APN NEWSLETTER

Asia-Pacific Network for Global Change Research • Volume 17, Issue 3, September 2011 • ISSN 2185-6907

Guest Article

REDD+ for Forest Communities

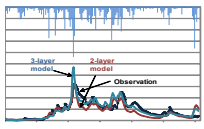
03 Dr. Kazuhiko Takeuchi, UNU Vice Rector, UNU-ISP Director offers new insight on the REDD+ mechanism

Featured Story

APN Organizes Special Session at EMECS 9

10 The APN organizes a special session on Vulnerability and Risk Management of Enclosed Coastal Seas Home to Asian Megacities at the EMECS 9 conference to look at the added vulnerability of Asian coastal megacities

Featured ARCP Project



14

Flood Risk Management Demonstration Project under the Asian Water Cycle Initiative for GEOSS

ARCP2009-01CMY-Fukami

Kazuhiko Fukami explains his team's effort under the ARCP project to develop and apply promising flood risk management technologies in demonstrative pilot projects in a number of Asian countries.

Featured CAPaBLE Project

23

Addressing the Livelihood Crisis for Farmers: Weather and Climate Services for Sustainable Agriculture – Development of Tools

CBA2010-08NSY-Salinger

Dr. Jim Salinger on his project on addressing the livelihood crisis for farmers, introduces a set of recommendations for further activities developed at this latest workshop funded under APN's CAPaBLE programme.

In this Issue

Message from the Director

Warm greetings from the APN Secretariat. My name is Akio Takemoto and I joined the APN in July 2011 as Secretariat Director to take on the duties of my predecessor Mr. Tetsuro Fujitsuka. It is my pleasure to present to you this new issue of the APN Newsletter.

We are pleased to announce that the APN has completed the Stage 1 Review Process of its Annual Calls for Proposals under the ARCP and CAPaBLE programmes. The number of summary proposals submitted under both programmes nearly doubles the amount received last year. After an initial review of these submissions by the APN Scientific Planning Group Sub-Committee (SPG-SC) and the Capacity Development Committee (CDC), a number of proposals were selected and invited to enter the Second Stage. During this stage successful proponents will beef up their proposals for a second round of review before they are submitted to the Inter-Governmental Meeting early next year for final approval.

This issue of the APN Newsletter features a guest article by Professor Kazuhiko Takeuchi and his team in UNU-ISP on his observations on and the way forward for the REDD+ mechanism. Supporting research and capacity building in a region where forests account for nearly 20% of the world's total forest cover, the APN sees the multiple challenges our forests are faced with. At the same time we see the many opportunities for collaborative efforts to better understand and contribute to an appropriate mechanism that will support not only the conservation of forests, but also the wellbeing of populations whose livelihood depends fully or partly on them.

We also report to you the activities APN carried out in the past months. The fourth Southeast Asia Sub-Regional Cooperation Meeting was successfully held in Hanoi, Viet Nam. The meeting has come up with a roadmap for further and strengthened cooperation among APN Member Countries in Southeast Asia. It also provided an opportunity also for young and early career scientists and decision-makers to learn more about our Network, as well as to engage in our activities.

We organized a special session at the EMECS 9 Conference that looked at the added vulnerability of enclosed coastal seas in the Asia-Pacific region, and its environmental, ecological and social implications. The session was a great success with the valuable contributions from invited speakers, including APN project leaders.

Finally, please join me in welcoming a new member to the APN family, the new National Focal Point for Indonesia Ms. Hermien Roosita. We look forward to working with you closely, especially in preparation for the upcoming IGM/SPG Meetings in Indonesia to be held in April 2012.

Akio Takemoto

Dr. Akio Takemoto
Director, APN Secretariat

Guest Article:

REDD+ for Forest Communities

Based on Lessons Learnt from Forest Conservation Efforts in Laos and Thailand

Photo: UNU-ISP

Kazuhiko Takeuchi,
Shimako Takahashi,
Alva Lim,
Jintana Kawasaki,
Luohui Liang

United Nations University
Institute for Sustainability and
Peace (UNU-ISP)

UNITED NATIONS UNIVERSITY
UNU-ISP

Forests are home to around 300 million people around the world, including people of indigenous and tribal groups, who are largely dependant on forests. More than 1.6 billion people depend to varying degrees on forests for their livelihoods. Not only that, but forests also sustain critical environmental services such as conservation of biodiversity, water and soil conservation, and climate regulation.

Similar to payments for environmental and ecosystem services (PES) mechanisms, REDD+ is expected to provide incentives to forest owners and users for not converting forests to other uses to prevent loss of forest carbon stocks, or for not overusing forests to avoid degradation of forest carbon stocks. The incentives or payments are based on the net change in carbon stocks for a specific period in comparison to a reference level. The net change in carbon stocks are measured and calculated into certified "carbon credits" which can be eventually bought and sold on a carbon market or paid through a fund. However, the global architecture for REDD+ still remains under development. REDD+ should promote the multiple values of forests, not only carbon benefits but also co-benefits of food and livelihoods and biodiversity conservation.

The APN project

In order to address the knowledge gap on potential opportunities and challenges of REDD+, the UN University, in partnership with the National Agriculture and Forestry Research Institute of Laos, and Chiang Mai University, Thailand, with the support of the Asia-Pacific Network for Global Change Research (APN), is undertaking a 3-year project that aims to:

- Assess the potential social, economic and environmental challenges and opportunities of REDD+ for forest communities in Laos and Thailand. Lessons will be drawn from past/ongoing forest conservation policies;

- Provide much-needed scientific evidence on the potential co-benefits of traditional forest management practices and comparing it with alternative land-uses; and
- Develop participatory community-based monitoring, reporting and verification (MRV) mechanisms for REDD+ to enable local communities to incorporate carbon stocks into their forest management.

Findings will facilitate the pro-poor design and implementation of REDD+, improve the well-being of forest-dependant communities and integrate traditional agriculture and forestry into the climate change mitigation agenda.

Learning from the past

Learning lessons from the past and how experiences will be translated into REDD+ are only partially considered in current mainstream debates on REDD+. Greater understanding is needed on why past forest conservation and rehabilitation efforts have failed and how to properly address the drivers of deforestation. The introduction of any additional forest conservation measures, even those like REDD+ with its carbon storage-focus, cannot be analysed in a vacuum separated from the past but as part of a continuum of one of many forest conservation efforts. Nor can it be developed in isolation from communities who not only depend on forests, but who are also critically needed and supported for the long-term and on-the-ground management, monitoring, reporting and verification (MRV) of forests within REDD+, so as to benefit from carbon finance as additional source of income from forests. The realities of forest conservation policies and its success in achieving stated goals and the socio-economic impacts, spatial and temporal, on local communities must be clearly evaluated. If the development of REDD and REDD+ follow similar paths taken by past forest conservation efforts, it may result in stand-alone approaches that focus purely on carbon accounting and erects barriers between local communities and forests. What could result is a fragmented mosaic where "conservation islands" of protected forest areas exist next to poverty-ridden forest-agriculture frontiers.

Going beyond REDD+

The approach of REDD+ has so far mirrored present conservation approaches to treat "nature" and human societies as separate entities. That is, exclude if not expel humans from protected forest areas (carbon sinks) assuming that their intervention causes forest degradation. This thinking devalues the role of local and indigenous communities in shaping and maintaining the surrounding landscapes and ecologies with which they live in, and ignores the positive impacts that their traditional (agri) cultural practices can have on the integrity, richness and resilience of ecosystems and landscapes.

With the uncertainty of future climate change, it is necessary to enhance the resilience and adaptability of these landscapes by enhancing diversity and flexibility of social-ecological systems. Because of the role socio-ecological landscapes play in soil fertility, carbon sequestration, biodiversity, food and water security, livelihoods and increased climate change resilience for the poor, they must be incorporated and supported by REDD+ mechanisms. Socio-ecologically productive landscapes maintain ecosystem functioning and support a rich repository of agricultural biodiversity through social mechanisms of exchange and use of many varieties and species.

REDD+ is about recognizing the multiple values of forests and should not narrowly emphasize forests as carbon sinks. The traditional forest and trees-based land-use systems and landscapes offer many models to integrate many values of forests and trees into REDD+. Systematic research and scientific data are needed to evaluate past/ongoing forest conservation efforts and assess their stated objectives to the actual realities on the ground, and then translate the lessons learned into improving future forestry schemes like REDD+.

> "REDD+ strategies need to go beyond carbon benefits

The success of any REDD+ projects must consider the sustainability of forest communities whose livelihoods depend on forest ecosystem services. REDD+ strategies need to go *beyond carbon* benefits to promote co-benefits for environment and forest communities through the harmonious integration of multiple values of forests, including poverty reduction, food and livelihood security, biodiversity conservation, climate change mitigation and adaptation. Carbon benefits for global climate regulation should not be achieved at the expense of forest functions to support local livelihoods and biodiversity.

Fourth SEA-SRC Meeting Convened

The APN in collaboration with the Institute of Natural Products Chemistry, Viet Nam Academy of Science and Technology (INPC-VAST), held its fourth Southeast Asia Sub-Regional Cooperation Meeting (SEA-SRC) and two back-to-back workshops from 25–29 July 2011 in Hanoi, Viet Nam.

Participants to the meeting included APN national Focal Points (nFPs) and Scientific Planning Group (SPG) members from Cambodia, Indonesia, Lao PDR, Malaysia, Thailand, Philippines and Viet Nam.

The meeting was opened by Dr. Xuan Bao Tam Nguyen, Deputy Director General, International Cooperation Department, Ministry of Natural Resources and Environment, Viet Nam and APN nFP for his country.

Dr. Linda Anne Stevenson, Executive Science Officer, APN Secretariat, delivered a welcome remark on behalf of the APN Secretariat Director, Dr. Akio Takemoto. She welcomed all participants and expressed her sincere appreciation to the nFP and SPG member for Viet Nam for organizing the 3 back-to-back meetings. Dr. Stevenson noted that she was excited to have many young scientists present in Viet Nam and expressed her hope that they would find the Climate Change Downscaling Workshop and Proposal Development Training Workshop useful for their future work with the APN and for strengthening interactions with colleagues from respective Southeast Asia Countries.

Dr. Kim Chi Ngo, Head of INPC-VAST and APN SPG Member for Viet Nam was elected Chair of the two-day meeting, and presided over the discussion of follow-up actions agreed upon in the last SEA-SRC held in Manila, Philippines in November 2010, and those during APN's 16th Joint Inter-Governmental Meeting/Scientific Planning Group Meeting (IGM/SPG) held in Colombo, Sri Lanka.

Among other issues, the meeting discussed activities for Southeast Asia sub-regional cooperation at both the national and local levels and global environmental issues in Viet Nam and other countries in the region.

In a country reporting session on day two of the meeting, participants reported on their countries efforts on climate change and adaptation, the Rio+20 process and sustainable development, as well as challenges and opportunities for science-policy linkage.

