	2
• Image Processing with ERDAS Imagine	3
• Fundamentals of ERDAS IMAGINE I	4
• Fundamentals of ERDAS IMAGINE II	3
• Introduction to Leica Photogrammetry Suite (LPS)	4
• Stereo Analyst for ArcGIS	3
Specialist Course	
• ArcFM UT (Utilities Solution)	5
• Introduction to Cellular Expert and Implementation	5

You can register for [Focused Training Events](#) on GIS, GPS and Remote Sensing. Further information and enrollment - www.osl.co.ke or email at training@osl.co.ke or call Catherine or Teddy on Tel: +254-20-2718321 / 2715276 | Mobile: 0721-244785 / 0733-448255.

University of Twente - ITC Faculty of Geo-Information and Earth Observation: Registration for courses (2012-2013)



Faculty of Geo-Information Science and Earth Observation

UNIVERSITY OF TWENTE

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).

ITC Short Course: Remote Sensing and GIS for Geological and Mineral Exploration

The course will be held on 16-27 January 2012 at the SEAMIC premises in Dar es Salaam, Tanzania. This two-week course provides an introduction into the application of GIS, remote sensing and airborne geophysics to geologic mapping and mineral resources exploration. The following will be covered: 1) The analysis and interpretation of geological data sets, such as ASTER satellite imagery, aeromagnetism and gamma-ray spectrometry and geochemistry, 2) the integration of different data sets to enhance geologic interpretations, and 3) mineral prospectivity modeling with GIS to generate exploration targets. Concepts and theories are explained in interactive lectures and their application will be practiced in hand-on exercises of East-African and other case studies.

Target group: Geologists who are working in the field of geological mapping and/or mineral resources exploration who want to deepen their knowledge of the use of digital data sets in a GIS environment to increase the efficiency of geologic mapping and exploration campaigns.

The course is at an advanced level and participants must be familiar with the basics of GIS and remote sensing. They must have an educational background and/or working experience in Earth Sciences.

The tuition fee is 2500 Euro, which excludes traveling to SEAMIC and accommodation. Please send your application to Mesfin Wubeshet at SEAMIC. Registration deadline is 7 January 2012.



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For further information about the course contact: Mesfin Wubeshet, (+255) 22 2650347, F: (+255) 22 2650319, M: (+255) 71 3262956; 78 3262956; 75 3262956, E: [Mesfin.Wubeshet](mailto:Mesfin.Wubeshet@seamic.org), [SEAMIC](http://www.seamic.org), I: www.seamic.org or Frank van Ruitenbeek, T: +31 (0)53 4874 280, F: +31 (0)53 4874 336, E: [Frank.van.Ruitenbeek](mailto:Frank.van.Ruitenbeek@itc.nl), I www.itc.nl or www.utwente.nl.

[ITC Distance Course: Geostatistics and Open-Source Statistical Computing](#)

The certificate course will start from 23 January 2012 for 6 weeks. Almost all the interesting data collected in geographical studies are from known locations on, in or over the Earth's surface. These data usually have a spatial structure that can be visualized and modeled. The resulting models can be used to map by interpolation, for example, using kriging or trend surfaces. Often, conventional statistical methods are not valid when there is spatial covariation, so specific geostatistical methods must be used to make inferences. The model of spatial covariation can also be used to design sampling plans. Statistical computing is becoming routine among geoscientists.

In addition, extensive computing using actual datasets is the best way to learn statistics. The R Project for Statistical Computing is the leading open-source environment for exploratory, introductory and advanced computational statistics. R includes several add-in geostatistical packages. This course will use mostly the GSTAT package, although students may elect to use any software that is available in their organization for a data analysis project.

This course is aimed at postgraduate students and working professionals who wish to apply spatial statistics and geostatistical computing in research and consulting projects. The tuition fee is 1000 / 500 Euro. Registration deadline: 2 January 2012.

[ITC Distance Course: Hyperspectral Remote Sensing](#)

The certificate course will start from 30 January 2012 for 6 weeks. Hyperspectral remote sensing and interferometric SAR are the two major steps forward in earth observation for earth sciences made in the late eighties. While Interferometric SAR allows to measure sub-millimetre surface deformations of the earth surface crust that can aid in understanding stress and strain changes and in turn can help in understanding crustal dynamics, hyperspectral remote sensing allows detailed surface composition to be revealed from satellite observations. Hyperspectral sensors acquire images in a large number of (>40), narrow (<0.01 to 0.02 m. in width), contiguous (i.e., adjacent and not overlapping) spectral bands to enable the extraction of reflectance spectra at a pixel scale that can be directly compared with similar spectra measured either in the field or in the laboratory.

