



Water: More Crop per Drop

Farmers' yields in the developing world are often limited by unreliable rains. Improving their harvests will require plant breeders, agronomists and geneticists to pull together — but can these experts work out their differences?

international Assessment of Agricultural Science and Technology was to be to agriculture what the Intergovernmental Panel on Climate Change is to climate: the definitive statement of the scientific art. Hundreds of researchers have worked on the report for five years. It is co-sponsored by the United Nations, the Global Environmental Facility, the World Bank and the World Health Organization, and included in its vast pool of stakeholders are big companies, small farmers and scientists from around the world. But this January, CropLife International, the trade group that represents crop-science giants including Monsanto, DuPont and Syngenta, walked out.

At issue was the report's handling of the role of biotechnology in the developing world — or rather, the degree to which it chose to ignore that role. The crop-science companies think complex genetic traits will be a crucial part of the future of developing-world agriculture; the draft report, though, suggests that genetically modified (GM) crops have little to offer in this regard.

Because water (either from the sky or the irrigation canal) is often a key factor in determining crop yields, squeezing more crop out of the same drop will be central to one of the biggest challenges of this century: sustainably feeding a population of perhaps 9 billion people in a climate-changed world where rain, temperature and drought will be increasingly erratic. Already, 1.2 billion people live in areas where there is not enough water for everyone's needs¹ (see [map](#)), and that figure will probably grow faster than the overall population of the planet. Everyone agrees on the problem, but as the CropLife walkout demonstrated, not everyone agrees on the solution."

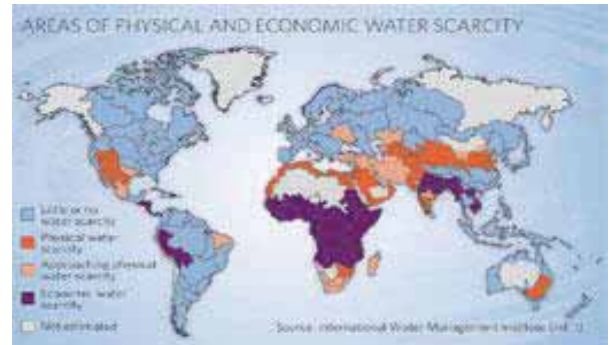
Resources for GM development have been spread very abundantly, with a great deal of overselling," cautions Pasquale Steduto, Italy-based chief of the United Nations Food and Agriculture Organization's Water, Development and Management Unit. "So far, we do not have a direct gain from GM or molecular biology in terms of drought resistance."

For Steduto, raising the maximum yield for a given crop with a given amount of water is not as useful as getting the many millions of low-yielding small farms up to where the efficient Western farms are now. For example, wheat, he says, seems to have an upper yield boundary of about 22 kilograms per hectare per millimetre of water per year.

"The upper boundary is like an envelope, in which you see all sorts of productivity from almost zero to very close to this limit," he says. Agronomic techniques can be used to fill the envelope worldwide.

Yielding to technology

A recent report from the International Water Management Institute, one of the groups within the Consultative Group on International Agricultural Research, makes a similar point this way: "Seventy-five per cent of the additional food we need over the next



decades could be met by bringing the production levels of the world's low-yield farmers up to 80% of what high-yield farmers get from comparable land." That is, land with similar soil and rainfall patterns. For example, says David Morden, the report's lead author, "grain yields in Uganda are on the order of 1 to 2 tones per hectare, and in a similar environment, one could expect 6 to 8 tones with really good management."

Much of the difference, the report says, can be made up by disseminating basic research techniques such as choosing a wise mix of crops and livestock for each plot or creating small dams or terraces for water management.

