

The background of the cover is a textured, golden-brown surface with a mottled, aged appearance. In the lower half, there is a landscape illustration featuring a single acacia tree on the left, a green, brush-covered hill in the middle ground, and a field of dry grass in the foreground. At the top, three overlapping circles are present: a large teal circle in the center containing the title, and two smaller green circles on either side.

# START

**Annual Report  
2008-2009**

**Regional Research and Training to Build Capacity,  
Inform Policy, and Inspire Action on Global  
Environmental Change**



global change SysTem for Analysis, Research and Training

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International START Secretariat  
2000 Florida Avenue NW  
Washington, DC 20009 USA  
<http://www.start.org>

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# START MISSION

To develop regional networks of collaborating scientists and institutions that:

- conduct research on regional aspects of global change,
- assess the causes and impacts of regional global change, and
- provide relevant information to policy makers and governments to assist in formulating adaptation strategies.

To enhance scientific capacity in developing countries by strengthening and connecting existing institutions, training global change scientists, and providing them with enhanced access to data, research, and communication technology skills.

To mobilize the resources required to augment existing global change scientific capabilities, infrastructure, and activities in developing countries.

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# MESSAGE FROM THE DIRECTOR

*Hassan Virji*

START is dedicated to strategic place-based regional research and capacity building in the developing world. START fosters networks of scientists and institutions and engages key societal stakeholder groups to use scientific knowledge to inform decisions and actions on issues of global environmental change and development. START's regional projects and comprehensive portfolio of research-driven capacity building in Africa and Asia have made significant contributions to enhance the capabilities of scientists and institutions in the developing world and contributed to global endeavors such as the Intergovernmental Panel on Climate Change.

This report provides a glimpse of the significant activities of START during 2008 and early 2009. We highlight activities at the International START Secretariat and START regional centers and secretariats. We hope that this report will inform you about START and to entice you to seek more information from us directly or through our website, <http://www.start.org>.

The period covered in this Annual Report has been both a time of transition and growth for START. Transition at the International START Secretariat involved the departure of key senior staff: Prof. Roland Fuchs, who skillfully shepherded START in the past decade and a half, retired to the more pleasant climate of Honolulu where he is now a Senior Fellow at the East-West Center; and Dr. Neil Leary, who led START's program on vulnerability, adaptation and global change risk management, was enticed back to academia at Dickinson College, in Carlisle, Pennsylvania. Though they may have left, both Roland and Neil remain engaged as friends-of-START in specific activities and their input is still valued by us.

The growth in START's portfolio, evident in this report, has occurred on two major fronts: our portfolio on climate risk management, vulnerability, and adaptation has expanded considerably and we have planted seeds of a major new initiative on global change education.

Regarding climate risk management, vulnerability and adaptation, , START:

- Completed the UNEP-GEF supported project on Assessments of Impacts and Adaptation to Climate Change (AIACC) that made significant contributions to IPCC's Fourth Assessment Report; we are now actively moving on to phase II in partnership with UNEP, SEI, IIED and others;
- Will complete during 2009 the project on Advancing Capacity to Support Climate Change Adaptation (ACCCA) in collaboration with UNITAR and SEI;
- Launched a new EC and UNEP-supported project Integrating Climate Change Mitigation and Adaptation into Development Planning (ICCMAD)



that will be carried out in collaboration with the IPCC and WMO; and

- Initiated a major new program on Asian Mega-Cities at Risk at a seminal workshop in Bangkok during February 2009, with follow up activities planned with the World Bank Institute and regional partners.

Regarding global change education, START:

- Initiated an African Climate Change Fellowship Program (ACCFP) in partnership with the Institute of Resource Assessment of the University of Dar es Salaam and the African Academy of Sciences and with support from IDRC/DFID; the program provides climate change adaptation fellowships at doctoral, post-doctoral, policy, and teaching levels for African professionals, researchers and graduate students; and
- Developed and implemented a graduate curriculum on climate change and biodiversity conservation aimed at conservation practitioners in the Albertine Rift region of East Africa with support from the MacArthur Foundation; an expanded phase II of this project will be undertaken in 2009.

More broadly, to our program sponsors and the Earth System Sciences Partnership, we have proposed implementation of a dedicated decade-long global change education initiative aimed at early-to mid-career scientists as well as to practitioner and policy communities. This program will involve active collaboration and participation of academic and research institutions in developing and developed regions to address critical issues of global environmental change and development.

We remain focused on human resource development and institutional strengthening in developing regions. Our work could not be accomplished without strategic partnerships, many of which we highlight in this report. Most of all, though, the dedication and energy of the START family, many of them volunteers based at institutions in developing world, makes us a "can-do" organization; and our supporters and funding partners enable us to meet our mission. Our sincere gratitude to them.

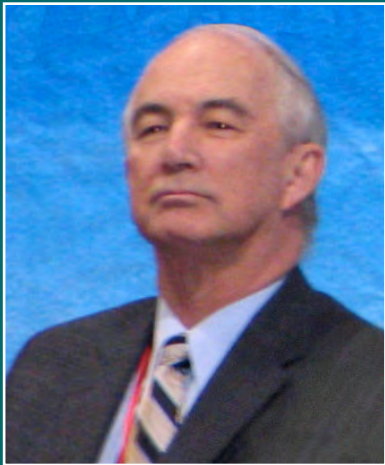
# MESSAGE FROM THE BOARD

*Gordon McBean*

As Co-Chair of the START Scientific Committee, I am pleased to provide a few words of introduction and welcome to the START Annual Report. Pleased: because I believe firmly in principles and objectives of START and because the START activities are providing value and benefits and are making a difference to the capacity to undertake scientific research around the world. Through this we collectively are contributing to a better Planet and better lives for people of our Planet. These accomplishments result from the dedicated work of the START team from the regional offices, the secretariat, the participants in programs and networks and the START supporters.

Over the past 15 plus years, the commitments of START to enhancing scientific capacity have been paying off. There has been a focus on scholarships and research conducted by individuals and teams. An example of the benefits came very clearly to me during the past year when I have been approached by young scientists who have self-identified themselves as START fellows. As past recipients of support, they are now making a difference through their own scholarship and initiatives. We are now adding an emphasis on institutional building – as part of a multi-pronged approach towards making this enhanced capacity long-lasting and self-sustaining. We have also created START International as a not-for-profit corporation that will allow us to access funding sources that previously were difficult or impossible. Using this approach to build upon our traditional and continuing support will enable START to make an even bigger positive difference in the years to come.

With our sponsors, the International Geosphere-Biosphere Program, the World Climate Research Program and the International Human Dimensions



Program, START is working to collectively build the scientific base for more informed decision making and more informed citizens around the world will leave a legacy for a better planet.

In the Annual Report, you will read about the successes of START over the past year and also gain insights into the approaches to build upon those successes in the years to come. These reports show the accomplishments, but we must not accept that this is as far as we can go. The needs are, if anything, multiplying as environmental issues and hazards create havoc around the world. In the years to come, START will endeavour to build on these successes but it will require and is seeking even greater a support from a broader community of sponsors to help make, through science, the world a better place of all humanity. To the readers of this Annual Report, we hope that you are satisfied with what has and is being done but also challenged to help us do even more in the future.

## START SPONSORS/PARTNERS



ICSU



ESSP



IHDP



IGBP



WCRP



DIVERSITAS

# AT A GLANCE

## Who we are...

START is dedicated to building human and institutional capacity for responding to the challenges of sustainable development under global environmental change. Since its founding in 1992, START has developed and implemented a wide range of programs and projects that support capacity building for global change research and assessment and that facilitate science-for-action by fostering linkages between scientific and policy making communities on critical global environmental change issues. Through its training, education, and fellowship opportunities, START engages over 1,000 scientists annually.

## How we work...

START activities focus on human resource development and institutional strengthening for research and policy applications related to global environmental and sustainable development. START interacts with universities, research institutions, scientists, government officials, development professionals and local communities. The START structure consists of regional committees and secretariats in Africa, East Asia, South Asia, Southeast Asia and Oceania; regional research centers and research nodes; an international scientific steering committee and secretariat; and collaborating scientists. START fellows are engaged in international global environmental research programs and contribute to the IPCC and UNFCCC, as well as national priorities.

45

2009/2010 ACCFP  
Fellows

9

Regional Networks  
& Nodes

5

Advanced  
Institutes

89

African GEC Research  
Grantees to date

1000

Scientists from  
developing countries  
engaged every year



# EXAMPLES

## Capacity Building

### Global Environment Change Research Grants for Africa

*Page 13*  
Awards 2009 Global Environmental Research Grants to African scientists who are engaged in one-year projects on global change research.

### African Climate Change Fellowship Program (ACCFP)

*Page 16*  
African professionals, researchers and graduate students are awarded fellowships that support opportunities to build their capabilities for advancing and applying knowledge for climate change adaptation in Africa.

### Cities at Risk Workshop

*Page 26*  
This workshop brought together scientists, urban planners and officials, and representatives of disaster management agencies to discuss the significant risks to and adaptation options for Asia’s coastal megacities faced with sea-level rise and climate change.

## Regional Research

### Integrating Climate Change Mitigation and Adaptation into Development Planning

*Page 29*  
Dialogues between the scientific and policy making communities, and regional knowledge assessments of mitigation and adaptation, are being developed to help turn information into action on climate change in West and East Africa and South Asia.

**Advancing Capacity to Support Climate Change Adaptation (ACCCA)** *Page 30*  
Supporting 19 pilot actions in 17 countries across Africa and Asia by developing risk communication tools and methods capable of supporting decision making for adaptation.