Climate Downscaling Workshop

The workshop was held from 26–27 July back-to-back with the SEA-SRC Meeting. Invited experts to the Climate Downscaling Workshop presented on key issues on climate change projections and adaptation actions. The participants engaged in active discussions with a view to promote scientific-based analysis using downscaling methods to enhance science-based adaptation planning in SEA, especially in Viet Nam, and raising awareness of the APN among young/early career scientists in the Southeast sub-region of the Asia-Pacific.

Proposal Development Training Workshop

From 28–29 July, over 20 young scientists from Viet Nam and other Southeast Asian countries attended the workshop, during which the APN's Annual Calls for Proposals process, guidelines and advice on proposal writing, and the review and selection process were introduced and explained. Participants were offered the opportunity to develop, in collaboration with their peers and mentors in pre-assigned groups, proposals under a specific topic for oral presentation, which were then followed by a group discussion and peer-review among all participants.

IHDP Executive Director Visits APN Secretariat

Dr. Anantha Kumar Duraiappah, Executive Director of the International Human Dimensions Programme on Global Environmental Change (IHDP) visited the APN Secretariat on 12 May 2011.

During his meeting with the Secretariat staff, Dr. Duraiappah provided updates on the progress of the IHDP Training Workshops on Asian Development Pathways in the Context of Transitions Towards a Green Economy, a capacity building project under APN's CAPaBLE programme. The first workshop, as informed by Dr. Duraiappah, will be held in Nanjing from 17–23 October 2011, in conjunction with the IHDP Scientific Steering Committee Meeting.

Also discussed in the meeting was the organization of the project "Satoyama: The New Commons in the Asia-Pacific Region", a joint initiative by the APN, DIVERSITAS, IHDP, UNU and the Hyogo Prefectural Government. A workshop will be convened from 23–25 January, 2012 to set the stage for the work ahead and produce a framework that details the methodology, the main actors involved, and the key deliverables.

Dr. Linda Stevenson, Executive Science Officer of the APN Secretariat, exchanged information on latest developments and APN's involvement in upcoming major events on global change and initiatives in the GC community, including the Planet Under Pressure conference to be held in London, the IHDP Global Change Assessment, and the ICSU Visioning process, among others.

APN Secretariat Staff Meets with NOWPAP Representatives

Northwest Pacific Action Plan (NOWPAP) representatives visited the APN Secretariat on 21st June, 2011. Mr. Masa Ohyama, Administrative Officer from the Toyama Office of NOWPAP Regional Coordinating Unit (RCU) and Dr. Sangjin Lee, Scientific Affairs Officer from its Busan Office met with then APN Secretariat Director, Mr. Tetsuro Fujitsuka, and other staff to provide information on the latest development of the project Impacts of Global Warming on Coastal and Marine Ecosystems in the Northwest Pacific, which is being funded under APN's Annual Regional Call for Research Proposals (ARCP) Programme. The project is currently being implemented by experts from all NOWPAP member states under the leadership of Dr. Sukgeun JUNG (Jeju National University, Republic of Korea). Project results will be presented to policy-makers in China, Japan, Korea and Russia.

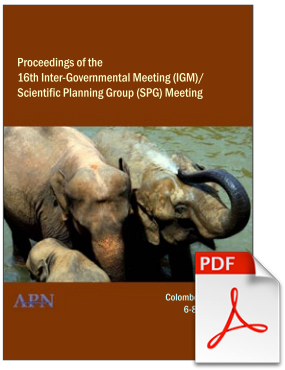
Mr. Yukihiro Imanari, Executive Manager of the APN Secretariat gave a brief introduction on the APN, in particular on its governing structure, major activities and funding information. Recognizing NOWPAP's efforts in promoting sub-regional collaborative research on marine environmental topics, Mr. Imanari expressed his hope that there will be more collaboration and interaction between the two organizations.

For more information on the project "Impacts of Global Warming on Coastal and Marine Ecosystems in the Northwest Pacific" (ARCP2010-FP12-Jung), please visit the APN website at www.apn-gcr.org. Further details on NOWPAP can be found in the "Featured Organization" section of the current issue of APN Newsletter.

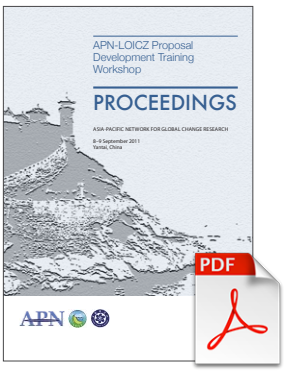
New Project Outputs

ARCP		
ARCP2010-07CMY-Bai	Asian Coastal Ecosystems: An Integrated Database and Information Management System (DIMS) for Assessing Impact of Climate Change and its Appraisal	Final project report Project website
ARCP2008-07CMY-Dutta	Climate Perturbation and Coastal Zone Systems in Asia Pacific Region: Holistic Approaches and Tools for Vulnerability Assessment and Sustainable Management Strategy	Final Project Report
ARCP2010-05CMY-Luck	The Effects of Climate Change on Pests and Diseases of Major Food Crops in the Asia Pacific Region	Final Project Report
CAPaBLE		
CBA2010-05NSY-Lorrey	Improving Pacific Island Meteorological Data Rescue and Data Visualisation Capabilities through Involvement in Emerging Climate Research Programmes	Final Project Report
CBA2009-04NSY-Visarto	Workshop on Climate and Agricultural Risk Management	Final Project Report
CBA-02CMY-Togtohyn	Dryland Development Paradigm (DDP) Application for the Most Vulnerable to Climate and Land Use Change of Pastoral Systems in the Southern Khangai Mountains of Mongolia (DDPPaS)	Final Project Report
CBA2010-15NSY-South	Global Change and Coral Reef Management Capacity in the Pacific: Engaging Scientists and Policy-Makers in Fiji, Samoa, Tuvalu and Tonga	Final project report
CBA2010-11NSY-De Guzman	Capacity Building for Research and Monitoring of Marine Protected Areas: An Adaptive Mechanism for Climate Change in the Asia-Pacific Region	Final project report Training manual for MPA monitoring: download here
CBA2010-06NSY-Kench	Improving Understanding of Local-Scale Vulnerability in Atoll Island Countries: Developing Capacity to Improve In-Country Approaches and Research	Final project report
CBA2010-08NSY-Salinger	Addressing the Livelihood Crisis for Farmers: Weather and Climate Services for Sustainable Agriculture – Development of Tools	Final project report
CIA2009-03-Lun	Climate Change in Eastern Himalayas: Advancing Community-Based Scientific Capacity to Support Climate Change Adaptation	Final project report
CIA2009-02-Pulhin	Capacity Development on Integration of Science and Local Knowledge for Climate Change Impacts and Vulnerability Assessments	Final project report
CIA2009-07-Lotia	Capacity Development of the Scientific Community for Assessing the Health Impacts of Climate Change	Final project report

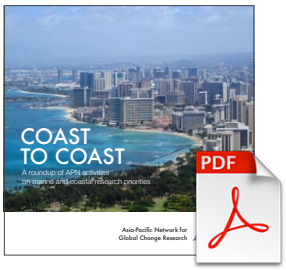
New APN Publications



Proceedings of the 16th Inter-Governmental Meeting (IGM) and Scientific Planning Group (SPG) Meeting



Proceedings of the Proposal Development Training Workshop in Yantai China, 8–9 September 2011



Brochure: Coast to Coast – A Roundup of APN Activities on Marine and Coastal Research Priorities

APN Welcomes New National Focal Point for Indonesia

APN Secretariat welcomes the new national Focal Point (nFP) for the Republic of Indonesia, Ms. Hermien Roosita, Executive Secretary to the Minister of Environment, Republic of Indonesia.

We also extend our sincere gratitude and appreciation to Ms. Liana Bratasida, the outgoing nFP who recently retired from the Ministry of Environment, Republic of Indonesia, and who has been very supportive with the APN's activities in Indonesia and in the Asia-Pacific region.

APN looks forward to the continued support of the Government of the Republic of Indonesia in APN's activities under the leadership of Ms. Hermien Roosita.

For official email correspondence, Ms. Roosita can be reached at dyahpoerwayanti@gmail.com.

Featured Global Change Organization – NOWPAP

The Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region (NOWPAP) was adopted in September 1994 as a part of the Regional Seas Programme of the United Nations Environment Programme (UNEP). Implementation of NOWPAP contributes to the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) in the Northwest Pacific region.

The Northwest Pacific region features coastal and island ecosystems with spectacular marine life and commercially important fishing resources. The region is also one of the most densely populated parts of the world, resulting in enormous pressures and demands on the environment.

The overall goal of the Northwest Pacific Action Plan is "the wise use, development and management of the marine and coastal environment so as to obtain the utmost long-term benefits for the human populations of the region, while securing the region's sustainability for future generations".

Activities of NOWPAP are carried out under the following priority programmes: establishment of a comprehensive database and information management system; survey of national environmental legislation, objectives, strategies and policies; establishment of a collaborative, regional monitoring programme (carried out by CEARAC and POMRAC together); development of effective measures for regional cooperation in marine pollution preparedness and response; and establishment of regional activity centres and their networks.

For more information please visit http://www.nowpap.org/

UNEP NOWPAP

Photo: Isaac Kohane

Staff Changes in the APN Secretariat

Akio Takemoto

It is my great honour to inform you of my recent appointment as Director of the APN Secretariat as of 20th July 2011.

I started my career with environmental administration in 1992. For nearly twenty years since then, I have devoted my entire career to environmental research and policy development at international, regional and national levels, including seven years in the Ministry of the Environment, Japan, during which I focused particularly on environmental research, climate change policy, global environmental issues and international cooperation.

As Director of the Secretariat, which is the principal administrative organ of the APN, I pledge to make utmost efforts to fulfil the Secretariat's mandate by facilitating the operation of the Network, providing secretarial support to the organs of the APN and implementing IGM, SPG and SC decisions on behalf of these organs, which I am convinced will contribute to implementing the Third Strategic Plan (2010-2015) and thus achieving the goals of the APN.

I look forward to working with you closely to support your efforts on global change and sustainable development research, and capacity development in the Asia-Pacific region.

Erdenesaikhan Nyamjav

Under the Fellowship for Science and Institutional Affairs, I worked at the APN Secretariat for exactly two years. Over this period, I had the opportunity to work on the complete life cycle of project management, from the submission of proposals all the way through to the submission of final technical and financial reports. Such experience has provided me with an understanding of a broad range of institutional, financial and scientific aspects of project management.

To highlight an interesting experience, communication was a learning tool engaged in all aspects of project management. There was never a single day without emails or dealing with documentation. From correspondence with individuals in different countries, I have learned that it is important to present the given information in, as much as possible, a clear and simple way so that it helps to effectively communicate the right message to all stakeholders. In my day-to-day work, I attempted to apply this rule of communication, and it is work in progress.