Often, real gains are within an individual farmer's reach economically, if only they knew what they were. In other cases, increasing yields requires modest investments in technologies or inputs that could be provided by micro-investment or donations. And finally, better management at the country and international level will make for stronger markets and more reliable water supply. Many in the world of agronomy and rural development see little role for biotechnology in these efforts. Despite vigorous adoption rates in the developed world — 60% of biotech crops are grown in developed countries² — it is conventional wisdom that biotechnology is at best a mixed blessing for the developing world. Some of this dismissal could reflect skepticism about the motives of seed companies. But those who work with genes say that they view it as impatience and a lack of faith in technology that is taking time to mature.

That's because the first GM crops were simple and came easy, says Marc van Montagu, a researcher at Ghent University in Belgium. He revolutionized agricultural biotechnology with the *Agrobacterium* method of introducing new genes into plants. But the game has moved on, and traits far more complicated than pesticide resistance are tougher to crack. "Drought tolerance looks dramatically complicated, but it can be done," van Montagu says. And it can be done only with biotechnology, he insists, "The best of traditional breeding is too slow."

This impatience is certainly felt by traditional plant breeders such as Marianne Bänziger at the Mexico-based International Maize and Wheat Improvement Center (CIMMYT). "At the moment there are probably hundreds of groups that work on transgenic drought tolerance," she says, "but very few have made it into the field and shown yield increases."

(Continued Page 5)

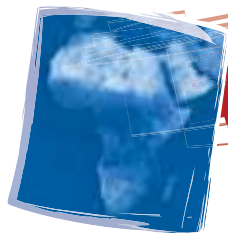
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A Network for the Co-operative Management
of Environmental Information in Africa



Geospatial Sciences for Sustainable Development in Africa: Global Dialogue on Emerging Science and Technology (GDEST) 2008 Cape Town, South Africa, 17-19 March 2008



A meeting focussing on Geospatial Sciences for Sustainable Development was held in Cape Town, South Africa, from 17-19 March 2008, as part of the Global Dialogue on Emerging Science and Technology programme (GDEST 2008). The aim of the meeting was to re-invigorate the collaboration between scientists based in Africa and the United

States of America, through identifying key high potential areas for engagement and discussing concrete steps to realize the potential of geo-spatial science in shaping decision-making. This dialogue was firmly based on a shared understanding of the success factors, as well as the constraints, in employing geo-spatial technologies in Africa today.

Bringing together close to 100 participants from 15 countries, the meeting comprised a series of presentations and panel discussions, as well as an exhibition of data and information products, technology and posters.

Contributed papers largely fell into three categories, namely those that presented theoretical development in or a particular application of geo-information science, those that primarily **focussed** on the current status of geo-information usage and technology within countries, and those that dealt at a more abstract level with the policy environment or insti-

tutional and organizational challenges and opportunities facing the application of geo-spatial technologies in Africa towards sustainable development.

Conference participants were eager to see a scenario (the 'go-go' scenario) in which all the ingredients enabling the harnessing of Geospatial information to address the challenges of sustainable development in Africa are in place. The crucial element for achieving this vision is that of a sustainable, critical mass of African expertise, under girded by the infrastructure and equipped with the appropriate tools required to utilize fully geo-spatial information. This meeting was without doubt a huge success and will lead to more concrete engagements by the African and American delegates.

A more detailed report will be made available on the EIS-AFRICA website in the next few weeks.



Dear Reader,

This is the 70th Edition of EIS-News and we at EIS-AFRICA are very proud of this achievement. The newsletter has certainly evolved greatly of the past few years and we believe that we provide a unique product to the African and international community of geo-information professionals.

EIS-AFRICA recently participated in the GDEST conference and we have a short report on this meeting included in this newsletter. The meeting provided a platform for African and American GI scientists to get together to discuss opportunities for cooperation and future dialogue.

EIS-AFRICA had meetings with several US State Department officials and other members of the US delegation and we believe that these meetings will strengthen our organisation and bring more tangible benefits to our members in future.

This edition is as usual jam packed with interesting articles on bio-fuel use, drought resistant maize crops in Kenya, the observation of Carbon Dioxide emission through ESA's Envisat, the use of mobile technologies to assist flooded areas in Zambia and many more.