This Distance education course introduces state-of-the-art techniques for processing and interpreting multispectral and hyperspectral data, with a focus on airborne and satellite-based hyperspectral sensors.

The course is designed for students, researchers and practitioners in remote sensing with a background or interest in earth and/or life sciences who want to learn the basics and prospective applications of hyperspectral remote sensing. Basic knowledge of remote sensing is desirable. The tuition fee is 1000 / 500 Euro. Registration deadline: 9 January 2012.

[ITC Distance Course: Systems analysis and modeling](#)

The certificate course will start from 13 February 2012 for 6 weeks. Systems analysis and systems thinking present a way to treat the complexities of modern world and understand how systems evolve and what can be expected from the future. This course is an introduction to simulation modeling of dynamic systems that will familiarize participants with basic principles of systems analysis and modeling. Applications and case studies are drawn primarily from ecology and economics. Participants can consider different modeling strategies and learn how to formulate, build and analyze models.

The course will teach you to think in terms of systems, to deal with complexity, to build conceptual and simulation models to analyze your systems. It is an essential introduction to such applications as Environmental Impact Assessment and Strategic Environmental Assessment, it is essential for decision making, environmental management and sustainability science. The course bridges the gap between static spatial maps and dynamic spatial processes. Several modeling software packages are introduced, including Stella, Madonna, and Simile. Investigation of alternative modeling software packages is encouraged.

The course is relevant for everyone interested in systems, complexity, and modeling. The course is designed for a broad audience, including those with little or no modeling expertise. Some basic knowledge of calculus is an advantage, although most of the needed concepts will be introduced during the course. The major skill



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that is sought and fostered is the ability to think logically and make connections between processes, events and actors. The tuition fee is 1000 / 500 Euro. Registration deadline: 7 February 2012.

ITC Distance Course: GIS Data Quality

The certificate course will start from 12 March for 7 weeks. This course aims to cover the basic principles of spatial data quality. This subject is of central importance in GIS and related fields since the quality of the data used and produced impacts on the quality of decisions made. The term “spatial data quality” is widely used in academic, governmental and industrial contexts but often remains undefined. In this course, participants are required to give critical attention to the meaning of spatial data quality. Greatest attention will be given to quantitative and statistical aspects of the subject. To do this, we will revise and develop some fundamental statistical concepts and computational tools that will be of more general value for data analysis and modeling.

The course is relevant for a wide range of geospatial data users and producers. The tuition fee is 1000 / 500 Euro. Registration deadline: 20 February 2012.

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 interested 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

Renewable Energy and Adaptation to Climate Technologies (REACT) Funding

The AECF has launched the second round of Renewable Energy and Adaptation to Climate Technologies (REACT Round 2), to catalyze private sector investment and innovation in low cost, clean energy and climate change technologies.

Please note that for REACT Round 2 the AECF is particularly keen to encourage business ideas that have an adaptation to climate change component and can make the case for this by, for example, linking the idea to reduced vulnerability of rural people. Further, there will be strong receptivity to proposals that: (i) demonstrate both adaptation together with low carbon benefits and/or adaptation with underpinning financial services; and (ii) take place in particularly vulnerable ecological zones.

African and international for-profit companies are eligible to apply. (There is no restriction on where the applicant company is from.) Funding is provided as grants and interest free repayable grants. Supported projects must take place in one or more of the following countries in East Africa: Burundi, Kenya, Rwanda, Tanzania, and Uganda. The application deadline is December 15th, 2011.



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The Africa Enterprise Challenge Fund (AECF)

The Africa Enterprise Challenge Fund (AECF) provides grants and interest free loans to businesses who wish to implement innovative, commercially viable, high impact projects in Africa in the areas of agriculture, financial services, renewable energy, and technologies for adapting to climate change. There are three funding windows currently open:

- Africa Agribusiness Window - www.aecfafrica.org/aaw/
- South Sudan Window - <http://www.aecfafrica.org/ssw/>
- Renewable Energy and Adaptation to Climate Technologies Window - <http://www.aecfafrica.org/react/>

African and international for-profit companies are eligible to apply. (There is no restriction on where the applicant company is from.) Funding is provided as grants and interest free repayable grants. Supported projects must take place in one or more of the following countries in East Africa: Burundi, Kenya, Rwanda, Tanzania, and Uganda. The application deadline is December 15th, 2011. Visit the AECF website: www.aecfafrica.org for more information and to download the application form and guidance notes.