A list of other experiences I gained from the APN includes project management, contractual matters, financial reviews of international projects, documentation and preparation for intergovernmental and scientific meetings, facilitation of linking science and policy, workshops on emerging concepts, and administrative matters. In short, I am very thankful to everyone at the APN Secretariat, particularly Mr. Yukihiro Imanari, Executive Manager and Dr. Linda Stevenson, Executive Science Officer, and to all members of the APN for giving me such a learning opportunity. My sincere thanks also go to the project leaders and their collaborators who have patiently dealt with my growth throughout the past two years.

Kristine Garcia

If you're brave enough to say goodbye, life will reward you with a new hello. And here I am again dear APN family, friends and colleagues to say hello. While it's been four months since I physically left the APN, I am very happy that I have this opportunity to write a short message about my experience working with APN. I also prefer calling it a "thank you note", to express my appreciation to all of you for the support that you've given to me in my three years of working with APN. I am particularly grateful to the APN Secretariat family. It's always challenging to be away from biological family but you've made it exciting for me.

For those of you who are new to APN particularly to new subscribers of APN Newsletter, hello, I'm Kristine. I started working with APN back in 2008 as Programme Fellow for Scientific Affairs and became the Coordinator afterwards. Not only have I gained knowledge and learned lessons from participating in different global change activities, assisting in managing global change research and capacity building projects, and communicating with persons from different background and disciplines; on a more personal level, I've also gained friends and memories which I will treasure. The knowledge that I've learned, particularly on global environmental change has been very useful to me. I'm now pursuing a master's degree in the field of environmental science, here in my *Alma Mater* University of the Philippines Los Baños. This has always been a part of my plan, so while I have a heavy heart leaving APN, I needed to do so and move on to the next phase of my life.

Working with APN has been a truly rewarding experience. Let me end my short my message by reminding myself that "once you've been part of the APN, you always will be".

APN Organizes Special Session at EMECS 9

The APN organized a special session on Vulnerability and Risk Management of Enclosed Coastal Seas Home to Asian Megacities on Monday 29th August 2011, to look at the added vulnerability of enclosed coastal seas that are home to Asian megacities, and how the risks posed to enclosed coastal seas is exacerbated by socio-economic pressures as well as climate change.

During this special session organized for the EMECS 9 Conference held from 28-31 August 2011, invited experts from China, Japan, Thailand and the United Kingdom shared information on emerging issues, science-policy gaps, as well as challenges and opportunities faced by several Asian enclosed coastal seas home to megacities in which, in total, billions of people live.

The session was opened by Dr. Akio Takemoto, APN Secretariat Director and Chair of the APN Session, who welcomed all of the participants and introduced the session speakers.

In his opening address, Mr. Toshizo Ido, Governor of Hyogo Prefecture, Japan, welcomed the participants and expressed his gratitude for their participation in the session. He stressed that environmental conservation in enclosed coastal seas and in other coastal zones is not only a challenge for Hyogo Prefecture, Japan where the Seto Inland Sea is located, but it is a challenge shared by all Asia-Pacific countries.

Governor Ido acknowledged the APN's efforts to bring together experts to share the latest knowledge and experience on three major cities located in enclosed coastal sea areas of the Gulf of Thailand, Bay of Bengal and the Bohai Bay of China.

"I believe that the APN session will be a very meaningful opportunity to exchange opinions and share information among participants from Asia, Europe, North America, Latin America, and Africa." He added.

Vulnerability of coasts home to megacities in Asia

Prof. Mark Pelling, King's College London, shared via video link the latest development on a

Synthesis Report on Megacities and Urban Regions on the Coast, a collaborated project sponsored by LOICZ and IGBP. He stressed that Asia is a critical region in terms of urbanization, climate change, globalization and governance, and that reliable and comparable data needs to be collected and compiled despite the fact that the challenges are clear on a macro scale.

Noting the limited experiments carried out in adaptation in large coastal cities, he emphasized that while political involvement is of critical importance, evidence of innovation and experiments will play a vital role in providing a sound scientific base for such involvement.

Finally, Dr. Pelling shared his experience on identifying gaps in policy for resilience from a case study on heat wave risk management in London, which he commented as a robust risk management process but there's a need to incorporate social processes in assessing and understanding risk and its management.

APN and its project-related coastal activities

Mr. Yukihiro Imanari, Executive Manager, APN Secretariat, went on to provide an introduction of APN and a summary of APN project-related coastal activities, with a special focus on the APN-funded workshops entitled Cities at Risk, which was designed to build capacity for individual and institutional participation in responding to climate change in Asia's coastal megacities, among other important goals.

In his presentation, Mr. Imanari also announced the release of a new APN brochure entitled "Coast to Coast: A Roundup of APN Activities on Marine and Coastal Research Priorities", a communications tool that provides examples of APN-funded coastal projects, and a summary of all related projects.

Megacities examined: Bangkok, Tianjin and Dhaka

Prof. Piamsak Menasveta, Dean, Faculty of Science, Chulalongkorn University, Bangkok Thailand, and Prof. Zhongyuan Chen, East China Normal University, Shanghai China, presented information on the coastal zones of Bangkok, Thailand and Tianjin, China respectively, which centred around the following issues:

- Current status of the megacities in the face of risks posed by enclosed coastal seas and pressures from social-economic development;
- The multiple causes of current issues faced by the megacities and their observed and predicted effects on the cities themselves and the livelihood of people; and
- Available and envisaged measures to respond to the risks posed by enclosed coastal seas through strengthening the science-policy interface.

Circumstances did not allow for the speaker from Bangladesh to be present, however, his abstract and presentation were distributed for information.

In the active panel discussion that followed, the important question of how to strengthen communications between national and local governments was discussed, which is considered crucial in increasing megacities' resilience to the vulnerabilities imposed by both socio-economic development and climate change.

Before closing the session, Dr. Takemoto noted that the APN has a very important role to play in terms of responding to the questions of risk management posed today and, particularly, to support developing countries in order to mainstream risk management into policy development for coastal megacities.

He also expressed his hope that the outcomes will continue to complement the research agendas of APN, EMECS, LOICZ and other institutions on coastal vulnerabilities and risk management practices.

About EMECS 9 and the APN

The purpose of EMECS 9 is to improve our ability to manage enclosed or semi-enclosed coastal seas in all their ecological, economic, and cultural dimensions. The conference worked across barriers of discipline and culture by bringing together experts and stakeholders from different backgrounds to share information, insights, and lessons learned. The EMECS 9 Conference was held in Baltimore, Maryland USA, 28-31 August, 2011.

APN provided gold sponsorship in support of the EMECS 9 Conference and organized a special session on Vulnerability and Risk Management of Enclosed Coastal Seas Home to Asian Megacities, which took place on Monday 29th August, 2011.

About the APN brochure "Coast to Coast"

The publication can be downloaded from the following link: http://goo.gl/WO360

APN at the 3rd International Forum for Sustainable Asia and the Pacific

Dr. Akio Takemoto (representing IGES), Ms. Lizhier Coralde and Ms. Ratisya Radzi (representing APN) participated in the Third International Forum for Sustainable Asia and the Pacific (ISAP2011) held 26-27 July 2011 in Yokohama, Japan. The event was organized jointly by the Institute for Global Environmental Strategies (IGES) and the United Nations University Institute of Advanced Studies (UNU-IAS).

With the growing interest in sustainable development and looking towards the United Nations Conference on Sustainable Development (UNCSD: Rio+20), this year's main theme was "New Asia-Pacific Perspectives towards Rio+20: Implications of the East Japan Disaster."

This is in line with the main themes of Rio+20 which addresses the issues of green economy in the context of sustainable development and poverty eradication.

In addition, ISAP2011 focused on the implications of the recent triple disasters in Eastern Japan, an event which obliges the world to review the resilience and outlook of our current political and social systems in the face of climate change and natural disasters.

Prof. Hironori Hamanaka, Chair of the Board of Directors of IGES delivered his opening remarks and welcomed the participants on the first day of the Symposium. This was followed by speeches from experts from the academia, governments and inter-governmental organizations.

On the first day, there were two open sessions, "Consequences of Fukushima and a Proposal for Post 2012 Climate Regime" and "Building Resilient Societies". In the first session, local and international perspectives on Fukushima and its consequences provided different views on the energy crisis and energy policies. While the second session, "Building Resilient Societies", ranged in topic from biodiversity solutions to government policy in disaster risk management.

The second day of the ISAP Conference focused more on topics related to the upcoming Rio+20 agenda for 2012. "Governance for Sustainable Development" and "Green Economy" were the main focus for discussion on the second day, as well as a third summary session, "Road to Rio +20" that provided an overview of the discussions throughout the conference. The summary of the final session will be presented to the Asia Pacific Regional Preparatory Meeting for UNCSD, to be held in Seoul, ROK, from 19 to 20 October 2011.

The APN also attended a lunch session entitled "Local Energy Solutions in Japan" with speakers from Yokohama, Kitakyushu and Kanagawa prefectural governments as well as representatives from Mitsubishi Estate and Nissan Motors. There were also other events and workshops held parallel to the open sessions. Further information regarding these events can be found on the IGES website (http://www.iges.or.jp/en/news/event/isap2011/index.html).

APN Organizes Proposal Development Training Workshop in Yantai, China

The APN successfully organized a Proposal Development Training Workshop in Yantai, China from 8–9 September 2011, as part of the Young LOICZ Forum, which was jointly organized by the Land-Ocean Interactions in the Coastal Zone (LOICZ) and Yantai Institute of Coastal Zone Research (YIC).

As part of its effort to invest in the future by focusing on capacity building of early career scientists on a global scale, the Land-Ocean Interactions in the Coastal Zone (LOICZ) organized the first Young LOICZ Forum (YLF) in collaboration with the Yantai Institute of Coastal Zone Research (YIC) under the support of the APN.

The one-week forum brought together 25 young and early career scientists/policy-makers from around the world, during which participants had the opportunity to establish links and networks for their future research, to share interdisciplinary knowledge from different parts of the world, and to develop a set of skills that are vital for their future career.

The two-day Proposal Development Training Workshop (PDTW) provided by the APN as an important component of the YLF aimed to raise awareness of the APN among young and early-career scientists in the Asia-Pacific region, to increase their capacity to develop competitive proposals for APN's Annual Calls for Proposals, and to provide a platform to APN members and project leaders to share their knowledge on the APN proposal submission and selection process.

Invited speakers and mentors to the workshop included Dr. Juergen Weichselgartner, Senior Science Coordinator for LOICZ, Prof. Wenjie Dong, APN SPG Member for China, Dr. Konstantin Lutaenko, Senior Research Scientist from Russian Academy of Sciences, Prof. Zhongyuan Chen, College of Resources and Environmental Science, East China Normal University, and Prof. Hanjie Wang from the Key Laboratory of Regional Climate-Environment Research for Temperate East Asia (RCE-TEA), Chinese Academy of Sciences.