## Continued Demand for START Programs

### ACCFP



### GEC Grants



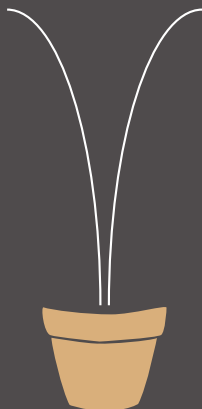
### Advanced Institute: Asian Monsoon



Jan.	Twenty early career scientists gathered in Honolulu, Hawaii for the Advanced Institute on ‘The Asian Monsoon System: Prediction of Change and Variability.’
Mar.	START’s inaugural ACCFP program kicked-off with an informational Workshop to Assess Needs and Opportunities for the Fellowship Program, in Dar es Salaam, Tanzania.
Apr.	In conjunction with the Fourth Monsoon Asia Integrated Regional Study (MAIRS) Scientific Steering Committee Meeting, START co-sponsored a workshop on “Anthropogenic Impacts on Asian Monsoon” in Nanjing, P. R. China.
May	Fourteen young African scientists attended a START session at the 4th IGBP Congress: ‘Sustainable Livelihoods in a Changing Earth System’ in Cape Town, South Africa.
June	Collaborating with SEI, START began Phase I of the Building Long Term Capacity for Managing and Adapting to Climate Change in Africa and Asia Project with a regional scoping workshop in Pretoria, South Africa.
July	Early to mid-career conservation professionals gathered for an advanced education and training program at the University of Dar es Salaam, Tanzania on Building African Capacity for Conserving Biodiversity in a Changing Climate.
Sept.	The START Development Committee met at the International START Secretariat in Washington, DC to discuss START’s strategic plan for 2009–2018.

## YEAR’S REVIEW & LOOKING AHEAD

ACCFP Fellows  
at the COP-15



Mainstreaming  
Mitigation and  
Adaptation Project  
gets underway



Online Master’s Courses  
in Climate Change &  
Biodiversity Conservation



Oct.

START-supported African Fellows participated in the GECHS International Human Development Workshop, ‘Sustainable Adaptation to Climate Change,’ in New Delhi, India.

Nov.

ACCFP Executive Committee met in Dar es Salaam, Tanzania to review applications and select the 2009/2010 Fellows and host institutions in Africa.

Dec.

START was present at the 14th Conference of Parties of the United Nations Framework Convention on Climate Change, in Poznan, Poland.

The European Commission approved the ‘Integrating Climate Change Mitigation and Adaptation into Development Planning’ project. This co-funded EC/UNEP project targets West and East Africa and South Asia, with science-policy dialogues and regional knowledge assessments.

Feb.

The Cities at Risk workshop, held in Bangkok, Thailand, brought together scientists, urban planners and officials, and representatives of disaster management and development agencies to review scientific findings and projections regarding climate-related risks for Asia’s coastal megacities.

Apr.

START awarded the 2009 African Global Environmental Change Research Grants.

The 2009/2010 ACCFP Fellows participated in the IHDP Open Meeting, in Bonn, Germany to promote their Fellowship initiatives to the international scientists and interact with the other Fellows.

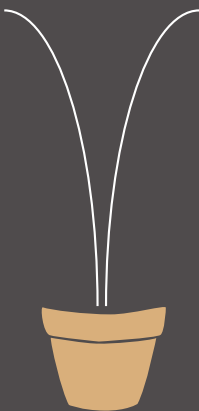
Grants for GEC  
Research in Africa: Call  
for Proposals

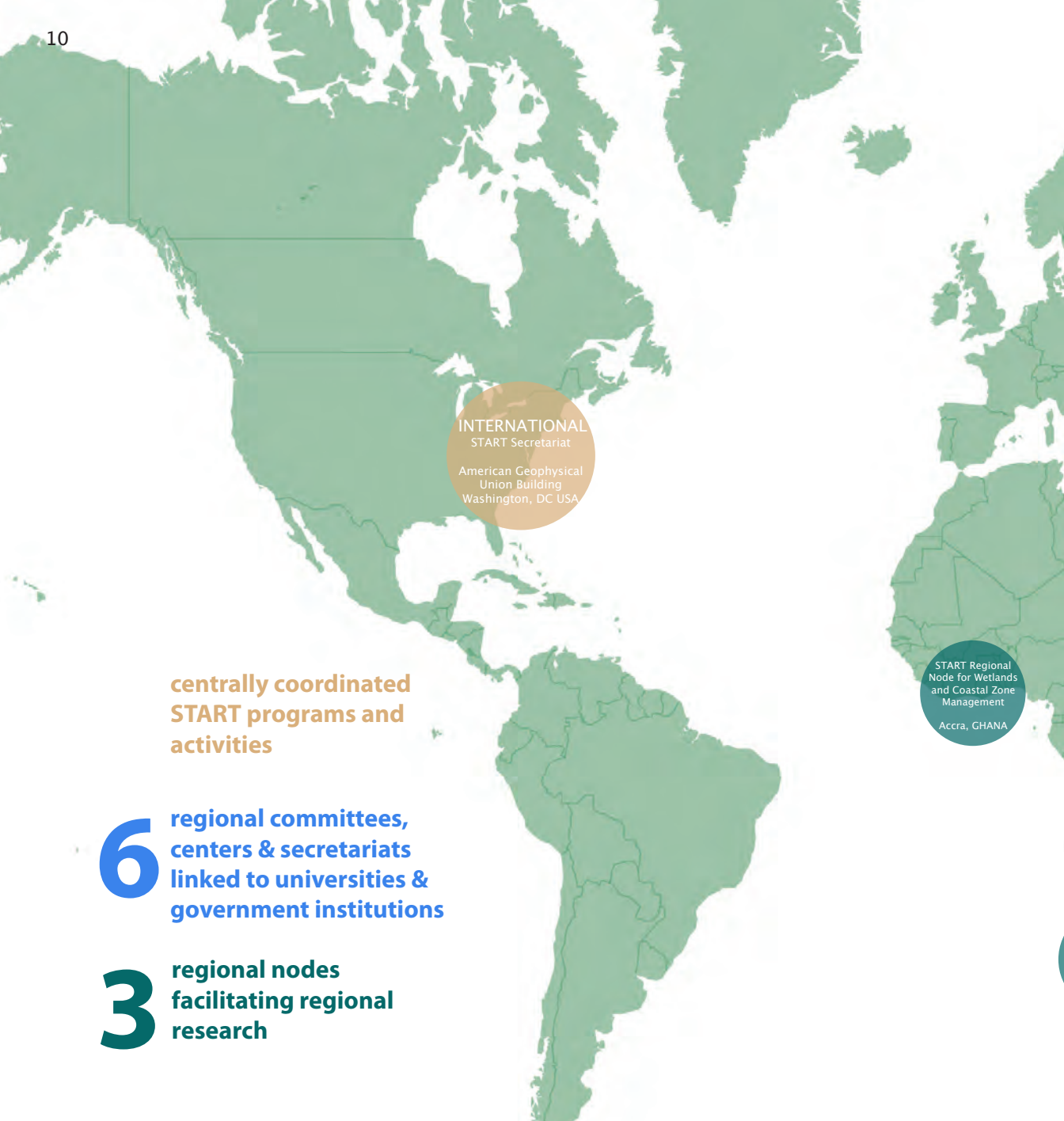


Capacity Building  
Activities in support of  
the CGIAR/ESSP Climate  
Change Challenges  
Program



Asian Megacities:  
Visioning the future





centrally coordinated  
START programs and  
activities

6 regional committees,  
centers & secretariats  
linked to universities &  
government institutions

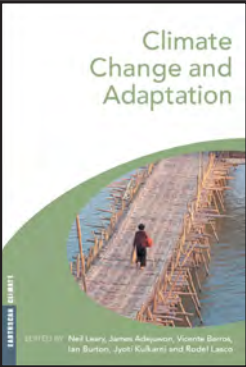
3 regional nodes  
facilitating regional  
research

START Regional  
Node for Wetlands  
and Coastal Zone  
Management  
Accra, GHANA

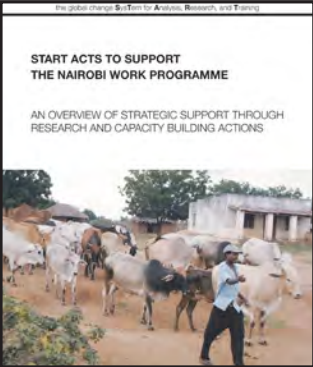
# GLOBAL OUTREACH & COMMUNICATION



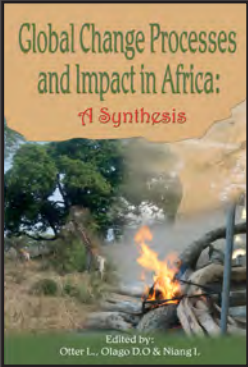
“Climate Change and Vulnerability”  
(2008) AIACC



“Climate Change and Adaptation”  
(2008) AIACC



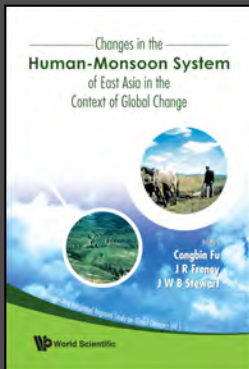
“START Acts to Support the Nairobi Work Programme”  
(2007) Brochure



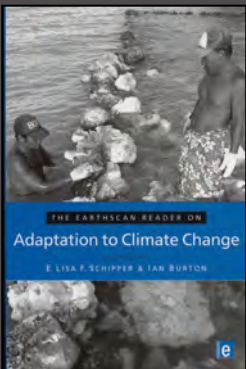
“Global Change Processes and Impact in Africa: A Synthesis”  
(2007)



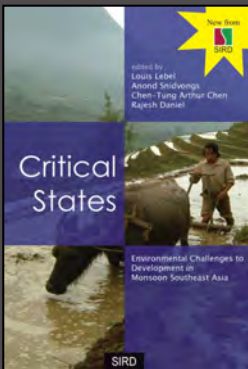
# TIONS



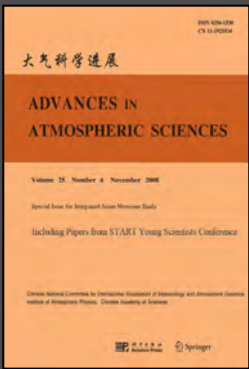
“Changes in the Human Monsoon System of East Asia in the Context of Global Change” (2009)



“Adaptation to Climate Change” (2009)



“Critical States: Environmental Challenges to Development in Monsoon Southeast Asia” (2009) MAIRS



“Advances in Atmospheric Sciences” (2009) Papers from START Young Scientists' Conference



## FOCUS: AFRICA PROGRAMS

African Global Environmental Change Grants *Page 13*

African Climate Change Program (ACCFP) *Page 16*

START African Scientists at 2008 IGBP Conference *Page 19*

Biodiversity in the Albertine Rift *Page 20*

# START GRANTS FOR GLOBAL ENVIRONMENTAL CHANGE RESEARCH IN AFRICA

2008: 15 Grantees | 2009: 17 Grantees | USCCSP, US National Science Foundation

START's Grants for Global Environmental Change Research in Africa are awarded to African scientists for one-year projects on global environmental change (GEC) in Africa.