We hope that you will find these articles interesting and that you will provide us with your stories in future.

Regards from the EIS Team

(Elizabeth, Dora, Rob and Sives)

Envisat makes first observation of CO2 from manmade emissions

Using data from the SCIAMACHY instrument aboard ESA's Envisat environmental satellite, scientists have for the first time detected regionally elevated atmospheric carbon dioxide – the most important greenhouse gas that contributes to global warming – originating from manmade emissions. More than 30 billion tonnes of extra carbon dioxide (CO2) is released into the atmosphere annually by human activities, mainly through the burning of fossil fuels.

According to the latest report by the Intergovernmental Panel on Climate Change (IPCC), this increase is predicted to result in a warmer climate with rising sea levels and an increase of extreme weather conditions. Predicting future atmospheric CO2 levels requires an increase in our understanding of carbon fluxes.

Dr Michael Buchwitz from the Institute of Environmental Physics (IUP) at the University of Bremen in Germany and his colleagues detected the relatively weak atmospheric CO2 signal arising from regional 'anthropogenic', or man-made, CO2 emissions over Europe by processing and analysing SCIAMACHY data from 2003 to 2005.

As illustrated in the image, the findings show an extended plume over Europe's most populated area, the region from Amsterdam in the Netherlands to Frankfurt, Germany.

Carbon dioxide emissions occur naturally as well as being created through human activities, like the burning of fossil fuels (oil, coal, gas) for power generation, industry and traffic.

'The natural CO2 fluxes between the atmosphere and the Earth's surface are typically much larger than the CO2 fluxes arising from manmade CO2 emissions, making the detection of regional anthropogenic CO2 emission signals quite difficult,' Buchwitz explained. 'This does not mean, however, that the anthropogenic fluxes are of minor importance. In fact, the opposite is true because the manmade fluxes are only going in one direction whereas the natural fluxes operate in both directions, taking up atmospheric CO2 when plants grow, but releasing most or all of it again later when the plants decay. This results in higher atmospheric CO2 concentrations in the first half of a year followed by lower CO2 during the second half of a year with a minimum around August.'

'That we are able to detect regionally elevated CO2 over Europe shows the high quality of the SCIAMACHY CO2 measurements.'



Significant gaps remain in the knowledge of carbon dioxide's sources, such as fires, volcanic activity and the respiration of living organisms, and its natural sinks, such as the land and ocean.

'We know that about half of the CO2 emitted by mankind each year is taken up by natural sinks on land and in the oceans. We do not know, however, where exactly these important sinks are and to what extent they take up the CO2 we are emitting, i.e., how strong they are.'

'We also don't know how these sinks will respond to a changing climate. It is even possible that some of these sinks will saturate or turn into a CO2 source in the future. With our satellite measurements we hope to be able to provide answers to questions like this in order to make reliable predictions,' Buchwitz said.

By better understanding all of the parameters involved in the carbon cycle, scientists can better predict climate change as well as better monitor international treaties aimed at reducing greenhouse gas emissions, such as the Kyoto Protocol which addresses the reduction of six greenhouse gases.

Last year, European Union leaders highlighted the importance of cutting emissions from these manmade gases by endorsing binding targets to cut greenhouse gases by at least 20 percent from 1990 levels by 2020.

Source: European Space Agency

www.adapcc.org

"Adoption for Smallholders to Climate Change" (AdapCC) supports coffee and tea farmers in developing strategies to cope with the risks and impacts of climate change.

The Public-Private Partnership is implemented by the leading British Fair-trade company for hot beverages; Cafédirect and the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH (German Technical Cooperation).

Adaptation for Smallholders to Climate Change gtz

Home | Project | Producer groups | Partners | Regions | Climate change | Press Office | Sitemap | Contact

AdapCC: Adaptation to climate change for smallholders of coffee and tea

"Adaptation for Smallholders to Climate Change" (AdapCC) supports coffee and tea farmers in developing strategies to cope with the risks and impacts of climate change.