Participants benefited from the workshop in terms of having a better understanding of the APN and its Calls for Proposals and selection process, gaining experience in developing collaborative proposals for the APN and other funding agencies, and also increased exposure and networking opportunities within the global change community.

More information on the workshop is available in the workshop proceedings, which is downloadable from the following link: http://goo.gl/pjkWj

Photo: Juergen Weichselgartner

ARCP-Funded Project Outputs

Flood Risk Management Demonstration Project (phase 1) under the Asian Water Cycle Initiative for the Global Earth Observation System of Systems (FRM/AWCI/GEOSS)

Reference No.: ARCP2009-01CMY-Fukami
Project Leader: Mr. Kazuhiko Fukami

Background

Asian countries suffer from flood disasters repeatedly every year. In order to mitigate flood disasters quickly and efficiently under limited budgetary conditions, integrated flood management is needed. This includes ensuring a balance between structural (infrastructural) and non-structural measures for reducing vulnerability against flood risk, and conducting activities to increase coping capacity of society against floods, etc.

For this purpose, we need reliable historical and real-time hydrology databases to plan and carry out those measures, based on reliable and quantitative flood risk and vulnerability assessment, while considering natural and social changes of a river basin such as climate, urbanization, etc. Such reliable long-term data are often insufficient in many developing countries in Asia.

The goal of the project was, therefore, to build a scientific basis for sound decision-making and for developing appropriate policy options for flood risk management for each country and region in Asia, through fully utilizing emerging opportunities on the integrated use of global, regional and in-situ earth observational and numerically-simulated datasets.

Those opportunities are now being enhanced under the scheme of the Asian Water Cycle Initiative (AWCI), which contributes to the Global Earth Observation System of Systems (GEOSS). The objective of GEOSS-AWCI is to promote integrated water resources management for addressing common water-related problems in the Asia-Pacific region by generating usable information from sustainable earth observations data.

Taking advantage of this framework, we regularly organized technical meetings and workshops to exchange knowledge and information on relevant state-of-the-art studies. Some of the promising technologies have been further developed and applied in demonstrative pilot projects in some member countries. In this article, two typical examples of such technologies are introduced.

Decision support system

One is a decision support system developed by the University of Tokyo for real-time optimal operation of

Event	Flood Peak reduction at control point [%]	Gain or Loss at Fujiwara reservoir [MCM]	Gain or Loss at Aimata reservoir [MCM]	Gain or Loss at Sonohara reservoir [MCM]	Total Gain or Loss, reservoirs [MCM]
2002/07	18.14	10.45	8.28	17.43	17.43
2003/08	28.03	5.36	-1.76	11.85	11.85
2004/10	7.6	5.24	-4.98	7.82	7.82

Table 1 Effect of DRESS on flood peak reduction and saving water storage in the Upper Tone River, Japan. (from Saavedra et al., 2010)

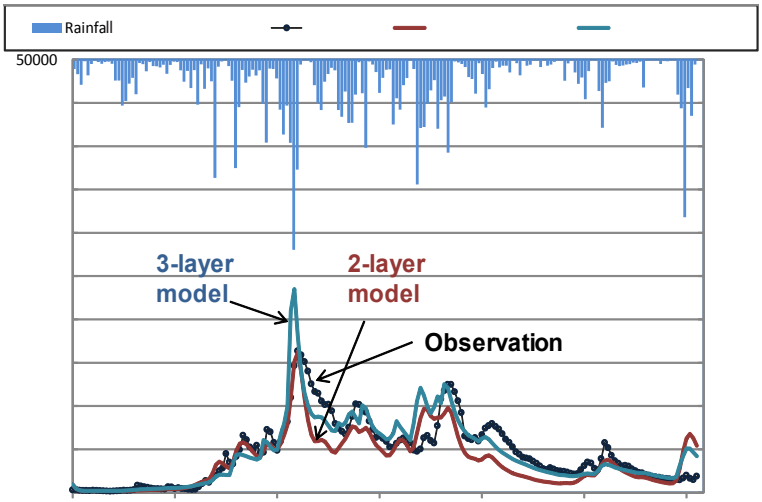


Fig.1 Runoff simulation with satellite-based rainfall (self-corrected GSMaP) and hydrological models on IFAS at the Hkamti Station (27,420km^2), Myanmar. The 2-tank model (PDHM Ver.2) reproduced the 1st major flood peak level and the other major flood peak timings well, despite the fact that low flows were underestimated. The 3-tank model (PDHM Ver.1) reproduced better results for both major flood peaks (timing and level) and their recessions. The first major flood-peak simulation seems overestimated, but this may show the possibility of inundation in the upstream of the station.

multiple dam reservoirs, including flood forecasting system coupled with numerical weather forecast data (GPV). The system consists of two components:

1. A Dam Release Support System (DRESS) that supports dam release decision-making in order to reduce flood peaks and store volume for water-use, and
2. Flood Warning Support System (FLOWSS) for disseminating flood warning information for timely evacuation.

DRESS is a combination of an ensemble of precipitation forecasts and WEB-DHM (Water and Energy Budget-based Distributed Hydrological Model). The model was originally developed for the Upper Tone River (a demonstration basin) and was verified (Table 1). DRESS successfully supported the optimal operation of multiple dam reservoirs of the Tone River.

FLOWSS is an integrated flood forecasting system using not only ground-based rain gauge and numerical precipitation forecast data but also satellite-based rainfall data. The result of the application of FLOWSS to the Huong River and the Red River in Viet Nam showed high potential of the full combination of numerical precipitation forecast and satellite-based rainfall data in flood forecasting for large scale rivers.

Integrated flood analysis system

The other example is the IFAS (Integrated Flood Analysis System), a concise free software toolkit for flood runoff analysis and forecasting, developed by the International Centre for Water Hazard and Risk Management under the auspices of UNESCO (ICHARM).

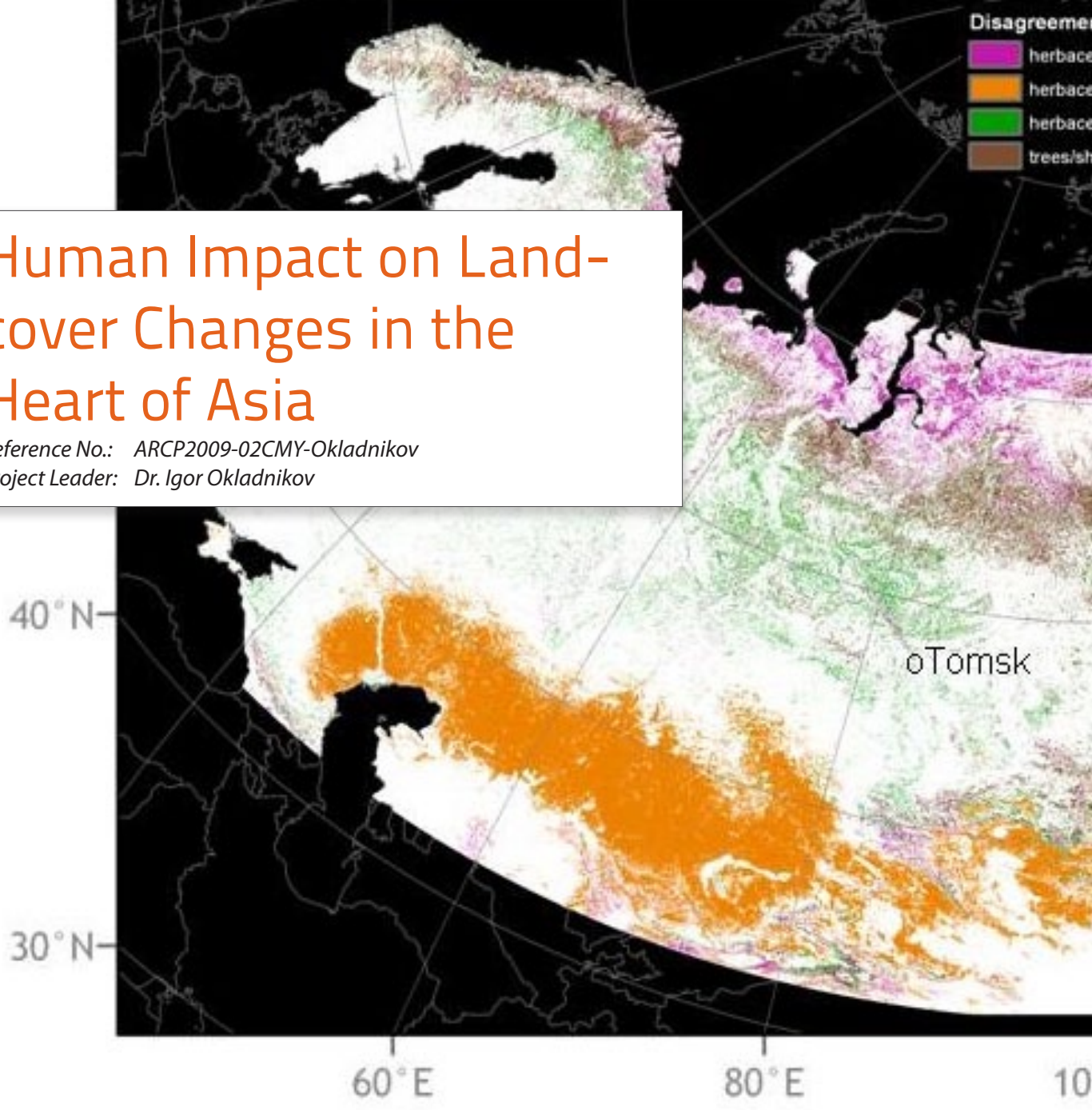
Working on minimum requirements of a PC with internet connection, IFAS enables us to construct and operate a flood runoff analysis system with global satellite-based rainfall database and global GIS data, because the necessary GIS analytical modules are all implemented on the IFAS itself with easy-to-understand graphical user interfaces.

Another feature of IFAS is to implement an original self-correction algorithm to modify the underestimation of satellite-based rainfall data (JAXA-GSMaP) for heavy rainfall events. This algorithm is empirical but does not require any ground-based rainfall data. Therefore, IFAS is expected to be very practical and useful for poorly-gauged river basins to start implementing flood forecasting systems.

It is, however, necessary to understand that using global data as the only source of input does not assure high accuracy in flood forecasting. IFAS is expected to be useful in promptly and efficiently building up a flood runoff analysis and flood forecasting system without developing a basic core system from the beginning. It also improves the accuracy of forecasts, step by step, depending on the availability of resources to implement an *in-situ* ground-based hydrological observational network. IFAS has been applied and tested in several river basins of Asia, such as the Bengawan Solo River of Indonesia, the Chindwin River of Myanmar (Fig.1), etc.