Research must contribute to:

- Improving knowledge of the Earth's changing climate and environment, including its natural variability, and/or how the research will improve understanding of the causes of observed variability and change;
- Improving quantification of the driving forces of changes in the Earth's climate and systems;
- Reducing uncertainty in projections of how the Earth's climate and related systems may change in the future;
- Understanding the sensitivity and adaptability of different natural and managed ecosystems and human systems to climate and related global changes; and
- Assessing impacts, adaptation and risk management strategies related to climate variability and change.

Scientists are encouraged to draw upon various GEC Science Plans including the Plan of the African Network for Earth System Science (AfricanNESS), the Plans

of the International Council for Science Regional Office for Africa (ICSU RoA), and other relevant documents from intergovernmental and multilateral organizations.

The outcomes of the research conducted as part of this program contribute to global change science knowledge in Africa, create long-term, international collaborative research partnerships among African scientists and scientists in developed countries, enhance the understanding of the impacts and consequences of global changes in Africa, and provide outreach to scientists, policy makers and the general public.

The START Grants for GEC Research in Africa are provided only to African scientist who are associated with an African institution of higher learning or with an African non-governmental organization. Funding is provided by the US Climate Change Science Program, administered by US National Science Foundation.

For more information, please contact: Skip Kauffman, [cskauffman@agu.org](mailto:cskauffman@agu.org)

## 2008/2009 START Grants to African Researchers Participating in International Global Change Research Programs

**Thierry LEBEL, Institut de Recherche pour le Développement (IRD), & AMMA, BURKINA FASO**  
Support for Seven African scientists to participate in the 3rd International Conference: "African Monsoon Multidisciplinary Analysis (AMMA)" to be held in Ouagadougou, Burkina Faso, 20–24 July 2009

**Mohammed UMER, University of Addis Ababa, ETHIOPIA**  
Support for Five African scientists to participate in the 2nd East African Quaternary Research Association (EAQUA) Workshop to be held in Addis Ababa, Ethiopia 20 to 25 May 2009

**Callist TINDIMUGAYA, Ministry of Water and Environment, Kampala, UGANDA**  
Support for Four African Scientists to participate in the International Conference: "Groundwater and Climate in Africa" to be held in Kampala, Uganda, 24–28 June 2008

**Karen O'BRIEN, University of Oslo, NORWAY**  
Support for five African Scientists to participate in the International Human Dimensions Workshop on "Sustainable Adaptation to Climate Change" to be held in New Delhi, India, 12–15 October 2008

Land/Water (2008)

**Fadiala DEMBELE**, Institut Polytechnique Rural de Katibougou, Koulikoro, MALI  
“Environmental Change in West African Savannas”

**GETACHEW Tesfaye Abebe**, Addis Ababa University, ETHIOPIA  
“Effects of Climate Variability on Species Diversity and Biomass Productivity of a Humid Afromontane Tropical Forest of Ethiopia: Evidence from Postfire Forest Regrowth”

**Alfons MOSIMANE**, University of Namibia, NAMIBIA  
“Landscape processes and biodiversity change along the Kwandu River in Caprivi, Namibia”

**Jeremiah Andrew KYOMO**, University of Dar es Salaam, TANZANIA  
“The effects of anthropogenic disturbance and global climatic change to benthic macroinvertebrates assemblages in forest streams of the Uluguru Mountains in Morogoro, Tanzania”

**John Ejiet WASIGE**, Makerere University, UGANDA  
“Assessment of the impact of climate change and climate variability on maize production in the Lake Victoria Basin Uganda”

Pests & Disease (2009)

**Michael J. MCLEISH**, South African National Biodiversity Institute, SOUTH AFRICA  
“Comparative population-level responses to aridification: implications for future range changes of parasite, parasitoid, and pollinator communities given global warming scenarios”

**Herbert TALWANA**, Makerere University, UGANDA  
“Pathogenicity and species shifts in plant parasitic nematodes affecting banana production in the East African Highlands: what is the influence of climate change?”

**John S. TERBLANCHE**, Stellenbosch University, SOUTH AFRICA  
“Physiological responses of tsetse flies, vectors of trypanosomiasis to simulated climate change: implications for prediction, mgmt and control”

Livelihoods (2008)

**Benjamin Delali DOVIE**, University of Ghana at Legan, GHANA  
Household-scale vulnerability to floods in Ghana

**Mathieu BADOLO**, Institut d’Application et de Vulgarisation en Sciences (IAVS), BURKINA FASO  
“The integration of the adaptation of climate change into the policies and national strategies for food security in Burkina Faso”

**Alfons MOSIMANE**, University of Namibia, NAMIBIA  
“Landscape processes and biodiversity change along the Kwandu River in Caprivi, Namibia”

Africa & the Earth System (2008)

**Victor François NGUETSOP**, University of Dschang, CAMEROON  
“Past climatic changes in Northern-Cameroon (Adamawa plateau) during the late Holocene”

**Gelas Muse SIMIYU**, Moi University, KENYA  
“Integrated assessment of land use changes, organic carbon, greenhouse gases and spring water variability in the middle Nzoia River catchment, Kenya”

**Piotr WOLSKI**, Harry Oppenheimer Okavango Research Center, University of Botswana, BOTSWANA  
“Ecotope, Water, and CO2 fluxes for assessment of climate change effects on the Okavango Delta wetlands”

**Cheikh MBOW**, Université Cheikh Anta Diop de Dakar, SENEGAL  
“Carbon Fluxes in Forest and Agriculture in West Africa: Case studies in Senegal, Burkina Faso, Mali and Ghana”

GEC Research grants contribute to AfricanNess theme, ICSU and other African research plans.

# gec research grantees!

## Livelihoods (2009)

**Emmanuel Chessum KIPKORIR, Moi University, School of Environmental Studies, KENYA**

“Integration of Indigenous Knowledge Systems in Adapting to Climate Change and Enhancing Food Security Among the Kalenjin Community of Rift Valley, Kenya”

**Caxton MATARIRA, National University of Lesotho, LESOTHO**

“Impacts and Adaptation to Climate Change for Subsistence Communities: Lessons from Lesotho”

## Africa & the Earth System (2009)

**Abdourahamane KONARE, Université de Cocody, Abidjan, COTE D'IVOIRE**  
“Regional Impacts of Aerosols on West Africa climate”

**Yohanna W. SHAGHUDE, Institute of Marine Sciences, University of Dar es Salaam, TANZANIA**

“Quaternary sedimentary record of monsoon winds variability and associated carbon and nitrogen burial rates on the East African continental margin”

## Marine (2009)

**Ndiaga DIOP, Institut des Sciences de l'Environnement (ISE) / Université Cheikh anta DIOP (UCAD), SENEGAL**  
“Economic Analyses of Adaptation Strategies of the Fisheries Sector of Senegal in Relation to Climate Change”

**Shigalla B. MAHONGO, Tanzania Fisheries Research Institute, TANZANIA**  
“Modelling the Dynamics of the Tanzanian Coastal Waters”

## Land/Water (2009)

**John BUKOMBE, Tanzania Wildlife Research Institute, TANZANIA**  
“Influence of Fire and Precipitation on Woody Vegetation Composition and Structure in Serengeti National Park, Tanzania”

**Benjamin L. LAMPTEY, International Water Management Institute, GHANA**  
“Volta Basin water resource management in present and future climate regimes”

**Kelebogile MFUNDISI, Harry Oppenheimer Okavango Research Centre, University of Botswana, BOTSWANA**  
“Mapping wetland flooding regimes for improved methane emissions estimates”

**Bob NAKILEZA, Makerere University, UGANDA**  
“Impact of climatic change on alpine plant species distribution, land cover and edaphic systems on Rwenzori Mountains in Uganda”

**Alfred OWINO, Kenya Wildlife Service, KENYA**  
“Land use and climate change: Potential impacts on human socio-economic developments, human-biodiversity conservation and management of southern Rift Valley wetlands, Kenya”

**Andriamandimbisoa RAZAFIMPAHANANA, REBIOMA Project, MADAGASCAR**  
“Climate change planning inside and outside protected areas”

**V.S. Henri TOTIN, Laboratory of Climate, Water Resources and Ecosystem Dynamic Research, BENIN**  
“Assessment of Global Change Impacts on Groundwater in the Coastal Sedimentary Basin of Benin (West Africa)”

# AFRICAN CLIMATE CHANGE FELLOWSHIP PROGRAM (ACCFP)

2009 - 2010 Awards | 45 Fellows | IDRC & DFID, CCAA Program

The African Climate Change Fellowship Program (ACCFP) offers experiential learning, education, research and training opportunities to African professionals, researchers and graduate students that will build their capabilities for advancing and applying knowledge for climate change adaptation in Africa.

Participating Fellows receive small grants that enable them to undertake Policy, Post-Doctoral, Doctoral or Teaching Fellowships. The Fellows visit other institutions – Host Institutions – to implement a project of their own design that enhances their understanding of climate risks, vulnerabilities and adaptation strategies, assesses current practices for designing and implementing adaptation projects and/or promotes integration of adaptation with planning, policy and decision-making.

A ‘Workshop to Assess Needs and Opportunities for the ACCFP, was held in March, 2009, in Dar es Salaam, Tanzania. Two of the major recommendations from the workshop were to target the pilot phase of the Fellowship Program to a relatively small number of capable and committed institutions in Africa to host Fellows and to place multiple Fellows with common Host Institutions. Targeting a small number of institutions with high qualifications to host multiple Fellows is expected to increase the impacts of the Program; provide valuable opportunities for Fellows to interact with and learn from their peers; build stronger capabilities at Host Institutions to become centers of excellence for supervising and mentoring Fellows; and establish stronger and longer lasting relationships among Host Institutions, Home Institutions and the Fellowship Program. ACCFP partners invited 30 proposals from targeted Hosts following the workshop and in July 2008, on the basis of proposal review, 11 Recommended Host Institutions were selected for the inaugural round of Fellowship awards.