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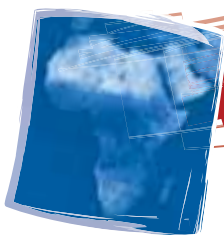
DOWNLOAD

November 2007: Executive Summary of Report on Impacts of Climate Change. Download PDF-Dokument (0.1 MB)

News

Report on Climate Change Impacts – coming soon

AdapCC is currently working on a report on the impacts of climate change on the tea and coffee production in the local areas. It offers a short summary of the most recent data on climate change impacts on...



UN's Pachauri urges caution in biofuel use

The world must take care when developing bio fuels to avoid perverse environmental effects and higher food prices, Nobel Peace Prize winner and climate changescientist Rajendra Pachauri said on Wednesday.

Speaking at the European Parliament, he questioned whether the United States' policy of converting corn (maize) into ethanol for use as a transport fuel would reduce the emission of greenhouse gases blamed for global warming.

Controversy has grown over using food crops to make bio fuels as an alternative to fossil fuels. Some environmentalists and politicians say it has raised food prices, distorted government budgets and led to deforestation in southeast Asia and Brazil.

"We should be very, very careful about coming up with bio fuel solutions that have major impact on production of food grains and may have an implication for overall food security," Pachauri, chairman of the U.N.'s Intergovernmental Panel on Climate Change, told a news conference.



"Questions do arise about what is being done in North America, for instance to convert corn into sugar then into bio fuels, into ethanol," he said.

The United States is the world's biggest producer of bio fuels, derived mostly from corn.

"Several questions have arisen on even the emissions implication of that route, and the fact that this has clearly raised prices of corn," said Pachauri, whose panel shared the Nobel prize with former U.S. Vice President Al Gore last year.

Scientists say some kinds of bio fuel generate as much carbon dioxide (CO2) as the fossil fuels they replace. Supporters, however, say bio fuels are the only renewable alternative to fossil fuels and do generally result in greenhouse gas emission savings.

Pachauri, in Brussels for talks with European Union lawmakers, said it was crucial to look at other ways of producing bio fuels, including investing strongly in research and development to convert cellulosic material into liquid fuels, as well as using agricultural residues.

EU leaders pledged last year to increase the proportion of bio fuels used in petrol- and diesel-consuming land transport to 10 percent by 2020, but concern that this is pushing up food prices has led the bloc to say it may reconsider its strategy.

Pachauri declined to comment on this specific target but said the EU should regularly seek feedback on its impact and review it if necessary.

"I think we have to set up a system by which we get a proper feedback and evaluate it on a regular basis," he told Reuters.

Earlier this month EU leaders pledged to pass laws within 12 months to implement ambitious goals for combating climate change, including slashing greenhouse gas emissions by 20 percent by 2020 and increasing the share of renewable energy.

Pachauri commended the 27-nation bloc's efforts, saying it had taken a much needed leadership role on climate change.

Asked if countries applying strict emissions curbs to fight climate change should tax imports from countries which do not, Pachauri said he hoped this would not be necessary.

The outcome of a U.N. conference in Copenhagen next year meant to adopt a new climate change treaty would be instrumental in that regard, he said.

Source: Reuters (Brussels)/ Ingrid Melander (Editing by Tim Pearce)



Kenya: Firm to develop Maize that resists Drought

Crop failure in Kenya and other parts of Africa will soon be a thing of the past following the launch of an ambitious programme to develop a drought-resistant maize variety. The project being undertaken by African Agricultural Technology Foundation will in the long-run help to alleviate hunger and guarantee food security.

It is estimated that the maize developed over the next 10 years could increase yields by 20 to 35 per cent under moderate drought, compared to current varieties. This increase would translate into about two million additional tonnes of food during drought years in the participating countries, meaning 14 to 21 million people would have more to eat and sell. Maize is the most widely grown crop in Africa, and a staple food for over 300 million people on the continent.