U.S - IALE Foreign Scholar Travel Award

27th Annual Symposium - Informing Decisions in a Changing World, 8-12 April, 2012, Newport, Rhode Island.

The United States Regional Association of the International Association for Landscape Ecology (US-IALE) has a program to support attendance at the annual meeting by landscape ecologists from foreign countries and to foster international exchange about advances in landscape ecology. The award recipients will receive US \$1,200 at the Annual Meeting. It is the recipients' responsibility to make all transportation arrangements and cover all transportation and lodging costs associated with participating in the meeting.

1. Applicants are NOT eligible if:

- A citizen or current resident of the United States or Canada.
- A citizen of a G7 country (France, US, Britain, Germany, Japan, Italy).
- (Of any nationality) is currently studying in the United States or Canada.
- (Of any nationality) received a Master's or Doctorate at an institution in the United States or Canada.
- Previous recipients are also ineligible.

Applicants must submit an abstract for a paper or poster presentation at the 2012 conference. Submit your abstract to the conference organizers by 16 December 2011 at the conference website. Submit your FSTA application materials by email to: ddonnerwright@fs.fed.us or by post (please include electronic copy) to Deahn Donner, Northern Research Station, Institute for Applied Ecosystem Studies, 5985 County K, Rhinelander, WI 54501. Awards will be announced on or before 13 January 2012.

Employment Opportunities

South Sudan Roads Authority – Senior Management Posts

The Southern Sudan Roads Authority Act, 2011 established the South Sudan Roads Authority (SSRA) as an autonomous body corporate. The Act stipulates that the SSRA shall have responsibility for the management, development, rehabilitation and maintenance of all Inter-state and International Roads in South Sudan and road development in war affected areas as may be directed by the Minister of Roads and Bridges.

SSRA is a legal entity with a duly constituted Board of Directors. The priority of the Board now is to make SSRA operational. SSRA is committed to the highest standard of corporate governance, business integrity and professionalism. In this respect, the Board of Directors, SSRA, now invites applications from South Sudan Citizens to fill a number of available positions in the Authority as attached below:

1. Director of Road Maintenance
2. Director of Finance
3. Director of Procurement
4. Director of Projects
5. Director of Administration & Human Resources Development
6. Director of Planning & Programming
7. Chief Internal Auditor
8. Legal Counsel
9. Manager, Corporate Communications



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These senior management positions in SSRA need persons of high moral character and proven integrity, with relevant qualifications and work experience relating to the functions of the respective Directorate of the Authority.

In order to apply for the position(s), the applicant is required to submit the following:

- Application for the position,
- A detailed curriculum vitae,
- A capability statement – indicating the technical understating of the Terms of Reference for the position, the working experience attainments and providing evidence of the attributes indicated in the Person specifications,
- Provide names, address including e-mail, and telephone contacts of three referees, one of whom should be the current or most recent employer.
- Copies of academic certificates and transcripts.

The above documents constitute the application for the position, and the applicant is required to endorse each page of the document(s) to be submitted. Applications by e- mail are admissible provided they are in PDF format. E-mail applications should be addressed to: ssrajobs@sisp-sudan.com.

Candidates submitting hard copies of the application, should send one original and two photocopies, sealed in one envelope, clearly marked with the following words “Application for the Position of South Sudan Roads Authority” addressed to and delivered by hand or courier to: The Chairman of the Board of Directors, South Sudan Roads Authority, Ministry of Roads and Bridges, Yei Road Offices Republic of South Sudan Juba, South Sudan, Attention: The Secretariat South Sudan Roads Authority Yei Road Office

The closing date for receiving applications is 15 December 2011 at 5.00 p.m. local time. See the complete advertisement with the list of positions attached: [Final Advert HOD-SSRA 1.pdf](#).

[Post Doctoral Fellow Community-Based Natural Resource Management](#), Ghana

The WorldFish Center seeks a Post doctoral Fellow to design and conduct research on integrated coastal management and fisheries governance in the Western Region of Ghana as part of the USAID funded [H&N MPOANO](#) (Our Coast) Initiative.