The workshop brought together members of scientific, public sector, development, intergovernmental and civil society organizations to inform design and



*French translations at the Dar es Salaam Workshop*

implementation of the ACCFP. Seventy-six workshop participants from 30 countries, including 23 African countries, discussed adaptation capacity needs, the potential for fellowships to help meet these needs, the appropriate design of an effective fellowship program, the engagement of institutions to host fellows, the roles of host institutions, conditions for success and sustainability of the fellowship program, and challenges to be overcome. A series of white papers presenting various perspectives on these issues were circulated in English and French prior to the workshop to stimulate discussion, and simultaneous French-English translation was provided during the workshop to facilitate participation and contributions of both Francophone and Anglophone Africans.

In November 2008, following extensive review of 281 applications, 45 individuals from 18 African countries were selected as the inaugural class of ACCFP Fellows. The Fellows are identified, alongside their Home and Host Institutions, in the following pages.

The ACCFP is jointly administered by START, the Institute of Resource Assessment (IRA) of the University of Dar es Salaam and the African Academy of Sciences (AAS), with generous financial support from the Climate Change Adaptation in Africa (CCAA) Program. The CCAA is funded by IDRC Canada and UK DFID.

For more information, please contact: Clark Seipt, [cseipt@agu.org](mailto:cseipt@agu.org)

## meet the accfp 2009/2010 fellows!

# 16 policy

Awarded to early to mid-career candidates who are currently working in organizations that play a role in or have the potential to influence policy and decision-making in climate sensitive sectors in Africa

### **Peter KALOKI, Kenya**

Home: International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Nairobi  
Host: Egerton University – Crop Management, Research and Training (CMRT)

### **Caroline Agosa KIRUNGU, Kenya**

Home: Kenya Sugar Research Foundation  
Host: University of Orange Free State, Department of Agrometeorology and the South African Sugar Research Institute

### **David Kimani KURIA, Kenya**

Home: Kijabe Environment Volunteers  
Host: BirdLife International, Climate Change Programme, Kasarani Campus

### **Jean-Berchmans MBAZUMUTIMA, Burundi**

Home: Institut Géographique du Burundi (IGEBU)  
Host: Institute of Resource Assessment, University of Dar es Salaam (IRA–UDSM)

### **Joelle MUKUNGU NKOMBELA, DR Congo**

Home: Organisation Concertée des Ecologistes et Amis de la Nature (OCEAN)  
Host: Centre for International Forestry Research (CIFOR), Burkina Faso

### **Gerald Maina MURIUKI, Kenya**

Home: Practical Action – Kenya  
Host: Kenyatta University, Department of Environmental Planning and Management

### **Felix OLORUNFEMI, Nigeria**

Home: Nigeria Institute for Social and Economic Research  
Host: University of Cape Town

### **Nancy Akinyi OMOLO, Kenya**

Home: Foodlink Resources  
Host: University of KwaZulu–Natal (UKZN)

### **Naima OUMOUSA, Morocco**

Home: Peace Corps Morocco  
Host: UNCCD Secretariat, Regional Coordination Unit for Africa

### **Monica Kansiime OWUOR, Uganda**

Home: Heifer International Uganda  
Host: Egerton University

### **Linda PHALATSE, South Africa**

Home: City of Johannesburg  
Host: University of Witwatersrand

### **Christian RIZIKI KABWE RIZE, DR Congo**

Home: Tayna Center for Conservation Biology – Kasugho Université for Nature Conservation and Développement  
Host: University of Cadi Ayyad

### **Abou SALE, Cameroon**

Home: Institute for Agricultural Research for Development (IARD)  
Host: Egerton University

### **Arame TALL, Senegal**

Home: Red Cross / Red Crescent Climate Center  
Host: Université Cheikh Anta Diop de Dakar (UCAD)

### **Maximilien TIOGANG DJOMO, Cameroon**

Home: Ministry of Environment and Protection of Nature, Western Provincial Delegation, National Action Plan for the Fight against Desertification, Cameroon  
Host: Centre for International Forestry Research (CIFOR), Cameroon

### **Betinbaye YAMINGUE, Chad**

Home: LEAD Tchad  
Host: Centre for International Forestry Research (CIFOR), Burkina Faso

# 3 teaching

### **Moses Adeyeye Adeyemi AWODUN, Nigeria**

Home: Federal University of Technology, Akure  
Host: N/A

### **Andre LENOUE, Cameroon**

Home: University of Douala  
Host: Université Cheikh Anta Diop de Dakar (UCAD)

### **Nicholas OZOR, Nigeria**

Home: University of Nigeria, Nsukka  
Host: N/A

Awarded to educators from African universities to enable them to develop and implement new Masters-level courses on climate change related topics or to integrate climate change topics into existing courses

# 13 doctoral research

**Grace ADENIJI, Nigeria**  
Home: Lead City University  
Host: University of KwaZulu-Natal (UKZN)

**Paul AHIDJO, Cameroon**  
Home: University of Ngaoundere, Cameroon  
Host: TBD

**Vincent Olanrewaju AJAYI, Nigeria**  
Home: Federal University of Technology – Akure  
Host: University of Cape Town – Climatic Systems Analysis Group (UCT-CSAG)

**Warvar P. Isabelle DABIRE, Burkina Faso**  
Home: Institute for Environmental and Agricultural Research (INERA)  
Host: University of Ghana, Department of Geography

**Temesgen DERESSA, Ethiopia**  
Home: University of Pretoria  
Host: International Food Policy Research Institute (IFPRI)

**Augustin KABORE, Burkina Faso**  
Home: University of Abomey-Calavi, Benin  
Host: Centre for International Forestry Research (CIFOR), Burkina Faso

**Amidou Njiloh KPOUMIE, Cameroon**  
Home: University of Yaounde  
Host: University of Cadi Ayyad

**Tiganadaba LODOUN, Burkina Faso**  
Home: Institute of Environment and Agricultural Research (IEAR)  
Host: International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Mali

**Chipo Plaxedes MUBAYA, Zimbabwe**  
Home: Midlands State University  
Host: Institute of Resource Assessment, University of Dar es Salaam (IRA-UDSM)

Awarded to students studying in a doctoral program and conducting research related to climate change risks and adaptation at an African university

**Mzime Regina NDEBELE-MURISA, Malawi**  
Home: University of Zimbabwe  
Host: University of KwaZulu-Natal (UKZN)

**S.W. Charles RECHA, Kenya**  
Home: Kenyatta University  
Host: International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Mali

**Emmanuel TACHIE-OBENG, Ghana**  
Home: University of Ghana  
Host: International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Mali

**Bernard TYUBEE, Nigeria**  
Home: Benue State University  
Host: Makerere University

# 13 post-doctoral research

Awarded to Africans with doctoral degrees in fields relevant to climate change and climate change adaptation to enable them to expand their research and teaching in fields that will contribute to improved management of climate risks and climate change adaptation

**Getachew Tesfaye ABEBE, Ethiopia**  
Home: Institute of Biodiversity Conservation  
Host: Makerere University

**Pierre AKPONIKPE, Benin**  
Home: Faculty of Agronomical Sciences, Laboratory of Hydraulics and Water Management (LHME)  
Host: University of Cape Town

**Ladislau Benedict CHANG'A, Tanzania**  
Home: Tanzania Meteorological Agency  
Host: Institute of Resource Assessment, University of Dar es Salaam (IRA-UDSM)

**Aliou DIOUF, Senegal**  
Home: N/A  
Host: Université Cheikh Anta Diop de Dakar (UCAD)

**Mayowa Johnson FASONA, Nigeria**  
Home: University of Lagos  
Host: University of Cape Town

**Sisthabiso GANDURE, Zimbabwe**  
Home: University of Zimbabwe, Center for Applied Social Science  
Host: University of the Free State

**Cyriaque-Rufin NGUIMALET, Central African Republic**  
Home: University of Bangui  
Host: Egerton University

**Nhamo NHAMO, Zimbabwe**  
Home: N/A  
Host: University of Ghana, Department of Crop Science

**Sean Henry O'DONOGHUE, South Africa**  
Home: University of KwaZulu-Natal  
Host: University of KwaZulu-Natal

**Saidu OSENI, Nigeria**  
Home: Obafemi Awolowo University  
Host: Egerton University

**Fritz Oben TABI, Cameroon**  
Home: University of Dschang  
Host: University of Ghana, Department of Crop Science

**Edouard Henri TONNANG ZEFACK, Cameroon**  
Home: N/A  
Host: Institute of Resource Assessment, University of Dar es Salaam (IRA-UDSM)

**Mamadou TRAORE, Burkina Faso**  
Home: University Polytechnic of Bobo Dioulasso, Institute of Rural Development  
Host: International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Niger

# START AFRICAN YOUNG SCIENTISTS SESSION AT 2008 IGBP CONFERENCE

May 7 - 9, 2008 | Cape Town, South Africa

The Young African Scientists (YAS) session at the International Geosphere–Biosphere Programme Congress was one of the Congress’s highlights. Global environmental change research in Africa was presented to an audience that included visiting international and national scientists, policy makers, and a group of schoolchildren.

From the uniqueness of Africa’s paleoclimate to the diversity and complexity of current and future impacts of environmental change on Africa, the session not only provided an overview of current projects but also highlighted the problems that are intertwined with poverty.