Human Impact on Land-cover Changes in the Heart of Asia

Reference No.: *ARCP2009-02CMY-Okladnikov*
Project Leader: *Dr. Igor Okladnikov*



Background

This project aimed to analyze actual land-cover to resolve differences and help evaluate other available land-cover products. The Landsat-based mapping of land-cover change was used to support the assessment of human impact. Four test sites (two in Siberia and two in Mongolia) were established for analyzing land cover and its change captured with time series space imagery.

For each of the test sites, the project collaborators compiled a concise descriptive scenario of economic development and land-use change based on available socio-economic studies and government statistics, including land inventories, population census, GDP, agricultural and forest sector production and other economic indicators. The ground data was collected from a variety of sources and in different forms including aerial photographs, field data from ongoing projects, and new sample plots.

The analysis now is focused on the effects of changes in land use in the region during 1960–2005 and understanding the observed changes in historic context. The test sites provide data for evaluation of existing coarse-resolution land-cover products and regional assessment of novel remote sensing methods. Major effort was focused on synthesis and documentation of results by research groups to ensure their use by decision-makers. The current active involvement of project collaborators in supporting policy decisions in the region facilitates the communication of research results to decision-makers.

Activities

The project started in July 2008 with the Initial Planning Meeting held in Tomsk, Russia at the Siberian Centre for Environmental

Figure 1: Map of disagreement in major vegetation types (tree-dominated, shrub-dominated, herbaceous, bare land) between two recent land-cover products: MODIS IGBP 2001 and GLC 2000.

Research and Training (SCERT), during which the four test sites (Figure 2) were identified and selected for data collection.

Following the meeting, the Russian and Mongolian teams visited Oregon State University (OSU), USA for a dedicated training session devoted to satellite image processing techniques, and obtained the knowledge required for creating land-cover maps and detecting changes using Landsat satellite images.

The key project collaborators later met in Ulaanbaatar, Mongolia, to visit the Mongolian test sites and participate in the 3rd International and National Workshop "Applications of geo-informatics for Mongolian natural resource and environment" (Figure 3), where they discussed current progress, visited areas designated for test sites, and met with local authorities to create links needed for better understanding of regional human activities and their impact on land cover (Figure 4).

The final Joint Workshop, which was conducted in Tomsk, Russia within the framework of the International Conference ENVIROMIS-2010, gathered project partners to discuss, summarize and compare their findings, both scientific and applied. This Conference gathered many specialists and young scientists from different areas as well as local officials and representatives of the Central Asia research community. It thus served as a dissemination tool providing the regional research community and decision-makers with a vision of potential remote sensing methods and an understanding of major areas of environment degradation. The partners presented results obtained and discussed plans of possible future cooperation.

Results

Results indicated that increased human activity negatively impacts vegetation cover. We also found that economic growth resulted in the expansion of urbanization, recreation, mining, timber cutting and agriculture. This resulted in increased spatial uniformity of landscapes. The results also demonstrated the influence of climate and socio-economical factors on vegetation. Population has a negative relationship to EVI and vegetation. Nomadic herders are moving their herds frequently to find grazing land for their livestock due to reduced amounts of pasture. This, coupled with unauthorized mining, exerts a negative effect on pastureland. Livestock has shown positive relationships with vegetation. Also, intense logging and local use led to a decrease of forest area in West Siberia in 1990–1999. Areas of forest cutting have a specific shape and were easily recognized on space images. All disturbed forest areas were separated into areas clearly eliminated by human activity and areas damaged for other reasons. Results indicate that the forest cutting (deforestation) areas increased during 1999–2007 due to intensified economic processes in the Tomskii Rajon administrative unit (Tomsk, Russia). For this time interval we observed some small new cuts for local purposes that appeared in the basic dark coniferous forests near villages and in old cuttings where roads exist.

We also found that decreases in forest area is not affected significantly by human activity. The primary natural reason for forest damage at the studied test sites were due to falling/breaking trees as a result of strong winds (local hurricanes). Strong winds were registered in the Tomsk region at the beginning of the 21st century. They made different windthrow areas. The strongest hurricane destroyed and damaged forest in an area measuring 5 by 50 km.

This project focused only on four typical areas in Western Siberia and Mongolia to investigate human impact on land-cover change. It also developed land-cover change and disturbance indices and maps for the selected regions to assess. However, further research is needed to characterize land patterns and classify vegetation types in Mongolia and Russia to have a deeper understanding of the interrelationship between land-cover changes and socio-economical processes. Improved data collection, methodologies, and national collaboration are necessary to answer the more complex questions.

Figure 2: Dr. Olga Krankina (Oregon State University, USA) during examination of Siberian test sites.

Figure 3: Dr. Tsolmon Renchin at the 3rd International and National Workshop 'Applications of geo-informatics for Mongolian natural resource and environment", Ulaanbaatar, Mongolia.

Figure 4: Peter Nelson and Mongolian team during examination of Mongolian test sites.

Fourth GIST-APN Meeting on Drafting a Strategic Plan for Sustainable Urban Water Quality Management in Southeast Asia

Reference No.: *ARCP2010-01-CMY-Sthiannopkao*
Project Leader: *Dr. Suthipong Sthiannopkao*

During May 30-31, 2011, APN in collaboration with the Office of Bali-Nusa Tenggara Eco- Regional Management Centre, Ministry of Environment, Indonesia, organized the Fourth APN meeting with a focus on developing analytical tools for a strategic plan for sustainable urban water quality management in Southeast Asia. The main objectives of this meeting were: (1) to follow up on progress of work conducted by APN members on analytical tools development, and (2) to disseminate our APN activities as well as introduce our developing analytical tools to local participants.

The meeting was declared opened by Ms. Hermien Roosita, Executive Secretary, Ministry of Environment, Indonesia (and new APN National Focal Point for Indonesia). Participants were from seven countries and regions, namely Cambodia, Indonesia, Thailand, Viet Nam, South Korea, USA and Taiwan. Local government officers, professors and lecturers in Bali and Bandung were also invited to participate in this two-day meeting as a part of disseminating the results of our APN activities.

Five developing analytical tools were presented and discussed at this meeting as follows:

1. A regional water quality index for Southeast Asia

This work aims to identify an optimal water quality index (WQI) formula which can be applied regionally. To establish the WQI for APN project countries, the water quality criteria of each country (Indonesia, Thailand and Viet Nam) were considered. The US National Sanitation Foundation Water Quality Index (NSF-WQI) was applied as a base formula for comparing the relative quality of the water. The water quality variables that can be used to calculate the WQI for Southeast Asian Countries are DO, BOD, TCB, FCB or E. coli, NH3, TP and TS. The index can be computed using the following formula and there are five levels for the descriptor:

Descriptor	WQI
Very good	>90
Good	81–90
Fair	61–80
Bad	41–60
Very bad	0–40

$$WQI = [\sum_{i=1}^{n} I_i^p]^{1/p}$$

Cities	Strengths	Weaknesses	Opportunities	Threats
Bandung	• Leaders commitment • Researchers concerned	• Lack of implementation coordination • Lack of law enforcement	• Support from national & international institutions • National strategic watershed/ river	• Population pressure • Climate change
Bangkok	• Having good master plan in order to achieve Green Bangkok • Public Private Partnerships	• Mega project on wastewater treatment areas • Lack of law enforcement and lack of monitoring	• Government commitment • Alliances on research • Environmental awareness	• Overlapping laws and institutions • Economic and political crisis • Lack of community participation
Ho Chi Minh City	• Adequate laws and regulations • Many tools to improve WQM	• Insufficient, vague and unclear policies for some fields and some policies on WQM are unsuitable with actual conditions of City • Overlapping institutions	• Government commitment to manage better water resources	• Quality of water sources is rapidly degrading • Exploitation and use water sources • Impact of socio-economic development • Pay more for water use
Phnom Penh City	• Government commitment and awareness	• Human resources and institutional capacity • Lack of key stakeholders participation and cooperation • Pending laws on Water Supply and Sanitation	• Regional and international cooperation	• Transfer of technology

Table 1 Internal and external factors influencing urban water quality management

2. SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis for urban water related policies

Strengths, weaknesses, opportunities and threats (SWOT) analysis was applied in order to evaluate the urban water quality management policies. Moreover, some recommendations were made to assist sound management aiming at improving the sustainability of the urban water quality of selected cases in Asian cities. As seen in Table 1, internal and external factors influencing urban water quality management differ considerably from city to city.

3. SWAT (Soil and Water Assessment Tool) analysis for urban water quality management

SWAT was applied to analyze best management practices for sustainable urban water quality management in Southeast Asia.

4. Risk assessment for heavy metals contamination in surface waters

The main purpose was to evaluate potential toxicity of priority and non-priority metals to aquatic life in river waters. In order to do so, Cumulative Criterion Unit (CCU) scores were applied to express the additive chronic effects of metals relatively to postulated toxic thresholds as a single variable.

5. APN database for decision-making process

The main objective was to benefit both scientists and policy-makers in Southeast Asia for their research and decision-making processes on policies related to sustainable urban water quality management. This database is composed of six sub database categories, namely climatic, demographic, geographic, hydrological, industrial, and water quality data.

Publication

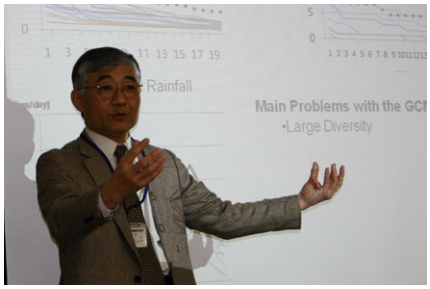
Pham Thi Minh Hanh, Suthipong Sthiannopkao**, Dang The Ba, Kyoung-Woong Kim, 2010, Development of water quality indices to identify water pollutants in Vietnam's surface water, Journal of Environmental Engineering-ASCE, Vol. 137, No. 4, pp. 273-283.

The GEOSS Asian Water Cycle Initiative (AWCI) Training Course for the Climate Change Assessment and Adaptation (CCAA) Study

Reference No.: ARCP2011-02CMY- Koike
Project Leader: Dr. Toshio Koike

Petra Koudelova, University of Tokyo, AWCI Coordinator

Toshio Koike, University of Tokyo, AWCI Scientific Leader



Since its inception in 2005, the GEOSS Asian Water Cycle Initiative (AWCI, http://monsoon.t.u-tokyo.ac.jp/AWCI/index.htm) has evolved into a strong and effective collaborative framework of 20 Asian countries that focuses on common water-related issues in Asia. It also builds linkages between scientists from multiple disciplines related to water cycle research and water resources management and local and national policy and decision-makers. Through coordinated research activities based on GEOSS principles of data and information integration and sharing, AWCI develops appropriate strategies for addressing these issues and promotes their implementation.