You will have a PhD preferably in a field related to social or environmental sciences, such as human geography, development studies and natural resource management. You will have proven capabilities in participatory and community based research, as well as good knowledge of principals of natural resource management. Experience working in developing countries would be a distinct advantage. Employed by WorldFish, you will work in partnership with a national project office and have the direct support of a Ghanaian coastal fisheries adviser and a local graduate research assistant. The position requires that you live in a rural community in Ghana for the duration of the project (home leave applicable). The position is for 18 months, and is potentially renewable if additional funding is identified. The incumbent should posses:

- Strong theoretical and practical grounding in principals of participatory social research;
- Theoretical and practical knowledge of community-based resource management in a developing country context would be a distinct advantage;
- Qualitative and quantitative research skills with a history of research publication;
- Proven ability to set and achieve targets independently and regulate workflow;
- Proven ability to engage in discussions with managers and policy makers;
- Ability to work in multidisciplinary teams;
- Strong interpersonal, communication and coaching skills;
- Proficient in English language both in writing and verbal; and
- Willingness to live in ‘basic’ condition in a rural community.
- PhD in social research (with community experience in developing countries), or natural resource management (with developing country experience and a proven record in social research); and
- Demonstrated records of working in developing countries with limited resources would be a distinct advantage.

Please indicate in your application the source of this advertisement (where you saw the job announcement) to the Human Resources Strategy and Services Unit at worldfish-hr@cgiar.org. Screening of applications will begin 10 December 2011. Apply by 31 December 2011. This is a global regular full-time position based in Sekondi, Ghana. Position will remain open until filled.



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Conservation Programme Manager, Nairobi, Kenya

WWF - The global conservation organization is keen to recruit the following position to be based in Nairobi, Kenya. Under the supervision of the Regional Conservation Programme Director, the position ensures that the WWF-ESARPO transboundary programmes and projects are effectively implemented in close collaboration with the relevant country offices and ensure collaboration, lateral and vertical synergy between regional level trans-boundary work and country level work to deliver landscape-level trans-boundary outcomes; develops fundable proposals that respond to the ESARP Conservation Strategy objectives; establishes and implements effective project organizational / management structures, policies, and processes; ensure that WWF-ESARPO technical standards and reporting requirements are met; works closely with the Strategy and M&E Officer to build staff capacity and maintain high quality reporting standards; work with the Regional Conservation Programme Director and other relevant staff to generate key 'lesson learning' documents, case studies on conservation success and other knowledge sharing and communication material.

The incumbent must possess: at least an advanced university degree in an appropriate field (conservation / environment / natural resource management);

- additional academic training or a degree in a management field would be a strong asset; proven track record in successfully developing, leading, and managing projects in the field of conservation, natural resource management, and/or other related fields;
- proven experience in programme development, budgeting and financial management in a multi-donor and multi-currency setting; at least 10 years of professional experience in a project management role, 5 years of which should be in the Eastern/Southern Africa region with demonstrated success in managing multi-disciplinary teams;
- skills in negotiation, liaison, and in relationship and conflict management; strong skills in project planning, proposal writing, financing, management, implementation, and evaluation; proven leadership and team management skills; excellent inter-personal skills, with the ability to network and to develop and maintain strong relationships at all levels, both internally and with government agencies, the not-for-profit sector, the scientific community, the business community, and the WWF Network; adaptable, flexible, able to take initiative and prioritize among competing demands; Strong management/oversight skills, focussed and results oriented;
- Excellent oral and written communications skills in English; adherence to WWF's values, which are: Optimistic, Engaging, Determined and Knowledgeable;

Interested candidates who meet the above requirements should email a cover letter and CV to the Human Resource Department at WWFESARPO – Humanresources@wwfesarpo.org not later than 31 December 2011.

Ecologist, Nairobi, Kenya

The African Wildlife Foundation (AWF) is the leading international conservation organization focused solely on the African continent. AWF's mission is, together with the people of Africa, to ensure that the wildlife and wild lands of Africa will endure forever.

AWF currently seeks to hire a Heartland Ecologist to be based in its Kilimanjaro Heartland Offices in Namanga who will be responsible for all conservation science in the heartland. Reporting to the Kilimanjaro Heartland Director with matrix reporting to the AWF Chief Scientist, the Heartland Ecologist will be incharge of design, data collection, collation, storage, analyses and dissemination of information in ecological monitoring, integrated land-use zoning, climate change and applied species research and conservation in the Kilimanjaro Heartland. S/he has an obligation to participate in fund-raising, policy, sharing knowledge about AWF work, managing program, partnerships, mentoring, monitoring and evaluation of ecological work embedded in the heartland.