The goals of this session were to showcase research conducted by young African scientists and encourage their interactions with representatives of core and joint projects of the Earth System Science Partnership (ESSP) family, and to enhance networking and collaboration. In total, 15 papers (10 oral and five posters) were presented. Talks covered a wide range of topics. One discussed the shifting in direction and intensity of a thermocline in the Indian Ocean, a phenomenon that may potentially affect the occurrence of cyclones in the south Indian Ocean. Another presented on the nature of environments within the Okavango Delta, a closed drainage basin in southern Africa. Other presentations on the atmospheric conditions over Africa (Nigeria and South Africa) confirmed that automobile traffic emissions were responsible for increases of nitrogen oxide species (NO<sub>x</sub>) and ozone and that regional meteorological conditions constrain the dispersion of such pollutants. Four speakers from African countries explained the links between global environmental change, land use, and land cover change and



*IGBP Swag: 'Global Change and Earth Systems' book*

their relationships to agricultural sustainability, poverty, livelihoods, and diseases. These studies in South Africa, Ethiopia, and Tanzania reported that environmental change is exacerbated by poverty, leaving vulnerable communities caught in a downward spiral of poverty and environmental degradation that increases their sensitivity to climate risks. Finally, two speakers reported that farmers’ adaptive capacity to climate change could be increased by targeting various social, political, and environmental systems. A consideration of different political and historical contexts in interpreting coupled human–environmental interactions was emphasized by another speaker.

In conclusion, the YAS session was inspiring and successful. Support for this session by the START and ESSP family of programs was critical in creating a strong and informed community of African scientists able to contribute to the achievement of global sustainability.

*Adapted from the article by Jane Mukarugwiza Olwoch, Department of Geography, Geoinformatics, and Meteorology, University of Pretoria, Pretoria, South Africa; Contact: jane.olwoch@up.ac.za*

# BIODIVERSITY IN THE ALBERTINE RIFT

Jan. 2007 - Dec. 2008 | Dar es Salaam, Tanzania | MacArthur Foundation

An advanced education and training program on biodiversity conservation and climate change was implemented at the University of Dar es Salaam, Tanzania, targeted at building the capacity of early to mid-career conservation professionals from the Albertine Rift region. This program funded by the MacArthur Foundation is jointly implemented by the International START Secretariat, Washington DC and the Institute of Resource Assessment (IRA), University of Dar es Salaam. A total of twenty conservation professionals from the Albertine Rift countries of Congo, Burundi, Rwanda, Uganda and Tanzania were engaged in this enterprise.

This effort recognizes the enormous challenge posed by climate change to ecosystems and biodiversity and addresses the urgent need to develop response strategies to sustain the ecoservices derived from natural systems. The Albertine Rift region is a particularly important biodiversity hotspot, where ecoservices are subject to increasing influence of multiple stressors, including human induced landscape changes. Rising temperatures and increasing rainfall variability due to climate change could result in a further loss or alteration of natural habitats and affect the rich variety of flora and fauna. Adaptation options for the protection of ecosystems and biodiversity and sustaining ecoservices are not yet well understood; natural resource management techniques that can help to increase the resilience of ecosystems are likely to be particularly useful.

This capacity building endeavour engaged conservation professionals in an education and training program to understand and address climate change risks to biodiversity conservation in the Albertine Rift region. In doing so it



Location: Congo, Uganda, Burundi, Rwanda, Tanzania

recognized of the critical importance of local ownership of conservation strategies, local participation in evaluating and prioritizing risks and response options, the highly context specific nature of adaptive responses and the need for a continuous process of learning at the local level. It thereby also supported the MacArthur Foundation's goals of adapting place-based conservation to manage the changing risks from a changing climate.

The primary components of this project were a baseline assessment of existing scientific and research capacity in the Albertine Rift region, and the design and implementation of Masters level courses on biodiversity conservation and climate change. Participants also took part in an externship activity to apply lessons from the classroom to the field.

This effort is now being expanded to other universities in the region. The participants and their institutions form a basis of a regional network on ecosystems and livelihoods adaptation.

For more information, please contact: Jyoti Kulkarni, [jkulkarni@agu.org](mailto:jkulkarni@agu.org)

# meet the biodiversity course participants!

**Jokha Takdir Mtoro, Jozani National Park-Zanzibar**

Externship research: Observation on water characteristics and aquatic biota at Pangani River delta

**Nicholas Joseph Kisambuka, Tanzania National Parks (TANAPA), Katavi**

Externship Research: Climate variability and extremes: Implications in the management of biodiversity in the Katavi–Rukwa Ecosystem, Tanzania.

**Emilian Kihwele, Tanzania National Parks (TANAPA) - Lake Manyara National Park**

Externship research: Assessment of the impacts of climate variability on biodiversity conservation and livelihoods in the Lake Manyara Sub basin, Tanzania

**Julitha Raphael Munishi, Tanzania Wildlife Research Institute**

Externship research: Effect of climate change on stinging bee's behaviour (*Apis milifera*) and honey production: A case of Arumeru District, Tanzania

**Sood Athuman Ndimuligo, Jane Goodall Institute-Kigoma**

Externship research: The impact of climate change on the phenology of chimpanzee (*Pantroglydotes*) tree food species in Gombe National Park, Western Tanzania

**Anna Titus Laroya, Tanzania Wildlife Research Institute**

Externship research: Effect of climate change and non-climatic variability to butterflies of Njiro Forest, Tanzania

**Opio Alfonse, Gulu University**

Externship research: Decomposition rate of fish pond organic fertilizers in changing climate in Uganda

**Rita Mugenyi, National Environment Management Authority**

Externship research: Structural changes of *Neuboutina macrocalyx* tree in a changing microclimate around Mubwindi Swamp, Bwindi Impenetrable National Park, Uganda

**Proscovia Khanzila, Greenwatch**

Externship research: Assessment of the existing legal framework in relation to biodiversity conservation in a changing climate in Uganda

**Richard Kialungira, General Commission Of Atomic Energy**

Externship research: Climate change impacts on aquatic biodiversity conservation in an urban ecosystem: Case study of the Ithchyo biodiversity of pool malebo in Congo River, Democratic Republic of Congo

**Lawrence Aribo, Meteorology Department, Uganda**

Externship research: Climate variability and waterbird diversity at Lutembe wetland Uganda

**Nelson Kisaka, Makerere University**

Externship research: Climate change impacts and environmental risk assessment in Rwenzori mountains ecosystem in Uganda

**Irene Nadunga, Uganda Coalition For Crisis Prevention**

Externship research: A Baseline study on the vegetation cover of the Mabira Forest Reserve Uganda, in the existing climatic conditions

**Runyambo Irakiza, Conservation Association Of Rwanda**

Externship research: Recent changes in vegetation structure of the Ngezi Swamp in the face of climate change: Case of Volcanoes Biosphere Reserve and National Park, Rwanda

**Nyirambangutse Brigitte, National University Of Rwanda**

Externship research: Evaluating the impact of climatic parameters on Ericaceous species of Nyungwe National Park, Rwanda

**Liliane Hatungimana, Geographic Institute Of Burundi**

Externship research: Effect of climate change and variability on socio-economic activities in Burundi: Implications for biodiversity conservation

**Masharabu Tatie, University Of Burundi**

Externship research: Climate change and the Ruvubu National Park, Burundi

**Jean Jacques Bagalwa Mashimango, Centre For Research In Natural Science**

Externship research: Impact of climate change on the Biogeochemistry of Lake Kivu, Western Basin (Kalehe), Democratic Republic of Congo

**Desire Khasrikani, Tayna Centre For Conservation Biology**

Externship research: Altitudinal distribution of small mammals in relation to climate change: The case of Muridae family in Kabwe Kandongwe station

**David Sivalingana Matsisi, Tayna Gorilla Reserve**

Externship research: Impact of climate change on the parasitology of *Gorilla graueri* in Tayna Gorilla Reserve, Democratic Republic of Congo

## Master's Level Courses Overview

Univ. of Dar es Salaam, July 1 – August 15, 2008  
2 intensive, 3-week sessions

20 Conservation Professionals selected /  
200 Applicants interested

**Course I: "Climate Change Risks to Ecosystems and Biodiversity"**

**Course II: "Conserving Biodiversity in a Changing Climate"**



# FOCUS: ASIA PROGRAMS

Water and Carbon in the Mekong Sub-Region *Page 23*

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# WATER AND CARBON IN THE MEKONG SUB-REGION

*Southeast Asia | TWAS, UNEP, GEF, WWF Greater Mekong*

In 1997 SEA START RC received funding from START-GEF to initiate the Southeast Asia Integrated Regional Model: River Basins Inputs to the Coastal Zone (SEA/BASINS) as a regional activity under SARCS Integrated Study Science Plan on Catchment Cascades: Integrating Biogeochemical Fluxes from Uplands through Coast to Continental Seas. Through partnership with the University of Washington (which also received funding from NASA and NSF) the project was able to develop basin-wide hydrological modeling tools, such as CASA and VIC, which have been fundamental for calculating water and carbon budget in the MRB in subsequent projects. Later in 2000–2004, capacity building and networking activities on water and carbon cycles in the 4 lower Mekong countries were carried out through supports from APN and SARCS.

Since 2003 to 2006 SEA START RC conducted the Southeast Asia Regional Vulnerability to Changing Water Resources and Extreme Hydrological due to Climate Change as the Regional Study AS07 of the START-TWAS-UNEP-GEF Assessment of Impact and Adaptation to Climate Change in Multiple Sectors and Multiple Regions (AIACC). The project initiated a network of natural and social scientists in Mekong countries on vulnerabilities and adaptation of water resource, urbanization and food production sectors to future climate change and climate variabilities. High resolution climate projections based on CSIRO CCAM were developed and applied to hydrologic and crop models to estimate future changes in water availability and extreme regimes as well as impacts on major food crops in the region. Field researches at community level were carried out in Lao PDR, Thailand and Vietnam to assess current and future coping capacity for changes.

Since 2004 SEA START RC has collaborated with UK Met Office's Hadley Center to apply the PRECIS model to the Mekong and GMS. High resolution projections under SRES A2, B2 and A1B scenarios up to 2100 are available for non-commercial uses and were applied to many applications. Funding for the activities were provided by APN and Thailand Research Fund (TRF). Our experience with PRECIS and other

regional climate models were also enable SEA START RC to assist Vietnam Institute of Meteorology, Hydrology and Environment to setup systems to create national climate scenarios under the National Target Program on Climate Change.

In following from AIACC, subsequent capacity building and the climate change vulnerability network in the Mekong countries through small projects were supported by APN, USAID and others. At the moment there are nearly 100 scientists, government officials and NGO's staff in all Mekong countries who have engaged in our network.