APN funding has been essential for the successful establishment of the AWCI as well as its research and capacity building activities that have been and continue to be conducted under several projects funded through the ARCP and CAPaBLE programmes. The ongoing AWCI-related projects under these APN programmes focus on climate change impact assessment on water resources and adequate river management system development. As a part of these activities, a training course for AWCI member country collaborators was organized in Tokyo, Japan, on 11–12 March 2011. The training course introduced techniques and tools for conducting climate change impact assessment studies.

More than 25 attendees from 15 countries participated in the training course including the leaders of the AWCI Climate Change Assessment and Adaptation (CCAA) study and students from Korea and Japan. The course was designed to include four main parts:

(i) Climate projection rainfall bias correction method, provided by the University of Tokyo (UT),

(ii) Water and Energy Budget Distributed Hydrological Model (WEB-DHM) application method using the bias corrected rainfall data and other projection forcings provided by UT,

(iii) Flood modelling system IFAS (Integrated Flood Analysis System) applications, provided by the International Centre for Water Hazard and Risk Management (ICHARM), and

(iv) Multi-model ensemble hydrologic modelling in use for Climate Change assessment, provided by Sejong University.

However, the first day of the course, 11 March, was interrupted by the Great East Japan Earthquake that resulted in the suspension of public transportation. Thus the ICHARM team could not come to the venue on 12 March. Regretfully, the IFAS course had to be cancelled but it was decided to utilize the time of the IFAS session for the WEB-DHM training and two other related lectures, which was appreciated by the participants.

The course was opened with an introductory talk by Prof. Toshio Koike, who explained the scheme of the climate change impact assessment using (i) the multiple output of global climate models (GCM) for assessing changing hazards and (ii) integrated hydrological models for assessing changing hydrology.

Based on the assessment results and integrating them with relevant socio-economic data, valuable information can be produced for raising public awareness and undertaking effective action towards adaptation. The current GCMs

have certain limitations resulting in significant uncertainties of their rainfall outputs. The main issues include large discrepancies among models, low extreme heavy rainfall, small number of no-rain days, low seasonal representation, and low spatial distribution. Accordingly, the model output must be corrected for bias using the *in-situ* and downscaled data, and multiple model output must be considered in hydrological analysis.

After the introductory lecture, the UT team provided an interactive training session on rainfall bias correction. The participants were provided with fully equipped computers assuring that each participant had access to his/her country data and the Japan Tone river dataset that had been prepared for training purposes in advance. The participants followed the instructions and actively worked on applying the introduced method for their region using their basin data. UT researchers and students provided assistance to help complete all the necessary tasks.

At the second session, the structure and main components of the WEB-DHM and examples of its application for the CCAA study were introduced. After that, participants, assisted by the UT researchers and students, learned how to initialize and run the WEB-DHM model and how to visualize and analyze the results. For most of the AWCI basins, WEB-DHM was developed and forcing datasets prepared in advance using the past data from available sources (e.g. JRA25) and future projection data including the bias-corrected rainfall. Therefore, most of the participants could work with their own data at their river basin, using also the rainfall corrected output produced during the bias correction session.

The multi-ensemble hydrological modelling session was provided by Sejong University (Seoul, Korea) team led by Prof. Deg-Hyo Bae. Firstly, an overview of climate change impact assessment on water resources was given, highlighting various sources of uncertainties. Then the hydrologic impact assessment process was introduced using multiple hydrological models and producing ensemble hydrological responses to projected climate forcings in order to consider said uncertainties. After the introductory session, the participants were engaged in a practical application of the Sejong University hydrological model SURR to the Korean AWCI demonstration basin, the Chungju dam basin.

At the end of the two-day intensive programme, Prof. Koike summarized the achievements and acknowledged participants' diligent work during the working sessions. He appreciated the participants' focus on the course subject and their kind cooperation during the difficult situation after the earthquake. At the same time, the selfless and tireless work of the logistic team led by Ms. Akiko Goda were acknowledged by participants who highly valued the team members' efforts to ensure safety and maximum possible comfort of the participants and to rebook their air tickets for the earliest possible flights after the earthquake.

All the presented material can be accessed through the Internet at:

http://monsoon.t.u-tokyo.ac.jp/AWCI/meetings/Tokyo_Mar2011/presentations.html

CAPaBLE Programme Updates

Addressing the Livelihood Crisis for Farmers: Weather and Climate Services for Sustainable Agriculture – Development of Tools

Reference No.: *CBA2010-08NSY-Salinger*
Project Leader: *Dr. Jim Salinger*

There are 450 million smallholder farms in the world and several weather and climate issues in recent years are threatening their very livelihoods. The frequency and intensity of natural disasters such as floods, droughts, tropical cyclones, wild fires and heatwaves have been rising. Climate change is very likely contributing to increasingly frequent weather extremes and ensuing natural catastrophes.

In order to address the livelihood crisis of farmers, there is an urgent need to increase productivity on their farms. This workshop brought together leading experts in the field who prepared and presented state-of-the-art discussion papers to address the objectives of the workshop. The programme was designed to engage all participants in discussions on topics of their interest to facilitate interactive dialogue and develop appropriate recommendations. The dramatic growth in human population is imposing enormous pressure on existing farming production systems. In addition, farmers are expected to manage the more insidious effects of long-term climate change that may now be occurring at an unprecedented rate. Various weather and climate services for the farming community, communication methods and ways to implement new tools for dissemination of the weather and climate products and services, especially in regions most vulnerable to weather and climate extremes were identified. This provided capacity building in the area of strategies for more targeted weather and climate information and forecasting for increased preparedness to sustainable agricultural development, especially in the Asia-Pacific region, and also assisted policy-makers and civil society in responding effectively to varying weather and climate conditions.

CEO of Vanuatu Agricultural College Mr. Peter Napwatt interviewing a cocoa farmer, Santo, Vanuatu

One hundred and thirty-four participants from 57 countries participated in the workshop. The workshop developed a set of recommendations to address the livelihood crisis for farmers for user training, liaison and communications; for NMHSs, extension services and partners; research, seasonal climate forecasting for farming communities, roving seminars and policy and cross cutting issues.

The key recommendations include the following:

- Develop and enhance two-way dialogue between providers of products and services and the farmers to ensure that user requirements are understood and met (e.g. via RCOFs); face-to-face interaction is critical;
- Improve information delivery systems, especially for remote areas, through traditional systems (e.g.

drums) as well as use of modern tools (e.g. SMS, Internet, e-boards);

- Further develop the World AgroMeteorological Information Service (WAMIS);
- Establish and maintain an adequate density of high quality meteorological and agrometeorological observing stations, to provide the data necessary for services, products, forecasts, modelling, assessments, insurance, etc., especially in developing countries;
- Collect/provide data from all relevant sources; e.g. meteorological, agrometeorological, soils, phenology, crop conditions, remote sensing, and agricultural statistics;
- Develop localized climate services, products, forecasts and assessments with high spatial and temporal resolution (e.g. mine the long-term records for historical risk/hazard trends and patterns; conduct analysis of meteorological, climatic and crop data; make assessments of the temporal and spatial dimensions of climate impacts; provide forecasts of crop yield, crop growing period, of plant diseases and insect/pests, etc.)
- Include farmer livelihood assets in climate impacts assessments and in development of response strategies;
- Ensure that climate services target and foster coordination among an expanded set of applications of seasonal forecast information, (e.g. coordinating input and credit supply, food crisis management, trade, and agricultural insurance).
- Systematize the dialogue between the technical services and the rural community on weather and climate and their impacts on the rural activities;
- Foster a philosophy of protection of vulnerable and food-insecure people, the environment, land and water; reduced consumption of energy and natural resources; and development of people's resilience against climate hazards, to ensure sustainable development.

A follow up workshop was held from 11–13 December 2010 in Luganville, Santo in Vanuatu. This was to improve the interface between Vanuatu farmers, experts in climate change and develop tools.

While climate change can have extreme consequences, the scientific evidence shows that there are actions that local communities and local farmers today can take to minimize impacts. This workshop focused on the positive actions that Vanuatu's agricultural community can implement to ensure the maintenance of livelihoods and food security. Vanuatu farmers from six provinces worked together with scientists to form climate change adaptation strategies to suit local conditions in their communities and islands. This unique local climate change adaptation knowledge was captured in radio, video and television segments that are being disseminated around the islands and the world for people to view.

The workshop brought together climate change, agricultural and media experts with the goal of empowering indigenous communities to develop their own creative solutions that acknowledge and treasure local traditions.

Dr. Jim Salinger training growers in Luganville, Vanuatu

Capacity Building on Integration of Science and Local Knowledge for Climate Change Impacts and Vulnerability Assessments

Reference No.: *CIA2009-02NSY-Pulhin*
Project Leader: *Dr. Juan M. Pulhin*

In-depth investigation of vulnerability and adaptation to climate change has become central to climate science, policy and practice, particularly as a requisite in achieving the goal of resilience among natural and social systems. However, as in many other developing countries, the capacity to conduct such assessment is still limited in the Philippines with gaps in downscaling simulated climate scenarios and mainstreaming research findings into policy- and decision-making.

Competence in conducting vulnerability and adaptation assessments is important among local decision-makers being positioned at the forefront for responding to climate change problems and given the variation in impacts among sectors and societies which creates a need for area-specific responses. This capacity building initiative was therefore conceptualized and implemented in response to the above need. The province of Albay was chosen as the study site with its high exposure to climate-related hazards being located adjacent to the Pacific Ocean and the dependence of a significant portion of its population on primary industries such as agriculture, fisheries and forestry. The risk of sea-level rise also threatens hundreds of thousands of its population living along the coasts.

The project involved training in the concepts of climate change and use of participatory assessment approaches and a computer modelling system. SimCLIM was developed and used for Albay (called AlbayClim) as an innovative tool for creating and assessing climate scenarios and characterizing future risks. Case studies were conducted in upland communities and coastal communities for climate change and sea-level rise assessment, respectively.

The capacity building project resulted in greater understanding of the concepts of climate change by the local stakeholders, and trained capacity in conducting vulnerability and adaptation assessment, particularly with the aid of AlbayClim. It also directly contributed to an important undertaking in the province for policy planning, which is the revision of their Comprehensive Land Use Plan (CLUP). Likewise, it paved the way towards enhanced methodologies and better tools for vulnerability and adaptation assessment, which addressed the major gaps in climate change research in the country.