- Be responsible for all priority ecological monitoring in the AWF Heartland.
- Provide monthly briefings/ updates on species related activities.
- Ensure ecological data and information feeds into the integrated land use zoning on the AWF Heartland.
- Undertake species conservation action in the AWF Heartland.
- Ensure climate change science integration into the Heartland program.
- Represent AWF in strategic forums.

Qualifications

- Postgraduate (MSc. or PhD degree) in relevant field.
- At least 3 years post degree experience in the sector – any relevant area of ecology acceptable.



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- Direct experience of conservation or field ecological work in Africa.
- Experience engaging partners and other stakeholder consultation in project development.
- Experience working under organizational and site-level strategies as member of teams.
- Demonstrable commitment to AWF mission and understanding of issues faced by AWF in delivering its mission.
- Have verified record participating in design, managing resources and running a project.
- Participant in several forums and published at least one peer-reviewed paper.
- Must have thorough knowledge of ecological and human issues relevant to AWF's Heartlands Program approach.
- Has acceptable level of knowledge of local laws and regulations governing research and other ecological work in the country.
- Be fluent in spoken and written English.

Please send a cover letter, your detailed CV indicating daytime telephone numbers, address and names of three referees to Human Resources Manager at Humanresources@awfke.org. Closing date: 16 December 2011.

Data Management Specialist, Nairobi, Kenya

Reporting to the Monitoring and Evaluation Advisor, s/he provides the technical expertise to implement different stages of data and database management in line with the needs of the overall monitoring, evaluation, research and reporting framework of the project. S/he manages the integrity of the databases, translates information requirements of program managers in the desired data architecture, develops processes to link and analyze data from a variety of data sources. S/he provides guidance for designing, development and use of data capture tools. The role will ensure use of standard national and project specific tools to collect, analyze and synthesize data.

The incumbent should possess:

- A Bachelors Degree in IT or a data management related field with 5-7 years progressive work experience.
- Proven experience in database design, development, implementation, documentation and management using a variety of tools including SQL-compliant relational databases
- Experience with the design and support of high standards for data quality and security in large, multi-user data management systems
- Demonstrated experience with Health Management Information Systems;
- Working knowledge of USAID/PEPFAR/GOK data requirements
- Good planning and organizational skills

Please apply to email: kenyajobs@pathfinder.org. Deadline for application submission: 16 December 2011.

Other

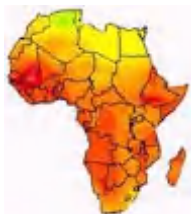
Forum on ecosystem management and green economy, November 18, Beijing, China

The United Nations Environment Programme (UNEP) and the Chinese Academy of Sciences (CAS) co-organized a High-level International Forum on Ecosystem Management and Green Economy. The event also marked the launch of the International Ecosystem Management Partnership (IEMP) in Beijing.

The forum aimed to contribute to the success of the United Nations Conference on Sustainable Development, popularly known as Rio+20, by highlighting the pivotal role of ecosystem management in the development of a Green Economy. The forum was attended by over 200 participants, including heads of UN and other international organizations, leaders and ministers, renowned scientists, business leaders and representatives of the civil society. Addressing the forum, Mr. Zukang Sha, UN Under-Secretary General in charge of the UN Department of Economic and Social Affairs and Secretary General of Rio+20, pointed out that the Forum's outputs would form a key input to Rio+20, in the context of the urgent need to protect and restore the world's ecosystems.

Based on the key findings reflected in the Issues paper, the Forum proposed the four recommendations for Rio+20:

- Political commitment at the highest level is urgently needed if ecosystem management is to have the adequate weight it deserves in the Rio+20 arrangement;
- Political support and appropriate governance structures are needed for improved synergies between ecosystem management and the Green Economy in developing Rio+20 policy frameworks;



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- Adequate financial, technological and knowledge resources must be allocated, including in national policy-setting, awareness-raising, capacity-building and planning and practices, particularly in developing countries;
- Building capacity and ecological infrastructure in developing countries, such as Africa, is a prerequisite for enhancing ecosystem management and promoting the Green Economy.