Climate and food production were also addressed under our partnership with Chiang Mai Universities to customize DSSAT model for the MRB with major support from APN. Recently we have expanded our modeling domain to cover additional sites in GMS countries outside of the MRB to support a new initiative under support from ADB with our new partner, Murdoch University.

Since 2008 SEA START RC is assisting the Mekong River Commission (MRC) to formulate its Climate Change Initiative (CCI) which will cover a basin-wide integrated assessment of water related systems and sectors under combinations of changing climate and socioeconomic development scenarios. Capacity building and pilot sites in riparian countries will be supported through this initiative.

On the social vulnerability and adaptation, SEA START RC has collaborated with Can Tho University, Helsinki Technical Universities and WWF Greater Mekong to communicate regional climate projection and hydrodynamic modeling outputs for the Mekong delta (including the Tonle Sap) to stakeholders from different levels from national to local communes. Two stakeholder workshops were organized in Phnom Penh and Can Tho in 2009.

For more information, please contact: Anond Snidvongs, [anond@start.or.th](mailto:anond@start.or.th)

# ADVANCED INSTITUTE ON ASIAN MONSOON: PREDICTION OF CHANGE AND VULNERABILITY

January 2-11, 2008 | Honolulu, Hawaii, USA | APN, IPRC

More than 3 billion people in Asia rely on monsoon precipitation for water, and changes in this precipitation influence agriculture, economic activity, and public health. Given trends of population growth, rapid industrialization, and urbanization, it is important for scientists in the Asia-Pacific region to both stay abreast of advances in monsoon science and develop collaborations to understand and predict the variability of monsoons.

START is responding to this need by creating learning opportunities for regional scientists. For example, twenty early-career meteorologists from across the Asia-Pacific region and North America met 2-11 January 2008 to attend a series of lectures on the Asian monsoon and to explore possibilities for collaboration. The participants were selected from more than 70 applicants from universities, government labs, and meteorological forecast centers in more than 10 countries. Invited faculty from China, India, Japan, Korea, and the United States gave the lectures, with the largest group of lecturers coming from the International Pacific Research Center (IPRC) of the University of Hawaii. The meeting was held at the East-West Center, adjacent to the campus of the University of Hawaii at Manoa.

Lecture topics included the fundamental physics of monsoons, the variability and predictability of the Asian-Australian monsoon system, advances in satellite observations, and numerical modeling of monsoons.

Monsoon variability on intraseasonal, interannual, and decadal timescales was discussed, with focus given to the roles played by land surface hydrology and ocean coupling, including Indian Ocean dynamics and the El Niño–Southern Oscillation. Various modeling studies were reviewed, especially projections from the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) for the Asia-Pacific region. Participants were introduced to multimodel ensemble seasonal forecasts produced by the Asia-Pacific Economic Cooperation (APEC) Climate Center and to climate data available from the Asia-Pacific



*Bus rides in Honolulu, Hawaii*

Data Research Center at the IPRC.

One major goal of the institute was to foster international collaboration on both fundamental research and the operational prediction of monsoon variability. To this end, participants presented summaries of their own work, received constructive comments, and identified needs for collaboration or research support. By the end of the program, participants had gathered into four smaller groups focusing on the topics of intraseasonal variability, interannual variability, decadal variability, and the prediction and predictability of the Asian monsoon. Some of these focus groups intended to maintain contact for a few years, and one group even presented an idea for a collaborative study on interannual variations of monsoon onset in Southeast Asia. An e-mail list server was established for continued interaction among all participants.

The institute was directed by Bin Wang of the IPRC and the Department of Meteorology, School of Ocean and Earth Science and Technology, University of Hawaii. START organized the Institute, sponsored by the Asia-Pacific Network for Global Change Research (APN), with additional support provided by IPRC, START, and the East-West Center.

*Adapted from the article by William Boos, Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, USA; Contact: billboos@mit.edu*

# MONSOON ASIA INTEGRATED REGIONAL STUDY (MAIRS)

*Temperate East Asia | ESSP, GEC*

The Monsoon Asia Integrated Regional Study (MAIRS) is a consortium for the integrated study of earth system process in the Asia Monsoon Region. It was implemented by START on behalf of ESSP and GEC partners. MAIRS is guided by a scientific steering committee (SSC) and supported by an international project office (IPO) adjoining the START TEA Center located at the Institute of Atmospheric Physics of the Chinese Academy of Sciences in Beijing, P. R. China.

The Monsoon Asia Region is composed of South, Southeast, and East Asia. Unlike other monsoon research projects, which focus on understanding the monsoon climate, MAIRS focuses on the human relationship with the monsoon. The population, vegetation, soil and water systems in that region have developed in response to the monsoon and thus are vulnerable to changes in that climate. It is therefore vital for scientists to have a strong understanding of how human activity in this rapidly developing area of the world will interact with the natural regional climate. The MAIRS project is undertaking this challenge through studies combining field experiments, process studies and modeling components that aim:

- to better understand how human activities in the region are interacting with and altering natural regional variability of the atmosphere, terrestrial, and marine components of the environment,
- to contribute to a sound scientific basis for sustainable regional development, and
- to develop a predictive capability for estimating changes in global–regional linkages in the Earth System and to recognize the future consequences of such changes.

For more information, please contact:  
Dr. Ailikun, [aili@mairs-essp.org](mailto:aili@mairs-essp.org)

## INTERNATIONAL WORKSHOP ON ANTHROPOGENIC IMPACTS ON ASIAN MONSOON

Nanjing University of Information  
Science and Technology (NUIST)

Nanjing, P.R. China, 21 – 23 April 2008

### Key Topics:

Human-induced  
land cover change  
(Biogeophysics,  
Biogeochemical  
processes) impacts

Asian Monsoon  
in a warming  
earth: evidence  
for changes in  
monsoon  
system

Air pollutant  
impacts, mainly  
aerosols, on  
monsoon &  
hydrological  
cycles

Drivers of aero-  
sol emissions  
and land cover  
changes

Regional model:  
anthropogenic  
change of Asian  
Monsoon

# CITIES AT RISK WORKSHOP

February 26-28, 2009 | Bangkok, Thailand | East-West Center, Ibaraki University, WCRP, ICSU, IHDP, LOICZ, ADB, APN

Much of Asia’s rapid population and economic growth is occurring in large coastal cities that are at high risk from sea level rise and climate change. Asia’s densely populated deltas and mega-deltas and other low-lying coastal urban areas are among those described in the IPCC Fourth Assessment Report as “key societal hotspots of coastal vulnerability” with many millions of people potentially affected.

With the increase in population in coastal areas, there is an increased potential for loss of life and property. In recent years, there have been many incidences of severe flooding particularly when high tides were combined with storm surges and high river flows. Future sea level rise and climate change are unavoidable as a result of existing high atmospheric CO2 levels. Thus, the risks posed by climate change to Asia’s coastal population will persist, particularly given the rapid population growth of the region’s cities.

Physical risks and vulnerabilities in these regions are often accompanied by a deficit of adaptive capacity (i.e., the ability to cope with the risk and vulnerabilities posed by climate change) as the cities generally lack necessary



A panel presentation at the Cities at Risk Workshop

resources – financial, human, and institutional – as well as access to relevant scientific information. Despite the urgent threats posed by the combination of sea level rise and climate change, local governments and the international development community have not as yet seriously considered the implications of climate change and sea level rise on rapidly growing coastal populations and infrastructure. This argues for urgent attention to risk and vulnerability assessment, awareness raising, and integration of science into planning and policy for the potentially affected areas.

START collaborated with the East-West Center, Ibaraki University and several

**Dhaka, Bangladesh**

**Jakarta, Indonesia**

**Shanghai and Hong Kong /  
Shenzhen/Guangzhou, China**

**Mumbai and  
Calcutta, India**

other partners to host a workshop in February 2009 entitled, “Cities at Risk: Developing Adaptive Capacity for Climate Change in Asia’s Coastal Megacities”. The Southeast Asia START Regional Research Center in Bangkok, Thailand was the local workshop host. The workshop brought together nearly 80 scientists, urban planners and officials and representatives from disaster management and development agencies to review scientific findings and projections regarding climate-related risks (e.g., sea level rise, extreme climate events, intensification of storms and storm surges) for several of Asia’s coastal megacities.

Participants examined potential vulnerabilities and current coping mechanisms in the various megacities and considered means for better integration of science information, planning, development and disaster management. Discussion groups also considered venues for improving networking and communication between urban planners/officials and the scientific community in order to enhance urban resilience and adaptive capacities.

The Cities at Risk workshop is envisioned as an initial step in what is intended to be a longer-term program of activities for developing urban adaptive capacities and integrating science and policy in managing climate risks in Asian cities.



*Question & Answer sessions*

Workshop recommendations targeted a number of potential follow-up activities in the region. Future activities are expected to include the development of resource materials, hands-on thematic training courses, advanced workshops and institutes as well as coordinated research programs and the development of a regional network of scientists, city administrators and funding agencies.

For more information, please contact: Clark Seipt, [cseipt@agu.org](mailto:cseipt@agu.org)

# CITIES AT RISK WORKSHOP TARGET CITIES





# CROSS-REGIONAL ACTIVITIES

## BUILDING AFRICAN CAPACITY FOR MANAGING & ADAPTING TO CHANGING CLIMATE IN AFRICA & ASIA

*SIDA, SEI*

This program aims to enhance capacity in selected less developed countries across Africa, South Asia and Southeast Asia to better understand and manage risks associated with global change, particularly climate change and variability. The program is a collaboration between START and SEI regional offices to better understand and manage risks associated with global change, particularly climate change and variability and is funded by SIDA.

During Phase II, the program will convene and enhance the capacity of national level interdisciplinary resource groups that include representatives from universities, scientific research institutes, government, industry, NGOs, and others.

The main objectives of the program are:

- to develop research capacity in targeted less developed countries (at both the national and regional level) to analyze and assess the risks associated with climate change and variability,
- to enhance linkages between national resource groups and countries through regional science–technology policy networks, and
- to stimulate science–policy dialogue

to ensure that research contributes to the formulation and implementation of climate risk management and adaptation strategies, particularly as a part of national programs and policies.