It is however severely affected by frequent drought. And Africa is a drought-prone continent, making farming risky for millions of small-scale farmers who rely on rainfall to water their crops. The first conventional maize varieties could be available after six to seven years of research and development. The project, Water Efficient Maize for Africa, will include researchers from both private and public institutions in Kenya, Uganda, Tanzania and South Africa.

The researchers will use "marker-assisted breeding and biotechnology" to develop African maize varieties to be provided royalty-free to small-scale farmers. The benefits and safety of these maize varieties will be assessed by national authorities according to the regulatory requirements in each of the four countries.

Received a boost

The project has already received a boost from the Bill and Melinda Gates Foundation which has contributed \$47 million.

"This project fits into our mandate of bringing to small-holder farmers in Africa the tools needed to increase productivity for better food and income security," said Mpoko Bokanga, African Agricultural Technology's Executive Director. Mr Bokanga said they will work with the non-profit International Maize and Wheat Improvement Centre; Monsanto, a private agricultural company; and the national agricultural research systems in the participating countries. Uganda's Director General of the National Agricultural Research Organisation, Dr Denis Kyetere, lauded the project, saying it will help create food security

Source: The Nation (Nairobi): Dave Opiyo



Tanzanian farmers want crop varieties that mature early to beat the drought as well as good agronomics. R. KAUTSKY/AZOTE IMAGES

(Continued from page 1)

She's also worried that transgenic approaches steal limelight — and funding — from traditional plant breeding, which is itself becoming much more powerful with the help of new genetic techniques that can speed up field-based breeding. Marker-assisted selection, for example, allows plant breeders to follow genetic markers linked to specific genes of interest.

In the long run, biotech researchers say, impatience is counterproductive. Beachy thinks the backlash against biotechnology is a grave mistake. “We are still in the infancy of advanced agriculture,” he says, “and in the infant stages everyone thinks that their piece is more important than the next. As the world begins to recognize the severity of the problem, we will all become more collegial — we need everyone on board with all the tools in the arsenal.”

Plants need water in all sorts of ways; without it they can't absorb nutrients or photosynthesize — and water pressure keeps green plants from wilting. To think plants can be made drought-proof is a mistake, says Matthew Reynolds, a wheat physiologist at CIMMYT. “Rocks and stones are drought tolerant, but plants need water. It is quite limited how much you can tune that. What's more, the ways that plants deal with water stress when left to their own evolutionary devices may not suit the needs of farmers. One example is seed abortion in corn (maize). “Under drought conditions,” says Bänziger, CIMMYT's director for corn research, “the maize plant puts more resources into pollen for maturation and less into seeds.” From the plant's point of view this makes sense. Pollen is much cheaper energy-wise for the plant to make, and, if the pollen manages to fertilize another plant's seed, the drought-afflicted parent will still contribute 50% of its genes to the offspring. But this is of little help to farmers, who sell kernels, not pollen..

Down on the farm

Thanks to the constellations of funders and companies, it is nearly impossible to get global statistics that would show whether transgenics or agronomy is getting more money.

“I would guess that more money is put into genetic manipulation,” says Reynolds, because “it is a lot easier to get a return on your investment. It is hard to patent an agronomic manipulation.” And this, he thinks, is “positively dangerous. If we don't take care of the soil with the right agronomic strategies, then all our genetic manipulation will be futile.”

This is why the world needs farm-level agronomists, detail-oriented and muddy-booted. Among them is Hubert Savenije, a hydrologist at the Delft University of Technology who has helped some Tanzanian farmers manage their farms better. “The biggest gains we can make are clearly when the rain infiltrates the soil,” he says.