Meanwhile, the case studies revealed that the upland communities were highly vulnerable to typhoons and El Niño. The impacts of extreme

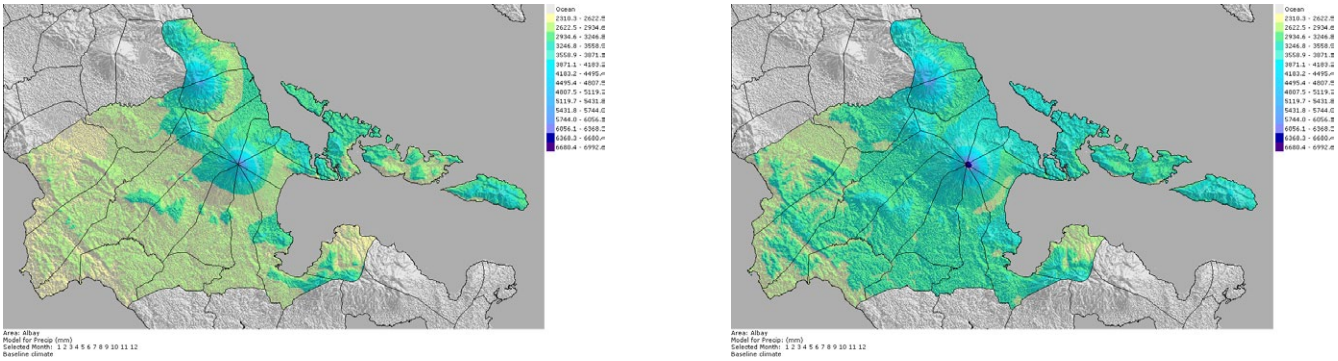


Figure 1. Results of AlbayCLIM baseline (left) and 2100 scenario (right) simulation for mean precipitation.

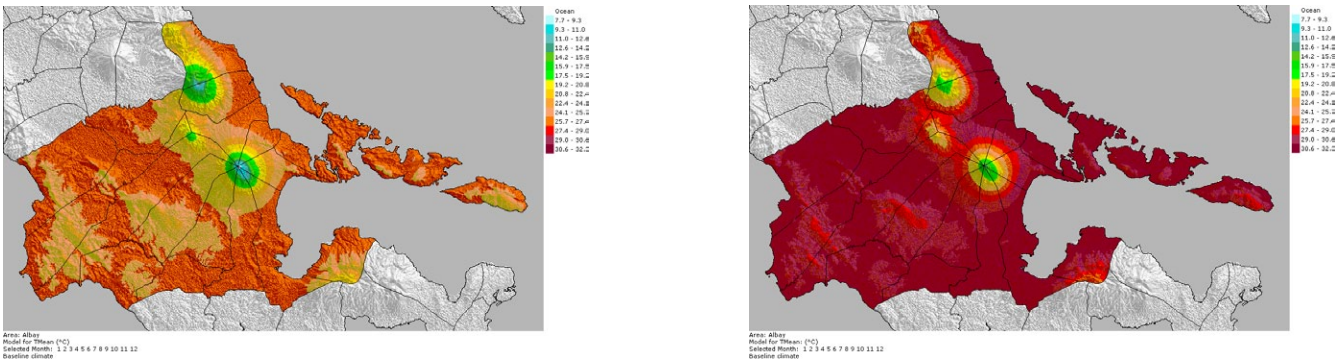


Figure 2. Results of AlbayCLIM baseline (left) and 2100 scenario (right) simulation for mean temperature.

climate events include decline in agricultural production or total crop failure, less water yield and poor water quality, landslides, damages to property, and malnutrition. Coastal communities, on the other hand, were affected by floods and storm surges during typhoons, which led to damage to properties and agricultural areas, increased occurrences of illnesses, and salt-water intrusion. For both upland and coastal communities, adaptation strategies were mostly spontaneous and meant to bear the losses of the impacts.

Future climate change and sea-level rise scenarios generated through AlbayCLIM, using ensembles and SRES A1FI set at high sensitivity, presented a 4–5˚C increase in temperature and about 10% increase in precipitation in 2100 in the *barangay*s (basic political unit in the Philippines) where the upland communities are located, and 1.3-meter sea-level rise in the same year in the eastern coast of the province, where lies the coastal communities. Given these results, long-term adaptation planning is in order, which should include improving the adaptive capacity of the concerned stakeholders.

Combining both computer-based modelling system and participatory approaches proved useful in demonstrating the "forward-looking" aspect of climate change and putting into context the vulnerability of the group assessed. Deeper investigation of the intricate interactions in the communities revealed non-climatic factors that increase or perpetuate vulnerability to climate-related hazards. These should be considered in designing strategies for adaptation and facilitating its implementation. Meanwhile, the future presents an uncertain picture which is beyond the experience and comprehension of local communities. The use of computer-generated scenarios could provide a peek on what is likely to happen, which could aid in adaptation planning.

> **"The integration of science and local knowledge provided a more robust vulnerability and adaptation assessment**

This APN capacity building project has yielded significant outcomes both at the local and national levels as the methodologies used and results of the assessment were seen to contribute to the recently established Climate Change Academy in Albay, as well as to the development of effective tools and methodologies for the promotion of climate change research and development in the country. The project demonstrated as well that the integration of science and local knowledge provided a more robust vulnerability and adaptation assessment which would be indispensable in enhancing current and future adaptations.

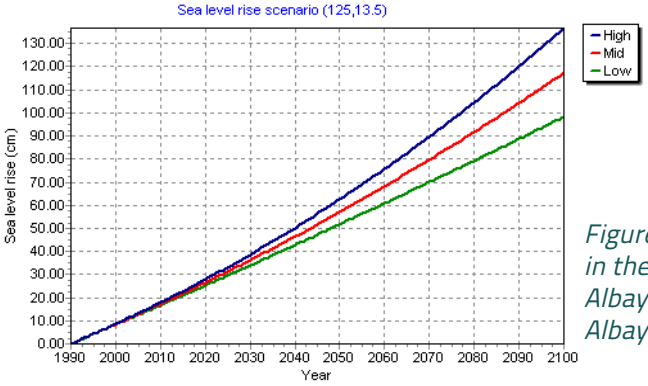


Figure 3. Sea-level rise in the eastern coast of Albay generated from AlbayCLIM.

Carbon Governance in Asia – Bridging Scales and Disciplines

Reference No.: *CBA2010-04NSY-Dhakal*
Project Leader: *Dr. Shobhakar Dhakal*

Carbon governance challenges are immense

In 2009 the world emitted 34 gigatonnes of CO_2 from fossil fuel, cement and land-use changes. Asia is a key region that accounts for a large and growing share of worldwide carbon emissions of about 41%. However, per capita emissions in Asia are still relatively low, excluding a few exceptions such as Japan and Republic of Korea. With growing populations and economic growth in Asia, per capita and absolute emissions are set to rise. In any effort of limiting a dangerous human interference to earth's climate, be it 2 degree C or others by the end of this century, Asia will play a prominent role. The opportunities as well as challenges for carbon governance in Asia are immense. A better understanding of the carbon governance challenges across multiple scales is necessary for Asia. Such understanding will provide important insights to design an optimized carbon governance structure.

Building research capacity for carbon governance is crucial

Therefore, in order to build capacity of young researchers from the Asia-Pacific region through dialogues and discussions on the issues and opportunities for carbon governance in Asia, a workshop titled Carbon Governance in Asia: Bridging Scales and Disciplines was organized on 1–3 November 2010 through collaborative efforts of the Global Carbon Project, the Earth System Governance Project, and United Nations University – Institute for Advanced Studies with support from APN. The workshop was attended by fifteen early career researchers from Japan, India, China, Indonesia, Bangladesh, Nigeria, Nepal, Thailand and Australia. They were supported and mentored by seven senior scholars from Colorado State University, University of Minnesota, Australia National University, National Institute for Environmental Studies Japan, Tokyo Institute of Technology, Renmin University of China and University of Maryland. The workshop provided a platform and the opportunity for early career researchers to interact with senior scholars and the practioners on approaches towards sound carbon governance.

Key outcomes and lessons

The workshop recognized that the pathways of regional development are sequences of interrelated changes in social, economic and governance systems. They vary from place to place and over time, are based on different drivers and problem perceptions in ways that are likely to have different consequences on how carbon governance is being shaped. It is very clear from the workshop that one size does not fit all and an in-depth understanding of the various approaches and processes is key to designing better carbon governance systems at multiple scales. The workshop appreciated that carbon governance involves local, national and regional levels and interaction between them. Thus, it is a multilevel governance challenge that should include actors and agents at all levels. A deeper look at their roles is needed, especially for the wider market, environmental advocacy groups, community groups, businesses, and scientific networks.

The presentations made in the workshop on the nature of carbon governance in forests and energy clearly stressed this fact. Thus, the workshop emphasized that this multilevel characteristic requires a better scientific understanding and political awareness of norms and standards in carbon governance. Norms that are compatible between levels and policy domains while, in parallel, reflect that carbon governance is embedded in different cultural, social, economical, and political contexts. Additionally, one of the key lessons of this capacity building activity underscores the further need for such activities and training young researchers on how to focus on the core research issues given a broader set of issues. The conceptual framing aspect of many young researchers' papers was relatively weaker and they lacked necessary methodological and theoretical foundations and reflexive capacities. Interactions prior to and at the capacity building workshop was tremendously helpful for young researchers but longer engagements with young researchers are necessary in similar future efforts.

Photo: UN Photo

Extreme floods in Punjab, Pakistan, 15 Aug. 2010

Capacity Development of the Scientific Community for Assessing the Health Impacts of Climate Change

Reference No.: *CIA2009-07-Lotia*
Project Leader: *Ms. Hina Lotia*

Over the ages human activities have degraded or changed local ecosystems. Today, this burgeoning human impact on the environment has reached a global scale. Populations from around the world are now encountering unfamiliar human-induced changes in the environment, including ozone depletion, land degradation, freshwater reduction and biodiversity loss.

Climate change affects multiple sectors, including human health. Its effects on health pose a serious threat to long-term sustainable development. In spite of this there has been little recognition among practitioners of the various scientific disciplines, of the relationships between environmental changes and human health.

In Pakistan, as in other developing countries, apart from a dedicated few, health professionals have not come to the climate change debate. To change this status quo, the Leadership for Environment and Development (LEAD) Pakistan, launched an initiative jointly with the Asia-Pacific Network for Global Change Research (APN) in 2010.

The one year intervention was based on the premise that the educational and scientific base of Pakistan will have a direct bearing in increasing or constraining its capacity to adapt. Keeping this in mind focus was placed on strengthening capacities for research on the health effects of climate change.

As a first step towards this direction, a cohort of 12 public health professionals was enlisted from around the country. Following their selection a series of three training workshops were conducted to build their capacity to assess and interpret climate data, information and projections. With their knowledge about the effect of weather on the incidence and prevalence of diseases serving as baseline, this exercise enhanced their understanding of the risks and vulnerabilities posed by climate change to human health.