The program will be implemented in two phases. Phase I, recently completed, was a brief scoping study to assess:

- 1) the targeted countries’ current education and training capacities for improving research and understanding of vulnerability, adaptation and resilience to climate risks;
- 2) their priority capacity needs; and
- 3) ways that the program could enhance those capacities. Phase I activities included regional scoping workshops and in-country consultations.

The design and development of Phase II of the program, envisioned as a longer-term collaborative initiative, will be directly informed by the results and recommendations of Phase I scoping activities. Future activities are also expected to include regional workshops and training seminars, support for traveling faculty and visiting experts, development of curricula and training materials, and research fellowships.

For more information, please contact: Clark Seipt, [cseipt@agu.org](mailto:cseipt@agu.org)

## INTEGRATING CLIMATE CHANGE MITIGATION AND ADAPTATION INTO DEVELOPMENT PLANNING

*EC, IPCC, UNEP*

Despite the urgency of adapting to climate change, a number of obstacles are impeding effective action in developing countries; these include low levels of awareness of climate change and its risks, lack of understanding of the findings of the IPCC and other sources of scientific information, lack of location and sector specific knowledge that is needed to guide more effective decisions, poor sharing of information in forms that are relevant and useful to decision-makers and stakeholders, and the uncertainties and distrust of information from sources external to the region. To address these obstacles, START will be engaging scientists and policy makers in a total of nine countries

in West Africa, East Africa and South Asia through a series of science–policy dialogues based on the findings of the IPCC Fourth Assessment Report. In addition to these dialogues, scientists and key decision makers from these regions will also collaborate on knowledge assessments targeted at multiple, nested scales from local to regional. A major outcome of this effort will be enhanced capability in target countries to engage in IPCC and SBSTA/UNFCCC activities and dialogues.

For more information, please contact: Jon Padgham, [jpadgham@agu.org](mailto:jpadgham@agu.org)

## HELPING TO PROMOTE THE NAIROBI WORK PROGRAMME

*UNFCCC*

The UNFCCC Nairobi Work Programme on Impacts, Vulnerability, and Adaptation to Climate Change (NWP) was developed to assist Parties to the Convention – especially developing countries, including least developed countries and small island developing states – to improve their understanding and assessment of climate change impacts, vulnerability, and adaptation and to make informed decisions on practical adaptation actions and measures to respond to climate change.

The NWP is structured around nine areas of work that are recognized as vital to increasing the capacity to adapt. Parties, intergovernmental and non-governmental organizations, the private sector, communities, and other stakeholders implement activities that support the objectives of the NWP.

The UNFCCC Secretariat has invited pledges of actions to support the objectives of the NWP. START has responded by reviewing its research and capacity building programs and realigning them to provide maximum support for the objectives of the NWP.

START pledges to:

- Better document and disseminate information about methods and tools for vulnerability and adaptation assessment from the AIACC, ACCCA, and biodiversity conservation projects; and
- Seek opportunities and partnerships to build capacity for the use of vulnerability and adaptation assessment methods and tools through new education programs, advanced study institutes, fellowships and small grants.

For more information, please contact: Fareeha Iqbal, [fiqbal@agu.org](mailto:fiqbal@agu.org)

# ADVANCING CAPACITY TO SUPPORT CLIMATE CHANGE ADAPTATION (ACCCA)

UNITAR, EDNA, SEI

The ACCCA (Advancing Capacity to support Climate Change Adaptation) project was developed to address the critical issue of developing risk communication tools and methods capable of supporting multi-sectoral, multi-stakeholder decision making for adaptation in Africa and Asia. ACCCA supports 19 pilot actions in 17 countries across Africa and Asia. The ACCCA project seeks to:

- Identify and prioritize climate risks to stakeholders and the climate influenced decisions that they face;
- Synthesize and communicate information about climate risks in terms that are directly relevant to stakeholder concerns and decision-making needs; and
- Develop, test and disseminate risk communication materials that are designed to assist adaptation decisions.

## Ghana

Pl: Dr. Francis Agyemang-Yeboah, Kwame Nkrumah University of Sciences and Technology (KNUST)

### “Capacity Development and Adaptation to Climate Change on Human Health Vulnerability in Ghana”

#### Project Description:

Guinea worm and malaria are among two of the most important climate-related health risks in Sub Saharan Africa, with increased drought magnify exposure to Guinea worm, and increased flooding and higher temperatures to malaria. The focus of this project is to formulate, develop and implement sustainable measures that will reduce the burden of climate-related diseases, promote public capacity development, educate the community on preventative measures, and build the capacity of health practitioners in early detection and treatment.

#### Risk Communication Strategy:

Climate risks are being communicated through radio bulletins, posters, and leaflets targeted at local leaders, schoolteachers, and district assemblies, as well as through drama, role playing, and traditional drums. The project includes a committed program to raise awareness on climate change through training workshops with national health service personnel, staff of Guinea Worm eradication programs, and local leaders. At the community level the project has presented a drama about seasonal weather changes, promoting the importance of using insecticide treated bed nets and the danger of stagnant waters.

## Mongolia

Pl: Dr. Togtohyn Chuluun, National University of Mongolia

### “Policy Framework for Adaptation Strategies for the Mongolian Rangelands to Climate Change at Multiple Scales”

#### Project Description:

Fragmentation of the cultural landscapes that have historically supported traditional nomadic pastoral systems in the arid and semi-arid areas of Mongolia has reduced the capacity of pastoral groups to manage climate risks, thus increasing their vulnerability to potential climate change. The purpose of this project is to develop local adaptation strategies for climate change in the Mongolian rangelands through encouraging participatory dialogue between scientists, herders and local land officers in order to define appropriate land management practices on fragile rangeland and pastoral systems, restore cultural landscapes in a manner that relieves pressure on the resource base, and find alternative livelihood options for pastoral communities.

#### Risk Communication Strategy:

Video was used to document best practices for rangeland and water management in areas experiencing trends of spring and early summer drought, and a translated version of the film ‘An Inconvenient Truth’ was shown, as a way to raise awareness of climate issues and to elicit information about local perceptions of climate change. The video of rangeland management helped to guide participatory community workshops aimed at identifying potential adaptation options. The identified options include the introduction of community-based conservation principles, protection of water points over additional rangeland, and agreements for communal use of migratory lands and reserve pastures.

For more information about ACCCA, please contact: Jon Padgham, [jpadgham@agu.org](mailto:jpadgham@agu.org)

## GLOBAL OBSERVATION OF FOREST COVER AND LAND DYNAMICS (GOFC-GOLD)

*NASA, GEO*

The overall goal of the GOFC-GOLD project is to improve the quality and availability of remote-sensing observations of forests and land cover at regional and global scales and to produce useful information from these data for application in land cover/land use management and research. Under a grant from NASA, START supports the participation of representatives of regional networks in developing countries and GOFC-GOLD Implementation Teams to relevant workshops and meetings, and facilitates data distribution and communication among the regional networks. This effort contributes to the program of the Group in Earth Observations.

A notable new effort under this project is the GOFC-GOLD/START Regional Network Data Initiative. This Initiative capitalizes on the opening of the Landsat archive to free, web-based access, and is intended to: disseminate US earth observation data in regions where available distribution methods are not effective, compile regional and in country data sets relevant to land cover and fire observations and make them freely available, and engage regional expertise in global data set development, evaluation, and validation.



A pilot group of data specialists from 5 regions of Africa is receiving training at the USGS EROS Center on data availability and applications, and will serve as focal points for data distribution in their regions. Future training sessions are planned for other current and emerging GOFC-GOLD networks.

For more information, please contact: Kathleen Landauer, [klandauer@agu.org](mailto:klandauer@agu.org)

## SUPPORT FOR GLOBAL ENVIRONMENTAL CHANGE RESEARCH IN ASIA

*APN*

START works closely with the Asia-Pacific Network for Global Change Research (APN) to support research projects that advance global environmental change research in Asia and the Pacific, including research on changes in complex climate, ocean

and terrestrial systems, and on physical, chemical, biological and socio-economic processes.

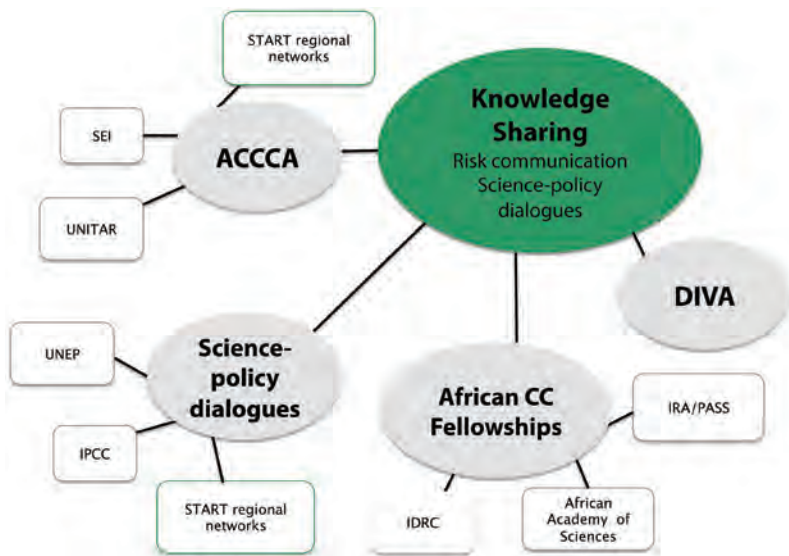
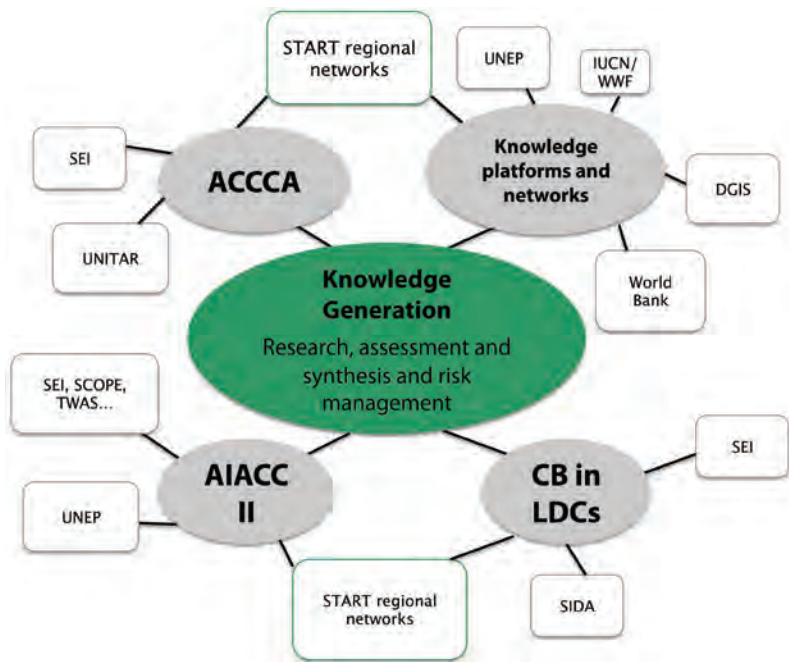
For more information, please contact: Skip Kauffman, [cskauffman@agu.org](mailto:cskauffman@agu.org)

# STRATEGIC PARTNERSHIPS FOR START’S PORTFOLIO ON VULNERABILITY, ADAPTATION & RISK MANAGEMENT

START’s major partners in capacity building remain its program co-sponsors and scientists in their core projects who are called upon to help identify and mentor individuals selected to receive support from START. Also, new strategic partnerships are being formed as START’s activities increasingly support the strengthening of institutions within the regions where it works.