Please read the key outputs of the forum at:

1. [Issues paper for Hi-level Forum on Ecosystem Management and Green Economy](#);
2. [Press Release of High Level Forum](#);
3. [Press Release of IEMP Launch](#)

ITC strategic partner Geospatial World Forum 2012, 23-27 April 2012, Amsterdam, the Netherlands

At the premium global geospatial industry event, Geospatial World Forum will bring the stakeholders - solution providers, policy makers as well as users to a single platform, providing unparalleled opportunities for discussion, debate and interaction. [Read more](#).

Conferences, Events

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

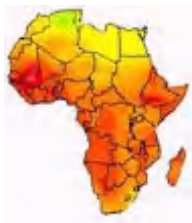
Date	Location	Event
December 2011		
3-4 December, 2011	University of Kwa-Zulu Natal, Durban	International conference on 'Climate Law & Governance in the Global South' Draft version of the Conference program is available, Contact secretariat@cisdl.org .
5-8 December 2011 * NEW	Accra, Ghana	International Conference on Sustainable Management of Africa's Natural Resources
5-9 December 2011 * NEW	Yaounde, Cameroon	Workshop on environment statistics
5-9 December 2011 * NEW	Kampala, Uganda	National workshop on census information
12-14 December 2011 * NEW	Monrovia, Liberia	Liberia national seminar on census data analysis
12-13 December 2011 * NEW	South Africa	Tiger Workshop 2011
13-15 December 2011	Shah Alam, Malaysia	Third International Conference on Management of Natural Resources, Sustainable Development and Ecological Hazards
January 2012		
February 2012		
March 2012		
5-7 March 2012	Valencia, Spain	INTED2012 (6th International Technology, Education and Development Conference)
26-29 March 2012	London, UK	Global-Change Open Science Conference : Planet Under Pressure: New knowledge towards solutions
26-30 March 2012	Tunis, Tunisia	GeoTunis, The International Congress Geotunis 2012 , "The use and the applications of GIS, remote sensing and digital modeling in the field of environment and in the management of natural resources and hazards"
April 2012		



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16-18 April 2012	Hohenheim University, Germany	International conference on Sustainable Land Use and Rural Development in Mountain Areas
24-27 April 2012	Avignon France	AGILE 2012: Bridging the Geographic Information Sciences
May 2012		
7-9 May 2012	Rio de Janeiro, Brazil	4th International Conference on GEographic Object Based Image Analysis (GEOBIA) 2012
14-17 May 2012	Québec City, Canada	Call for Papers: Global Geospatial Conference 2012 (GSDI World Conference (GSDI 13), 14th GEOIDE Annual Scientific Conference, Canadian Geomatics Conference (CGC) 2012 and the 7th 3D GeoInfo Conference).
21-23 May 2012	Boston, Massachusetts	Global Conference on Oceans, Climate and Security Call for Abstracts: Deadline 15 October 2011.
21-27 May 2012	Vilnius, Lithuania	12th World Congress on Environmental Health: New Technologies, Healthy Human Being and Environment
13-18 May 2012	Dublin, Ireland	IWA World Congress on Water, Climate & Energy 2012
14-16 May 2012	Rio de Janeiro	UN Conference on Sustainable Development (INCSD), Rio+20
21 to 23 May 2012	Boston, USA	Global Conference on Oceans, Climate and Security
28-30 May 2012		International Conference on Green Technology & Ecosystems for Global Sustainable Development
June 2012		
13-15 June 2012	Columbia University, New York	ICELW 2012 - The Fifth Annual International Conference on E-learning in the Workplace
18-22. June 2012 * NEW	Albena, Bulgaria	4th International Conference on Cartography and GIS & EU Seminar on EW & CM , Deadline for abstract submission is 10. January 2012.
July 2012		
2-6 July 2012	Galle, Sri Lanka	MMM3: Meeting on mangrove ecology, functioning and management
3-6 July 2012	Salzburg, Austria	Geomatics Forum, Linking GEovisualisation, Society and Learning
8-12 July 2012	San Diego, California USA	ESRI User Conference
16-21 July 2012	Obergurgl, Austria	ESF research conference: Energy Landscapes , - grants to attend
August 2012		
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
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		
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



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30 September–5 October 2012	Columbus, Ohio, USA	EcoSummit 2012, Ecological Sustainability: Restoring the Planet’s Ecosystem Services . Abstract submission deadline, <u>20 January 2012</u>
October 2012		
15-19 October 2012	Chengdu, China	International Conference on Mountain Environment and Development
November 2012		
December 2012		
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: <u>30 June 2016</u> .

Please mention SDI-Africa as a source of information in correspondence about items in this issue.

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