In his study areas in Tanzania, farmers practise a kind of specialized terracing called *fanya juu*, in which a series of trenches are dug perpendicular to the land's slope with soil heaped on their upslope sides. As water runs down, the heaps catch water for the plants immediately behind them. After several years of cultivation, such land looks like a series of lipped steps. Another technique is to cut the soil with a knife and plant corn seed in a 50-centimetre-deep slit, so that it roots deeply. And some farmers gather small amounts of water draining off fallow land, or a road. Increasing root depth, reducing evaporation of water from the soil and scavenging water to add back to soil are not new concepts to devel-

oping-world agronomy. But doing it right is difficult. “Every case is very specific and you have to experiment from a lot of options,” says Savenije.

Iddi Murindaka, a farmer Savenije works with near Mwenbe in Tanzania, uses *fanya juu*, spreads manure and diverts some water from a nearby gully onto his crops. He remembers the last bad drought well. “We had no food; our livestock died; my family was in very poor health,” he recalls. “We would sell two goats to buy 20 kilograms of maize.” Now things have improved; his household boasts a recently purchased sewing machine and his children are able to attend school.

He and the other farmers Savenije works with are interested in crop varieties that would mature early, beating the droughts, and thus make the most of their new farming practices. When asked which approach was more important, they all say “both”. “Even with proper farm management, a poor seed will take longer,” says Murindaka.

But that does not mean he would invest in a better seed, even if available, because the climate makes farmers risk-averse. “To this day we are not sure if it will rain or not the next season, so one's harvest is never secure,” Walter Godfrey Mjema, another farmer working with Savenije, agrees. “You can say 'next season I will plant maize, and with the new farm management knowledge I will get a better yield, and with this I will buy some new household items,' but then it simply doesn't rain.”

Despite the worries that sexy biotechnology is getting all the cash at the expense of researchers such as Savenije, interest in agronomy is growing. Both traditional funders and new donors, such as the Bill & Melinda Gates Foundation and Rockefeller Foundation joint venture, the Alliance for a Green Revolution, are now urging the importance of funding agricultural technologies.

According to the UK Overseas Development Institute, government funding of agriculture in developing countries fell by almost half, in real terms, between 1980 and 2005 whereas for overall development it was increasing 250%. But despite these decades of neglect, moves to fund agricultural technologies would be welcome indeed. Namanga Ngongi, president of the Alliance for a Green Revolution, says that they are looking into technologies such as foot-operated water pumps and solar-powered drip irrigation. And Rajiv Shah, director of agricultural



This irrigation system in Tanzania captures runoff water to boost water supplies in dry periods. R. KAUTSKY/AZOTE IMAGES

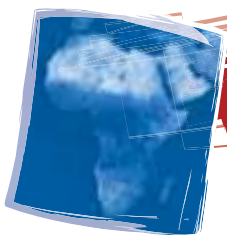
development at the Gates Foundation, says they are eyeing management projects “at the farm and watershed level” as well as grants for traditional breeding.

“There is a huge interplay between crop genetics and crop management, and we believe that these approaches are complementary and synergistic,” says Shah. “We are still formulating our priorities for these areas.” Maybe agronomy and biotechnology will play nice and work together after all, if the donors push for it.

Source: Nature/Emma Marris

For full article, and related Nature article entitled :“ Water: A long dry summer” focusing on global water strategies for a drier world, please visit :

www.eis-africa.org



Mobile Phones to the Rescue

Satellite communication equipment including phones have arrived in Zambia to help several thousand flood-affected people access aid in time.

More than 250,000 Zambians, most of them in the Kafue river catchment area in central Zambia have been affected by floods, said Dominiciano Mulenga, coordinator of the government's Disaster Management and Mitigation Unit (DMMU).

"Heavy rains which began in December 2007 have caused the water to rise in the river, then we were forced to release some water in the [Itezhi-Tezhi] dam, which has caused excessive flooding," he explained.

Heavy rainfall is also expected over the coming weeks in Zambia's Northern, North-Western and Copperbelt provinces.

"Communication is critical in some of the areas which have been cut off by floods for several days," said Mulenga. Twenty-five Thuraya hand-held sets satellite phones and mobile Immarsat Global Area terminals or devices which offer voice, fax and data services will be given to identified officials or community leaders to help coordinate rescue and relief efforts.