Network building is a central component in each of the projects that support knowledge generation, knowledge sharing, and action, as depicted on the following page. These networks exist among project partners and donors as well as among individuals, institutions, and communities served by the projects.







# START REGIONAL STRUCTURES NOTES

## PAN-AFRICAN START SECRETARIAT (PASS)

*Institute for Resource Assessment, University of Dar es Salaam, TANZANIA | Director: Pius Yanda*  
<http://www.pass-africa.org/>

### Project Collaborations:

**ACCFP**

*Page 16*

**Biodiversity  
in the  
Albertine Rift**

*Page 20*

**Building  
Long-Term  
Capacity:  
Africa**

*Page 29*

**ICCMAD**

*Page 29*

### Other Projects at PASS:

**Understanding the Findings of the IPCC 4th Assessment Report:** Focusing on Tanzania, Rwanda and Burundi, the project aims to design and implement knowledge sharing strategies and conduct training seminars, injecting the best scientific knowledge available into policy processes and decision-making to increase visibility of EC support for the IPCC.

**Technical Backstopping to Support the Assessment of Investment & Financial Flows to Address Climate Change in Developing Countries:** A capacity development project launched by UNDP Environment and Energy Group to assist developing countries assess and develop policy options for addressing climate change across different sectors and economic activities. PASS is supporting 7 African countries in this effort.

**Promoting International Cooperation for Environmental Research through Dissemination and Networking Activities:** Under an EC project, focusing on promotion and facilitating international cooperation in the environmental in Sub-Saharan Africa and the New Independent States, PASS supports the dissemination of information pertaining to the European Union's 6th Framework Programme and linking European and African scientific communities through a network of National Contact Points.

## SOUTHEAST ASIA REGIONAL RESEARCH CENTER (SEA RRC)

Chulalongkorn University, Bangkok, THAILAND | Director: Anond Snidvongs | <http://www.start.or.th/>

### Project Collaborations:

**Cites at Risk  
Workshop**

Page 26

**Building  
Long-Term  
Capacity:  
Asia**

Page 28

**ACCCA**

Page 30

**Mekong**

Page 23

### Other Projects at SEA RRC:

**UNEP/GEF International Waters IW: LEARN Project:** Design and implementation of an Environmental Information System and an organized knowledge base to access resources, experiences, and materials for the portfolio.

## SOUTHEAST ASIA REGIONAL START COMMITTEE SECRETARIAT (SARCS)

National Central University, Chung-Li, TAIWAN | Director: C.H. Liu | <http://www.sarcs.org/>

### Projects at SARCS:

**Southeast Asia Regional Carbon and Water Project:** The Joint Global Carbon Project (GCP) also sponsored by the Earth System Science Partnership is an effort to monitor, assess and predict the evolution of the global carbon cycle. This Southeast Asia Regional Carbon and Water Project through its regionally-focused research activities in the South China Sea (SCS) region contributes to the GCP agenda as well as to the Monsoon Asia Integrated Regional Studies (MAIRS) Project. Provides regional scientists with initial/seed funding for innovative research which aims at furthering our understanding of the carbon cycles in the SCS region, such as those related to biogeochemical issues, the impact of these on fisheries along with various interactions and feedback.

## OCEANIA REGIONAL RESEARCH CENTER

University of the South Pacific, Suva, FIJI | Acting Director: Anjeela Jokhan | <http://www.usp.ac.fj/>

### OCEANIA Updates:

The founding Director, Dr. Kanayathu Koshy has taken a new position with the United Nations University in Malaysia. Dr. Anjeela Jokhan, a Senior Lecturer at the University of the South Pacific is the Acting Director.

### Projects at OCEANIA:

**2009 Pacific Community– Based Conservation Course (PICCC):** Three-phase course (learn, implement, reflect) run over several months, in Suva, Fiji, which provides conservation practitioners with skills, information and experience in community-based conservation.

## TEMPERATE EAST ASIA REGIONAL RESEARCH CENTER (TEA-RC)

*Institute of Atmospheric Physics of the Chinese Academy of Sciences, Beijing, CHINA | Director: Congbin Fu*  
<http://www.tea.ac.cn/>

Project Collaborations:



Other Projects at TEA-RC:

**Predictive Study of Aridification in Northern China in association with Life-supporting Environment Changes:** Guided by the theories of global changes, the project is designed to analyze the natural regulations of the monsoon environment system composed of water, soil, air and biota, and to discover the processes and mechanisms of how global warming and human activities impact the aridification in northern China. Effort involves multi-disciplinary synthetic analysis, ecosystem experiment and numerical simulation. The project will develop the theory and methodology for the prediction and impact assessment of regional environmental change, especially of the future trend of aridity in northern China.

**Regional Model Intercomparison Project:** Improving the simulation of regional climate change is one of the high-priority areas because regional information is needed for climate change impact assessments. Such information is especially important for the region covered by the East Asian monsoon where there is high variability in both space and time. The Regional Climate Model Intercomparison Project (RMIP) for Asia has been established to evaluate and improve regional climate model simulations of the monsoon climate.

## SOUTH ASIA REGIONAL RESEARCH CENTER

*National Physical Laboratory, New Delhi, INDIA | Director: M.K. Tiwari | <http://www.npl-cgc.ernet.in/>*

A Major Project in South Asia:

**Mid-FACE Technology Transfer:** The Free-Air CO<sub>2</sub> Enrichment (FACE) facility developed by National Physical Laboratory (NPL) and Indian Agriculture Research Institute (IARI) at New Delhi with the support of START and APN has become a great success. Numerous peer-reviewed research papers have been published by scientists from the Indian Agriculture Research Institute. Other South Asian institutions, including the Bangabandhu Sheikh Mujibur Rahman Agricultural University of Bangladesh have requested help in setting up similar facility at their premises to study crop response to future climate in order to ensure food security.

# INTERNATIONAL START SECRETARIAT

Washington, DC, USA | Director: Hassan Virji | <http://www.start.org>

Following the advice of the START Development Committee, START International, Inc. is a registered international non-profit organization, as of March 17, 2009. All operational aspects of START remain as before.

The International START Secretariat plays a vital role in supporting the work of its regional centers through helping develop and implement research projects that span disciplines and/or regions, and facilitating international coordination and communication with scientists from developing countries engaged in START’s regional research networks and those from the broader international community of scientists involved in global change research. The research, observation, assessment, integration and capacity building that START enables would not take place without the coordination activities of the Secretariat.

## Jon Padgham Picks Up Neil Leary’s Portfolio of Activities



Acting Deputy Director, Neil Leary, takes a new position as Director of the Center for Environmental and Sustainability Education at Dickinson College, Carlisle, Pennsylvania USA in August 2008 to direct a new campus wide

program for undergraduates. Jon Padgham replaced Neil in September 2008, and is continuing to build upon Neil’s portfolio of risk management, vulnerability and adaptation. Jon was involved in climate change adaptation work at the World Bank and USAID before joining START.

## As Roland Fuchs Retires, Hassan Virji Becomes New START Director



Roland Fuchs steps down as Director of the International START Secretariat in January 2008. As Richard Rockwell notes, “START was fortunate to hire him in 1994. We could not have made a better choice.”

Roland continues to engage in START activities, while in Honolulu, Hawaii, as a Senior Fellow at the East-West Center. START’s Deputy Director and Acting Director since Roland’s departure, Hassan Virji was appointed Director in August 2008.

# INTERNATIONAL START SECRETARIAT STAFF

Hassan Virji Director hvirji@agu.org	Charles “Skip” Kauffman Program Associate cskauffman@agu.org	Fareeha Iqbal Program Associate fiqbal@agu.org
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Graeme Pearman, Co-Chair  
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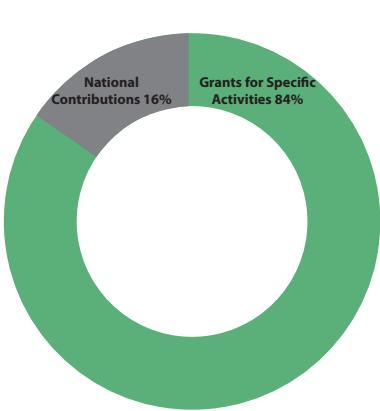
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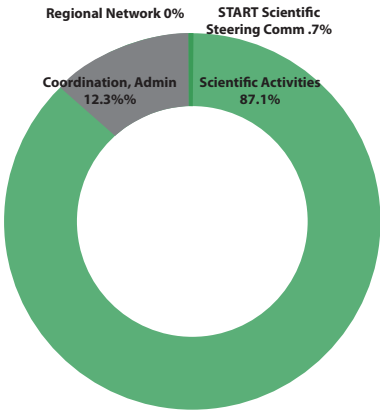
Pius Yanda  
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University of Ghana
University of the South Pacific, FIJI



income



expenditures