The DMMU intends to dispatch a couple of devices to two islands on the Kafue River this week.

"Residents on the two islands might need to be evacuated - we need to keep in touch with the community," explained Mulenga. The rest of the equipment is likely to be distributed in 40 camps set up in the Kafue river catchment area to help officials and the community to keep in touch with the disaster management unit.

The satellite devices have been provided by the International Telecommunication Union (ITU), a United Nations body, free of charge for countries affected by disasters for a three-month period.

"The terminals [satellite devices] can also provide accurate positioning coordinates to help coordinate rescue," said Cosmos Zavazava, chief of ITU's emergency telecommunications division. ITU launched its service during the 2004 tsunami. Last year the union helped out people affected by floods in Bangladesh and Uganda.

[This report does not necessarily reflect the views of the United Nations]Source: UN Integrated Regional Information Networks

Climate Change Adaptation in Africa (CCAA): Conference funding

The Climate Change Adaptation in Africa (CCAA) research and capacity development program aims to improve the capacity of African countries to adapt to climate change in ways that benefit the most vulnerable. Building on existing initiatives and past experience, the CCAA program works to establish a self-sustained skilled body of expertise in Africa to enhance the ability of African countries to adapt.

The CCAA is a joint program of the International Development Research Centre (IDRC), Canada, and the Department for International Development (DFID), U.K.

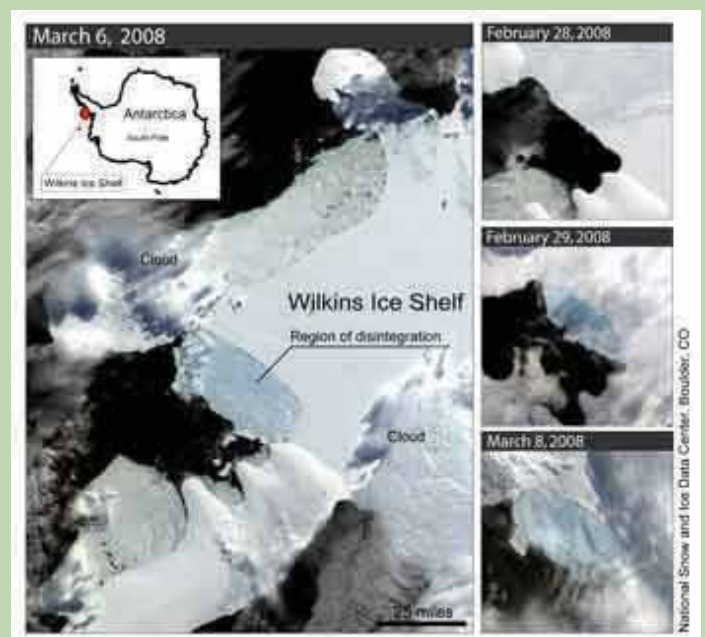
They are currently offering financial assistance to institutions that facilitate African attendance at meetings or conferences related to climate change adaptation. For more information and application form **to be submitted before April 15th 2008**, go to:

www.idrc.ca/en/ev-94424-201-1-DO_TOPIC.HTML



Antarctica ice shelf 'hangs by a thread'

Satellite imagery captured by the British Antarctic Survey showing the Wilkins ice Shelf gradually breaking out from the Antarctic Peninsula earlier this month



Unosat: Support to National Disaster Management—Mozambique Floods

In preparation for the monsoon season in Mozambique, UNOSAT began monitoring rainfall and satellite data in early November 2007.

UNOSAT produced the first collection of flood maps in early January 2008 following the rising flood waters along the Zambezi and Pungue rivers, and continued to monitor and produce updated maps of the affected areas in Mozambique and Zambia through February 2008.

This work has been conducted in support of the International Charter on Space and Major Disasters, jointly triggered by the USGS and the Regional Centre for Mapping of Resources for Development (RCMRD) based in Nairobi, Kenya.

In addition to the maps, UNOSAT has distributed all flood-related vector data derived from satellite imagery based on requests from the Mozam-



bique National Disaster Management Institute (INGC) and UN focal points in order to strengthen their own flooding analysis and mapping capabilities. In response to a request for further support from the INGC

INGC and UNJLC, UNOSAT provided a hydro graphic index model to help identify areas at further flood risk.

UNOSAT continues to monitor the situation and will provide additional flood analysis, maps and data throughout the remainder of monsoon season

Source: www.unosat.org - © UNOSAT, 2008

FOSS4G2008 in Cape Town - Open Source Geospatial: an option for Developing Nations

The annual Free and Open Source Software for Geospatial (FOSS4G) conference brings together the people who create, use, and support open spatial software. No other event brings together members of the open source development, open data creation, and open standards promotion communities like FOSS4G.

The 2008 FOSS4G Conference will be held in the fascinating and beautiful city of Cape Town, South Africa from the Monday 29th September to Friday 3rd October at the Cape Town International Convention Centre

In a change from the norm, the FOSS4G 2008 will incorporate one of the biggest GIS events in South Africa - the GISSA 2008 Conference - Interest is expected from the International and

Local Communities who might normally attend FOSS4G, as well as a new and enthusiastic audience. South African interest is

expected to grow in the light of our new government Open

Source Software policy. And of course we expect the usual GISSA community in South Africa to attend, including proprietary GIS vendors, users

and presenters. Open communication, debate and discussion amongst the 'proprietary' and 'FOSS' communities will be encouraged.

The Conference Theme is Open Source GIS: an option for Developing Nations

The conference program will explore this theme and more technical themes through a number of features and topics.

For more information, please visit: www.foss4g2008.org

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Vacancy & Training Announcements

ARDHI University, Tanzania:
GIS and Remote Sensing Short Courses 2008,
Centre for Information and Communication Technology (CICT).

All courses are of 5 weeks duration and costs US\$500. Contact
Mr. U. Guido, Training Coordinator; guido@aru.ac.tz

RCMRD, Nairobi Kenya:
1/ Global Positioning System Training Course 21 April-2 May
2008

2/ Digital Photogrammetric Training Course 12-23 May 2008

DEADLINES: 10th April 2008

RECTAS, Ile-Ife Nigeria

A number of 3-weeks courses 2008/2009 available.
Contact: rectasinfo@yahoo.com

ITC Distance Education Courses

Principles of Remote Sensing, begins May 12th 2008 (6 weeks).
Deadline 31 March 2008

For more information on all our vacancies please visit
www.eis-africa.org/jobs

For more information on all our Upcoming Events

and to see more please visit

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Upcoming Events

3rd SARDC-EU International Scientific Symposium

April, Lusaka, Zambia

International Conference on Global Environmental Change and
Food Systems

2-4 April, Oxford England

1st International Conference Geo-information Technologies to
support Sustainable Development Africa (GITSDA' 2008)

5-7 April 2008, Tripoli Libya

International workshop on Evaluating Climate Change & Devel-
opment

10-13 May, Alexandria Egypt

World Environment Day

June 8th 2008

International Conference on Groundwater & Climate in Africa

25-28 June 2008, Kampala Uganda

1st International Conference on Carbon Dioxide Utilization &
Climate 2008

12-19 July 2008, Jinja Uganda

GeoWeb 2008

21-25 July 2008, Vancouver Canada

4th International Conference of Sustainable ICT Capacity in
Developing countries

3-6 August 2008, Kampala Uganda

31st International Geographic Congress

12-15 August 2008, Tunis Tunisia

7th International Conference of the Africa Association of Re-
mote Sensing of the Environment (AARSE)

ABSTRACT DEADLINE: 31 MARCH 2008

27 Sept-3 Oct 2008 Accra, Ghana.

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'Open Source Geospatial: An option for Developing Nations'

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