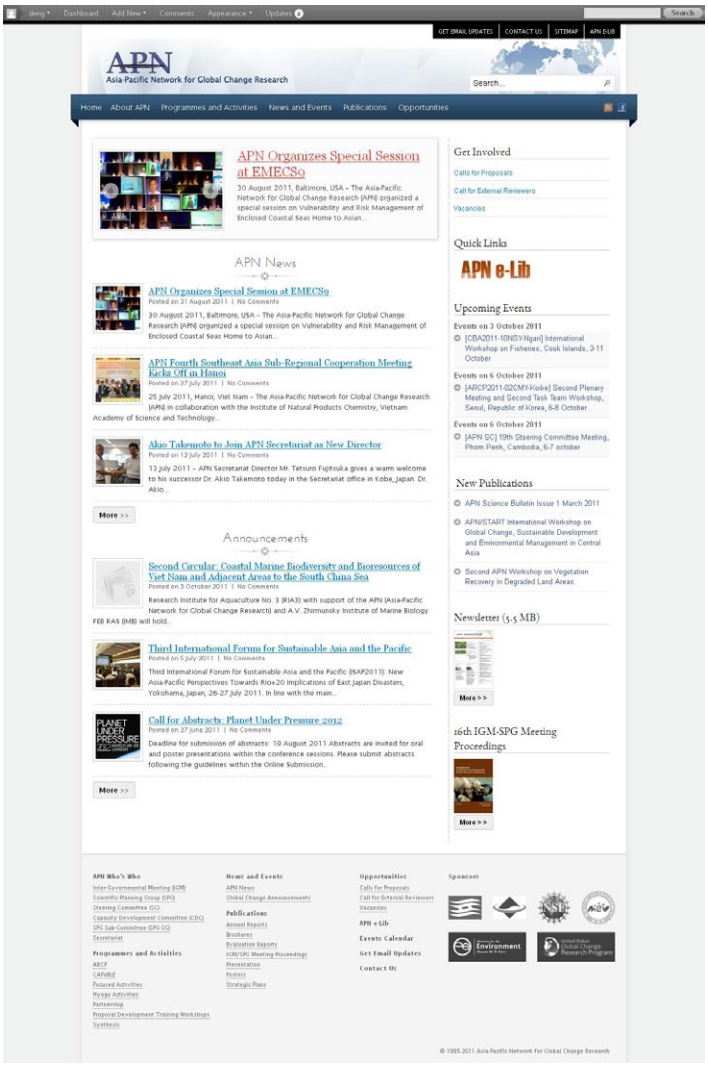
As evidence of the same, these experts were divided into 4 groups, with each group investigating a certain aspect of the climate change-health relationship. The undertaken research work was compiled and published in book form titled, "Climate Change and Health – Exploring Linkages".

As a final step, to encourage a science-policy interface for instilling the practice of "informed decision-making" in the policy arena, outcomes of the groups' research activities were communicated to the concerned decision-makers in the Ministry of Health, Government of Pakistan. In this way an effort was made through this intervention to create a bridge between the country's health-related scientific community and its policy-makers, by enabling the former with the necessary skills required to understand climate related risks to health. This, in turn, was made available to decision-makers for sectorial adaptation plans.

Additionally, to stimulate the interest of other aspiring health professionals in exploring the relationship between climate change and health, as well as to ensure continuation of this debate long after the cessation of the project, the said research work has also been placed on APN's and LEAD's websites.

The present work, is however, only the first step. It is hoped that this cadre of health professionals will serve as an example and inspiration for other professionals to enter into this arena; and the research work carried out by theme will prove to be the beginning of development of a scientific and research base on the subject.

APN Launches Redesigned Website



The APN Secretariat is pleased to announce the launch of its redesigned website on 30 September 2011. The new website provides a dynamic interface, a more intuitive navigation structure and higher readability.

Try out the APN "E-Lib" portal

Are you looking for information on a particular APN-funded project, or possible future collaborators for your proposed project?

Try out our E-Lib portal (http://www.apn-gcr.org/resources/), where you can browse through all completed and ongoing APN-funded projects. With the advanced search feature, you can search for projects by different criteria, including project leaders, countries involved, research topics and the project reference number.

The portal contains not only the metadata of APN-funded projects, but also other science-related publications by APN, such as books, proceedings, science bulletins and synthesis reports.

Stay updated with the new Events Calendar

Keep track of upcoming events in the global change research community and APN-funded project activities with our new Events Calendar.

The Calendar can be found at http://www.apn-gcr.org/news-and-events/google-calendar/. If you use Google Calendars, you can copy any events of interest to you to your own calendar. An "Events List" view is also offered.

We appreciate your comments and suggestions. Visit us at www.apn-gcr.org and send your feedback to apnwebmaster@apn-gcr.org so we can improve our website to better serve your information needs.

ARCP 2011/12 Projects

ARCP2011-01CMY-Wang
Project Title: Building Asian Climate Change Scenarios by Multi-Regional Climate Models Ensemble
Project Leader: Dr. Shuyu Wang, Institute of Atmospheric Physics, Chinese Academy of Sciences, CHINA
Email: wsy@tea.ac.cn

ARCP2011-02CMY-Koike
Project Title: River Management System Development in Asia Based on Data Integration and Analysis System (DIAS) under GEOSS
Project Leader: Dr. Prof. Toshio Koike, The University of Tokyo, JAPAN
Email: tkoike@hydra.t.u-tokyo.ac.jp

ARCP2011-03CMY-Asanuma
Project Title: Intercomparison of Landsurface Process Modeling in Asian Drylands
Project Leader: Dr. Jun Asanuma, Terrestrial Environment Research Centre, University of Tsukuba, JAPAN
Email: asanuma@suiri.tsukuba.ac.jp

ARCP2011-04CMY-Uprety
Project Title: Community-based Forestry and Livelihoods in the Context of Climate Change Adaptation
Project Leader: Dr. Dharam Raj Uprety, International Forestry Resources and Institutions (IFRI) and ForestAction, NEPAL
Email: forestaction@wlink.com.np; dharam.uprety@gmail.com

ARCP2011-05CMY-Bae
Project Title: Climate Change Impact Assessment on Asia-Pacific Water Resources under AWCI/GEOSS
Project Leader: Prof. Deg-Hyo Bae, Sejong University, REPUBLIC OF KOREA
Email: dhbae@sejong.ac.kr

ARCP2011-06CMY-Li
Project Title: Analysis on Urban Land-use Changes and its Impacts on Food Security in Different Asian Cities of Four Developing Countries using Modified CA Model
Project Leader: Prof. Jianlong Li, The Global Change Research Institute, College of Life Science, Nanjing University, CHINA
Email: jlli2008@nju.edu.cn; jianlongli@sina.com.cn

ARCP2011-07CMY-Han
Project Title: The Impact of Spatial Parameters on GHG Emission: A Comparative Study between Cities in China and India
Project Leader: Dr. Sun Sheng Han, The University of Melbourne, AUSTRALIA
Email: sshan@unimelb.edu.au

ARCP2011-08CMY-Huda
Project Title: Food Security and Climate Change in the Asia-Pacific Region: Evaluating Mismatch between Crop Development and Water Availability
Project Leader: Prof. Samsul Huda, University of Western Sydney, AUSTRALIA
Email: s.huda@uws.edu.au

ARCP2011-09CMY-Towprayoon
Project Title: Strategic Rice Cultivation for Sustainable Low Carbon Society Development in Southeast Asia
Project Leader: Assoc. Prof. Dr. Sirintornthep Towprayoon, King Mongkut's University of Technology, THAILAND
Email: sirin@jgsee.kmutt.ac.th

ARCP2011-10CMY-Lutaenko
Project Title: Coastal Marine Biodiversity of Viet Nam: Regional and Local Challenges and Coastal Zone Management for Sustainable Development
Project Leader: Dr. Konstantin Lutaenko, Institute of Marine Biology, RUSSIAN FEDERATION
Email: lutaenko@mail.primorye.ru; lutaenko@mail.ru

ARCP2011-11NMY-Patra/Canadell
Project Title: Greenhouse Gas Budgets of South and Southeast Asia
Project Leaders: Dr. Prabir K. Patra and Dr. Josep Canadell, Research Institute for Global Change (JAMSTEC) , Global Carbon Project (GCP), JAPAN/AUSTRALIA
Email: prabir@jamstec.go.jp; pep.canadell@csiro.au

ARCP2011-12NMY-Fortes
Project Title: Seagrass-Mangrove Ecosystems: Bioshields Against Biodiversity Loss and Impacts of Local and Global Change along Indo-Pacific Coasts" (The Seagrass-Mangrove Bioshield Project, SMBP)
Project Leader: Prof. Miguel Fortes, Marine Science Institute , University of the Philippines, PHILIPPINES
Email: migueldfortes@gmail.com

The Annual Regional Call for Research Proposals (ARCP) is one of the scientific pillars of the APN to encourage and promote global change research in the Asia-Pacific region that has potential, in addition to improving the understanding of global change and its implications in the region, to contribute to the establishment of a sound scientific basis for policy-making with regard to issues for which global change is an important factor. The ARCP is a competitive process launched in April 1998 to select projects for funding under the Science Agenda of the APN.

ARCP2011-13NMY-Herath
Project Title: Developing Ecosystem-based Adaptation Strategies for Enhancing Resilience of Rice Terrace Farming Systems against Climate Change
Project Leader: Prof. Anura Srikantha Herath, Institute for Sustainability and Peace, United Nation University (UNU), JAPAN
Email: herath@unu.edu

ARCP2011-14NMY-Salik
Project Title: Impact of Climate Change on Mangrove Ecosystems in South Asia
Project Leader: Mr. Kashif Majeed Salik, Global Change Impact Studies Centre (GCISC), PAKISTAN
Email: kashif.majeed@gcisc.org.pk; kashif.salik@gmail.com

ARCP2011-15NMY-Zhen
Project Title: Holistic Assessment of Land-use Change and Impacts on Ecosystem Services of Wetlands
Project Leader: Dr. Lin Zhen, Institute of Geographic Sciences and Natural Resources Research (IGSNRR), Chinese Academy of Sciences, CHINA
Email: zhenl@igsnrr.ac.cn

ARCP2011-16NMY-IGBP
Project Title: An International Geosphere-Biosphere Programme Synthesis Theme on: Global Environment Change and Sustainable Development—Needs of Least Developed Countries
Project Leader: Prof. João M. F. de Morais, International Geosphere-Biosphere Programme (IGBP)
Email: morais@igbp.kva.se

ARCP2011-17NMY-Mathukumalli
Project Title: Tracing Nitrogen and Carbon Biogeochemical Processes in the Inter-tidal Mangrove Ecosystem (Sundarban) of India and Bangladesh: Implications of Global Environmental Change
Project Leader: Dr. Bala Krishna Prasad Mathukumalli, Earth System Science Interdisciplinary Centre, University of Maryland, UNITED STATES OF AMERICA
Email: mbkp@umd.edu

ARCP2011-18NMY-Jung
Project Title: Impacts of Global Warming on Coastal and Marine Ecosystems in the Northwest Pacific
Project Leader: Dr. Sukgeun Jung, National Fisheries Research and Development Institute, REPUBLIC OF KOREA
Email: sukgeun.jung@gmail.com

ARCP2011-19NSY-Koottatep
Project Title: Affordable Sanitation as an Adaptive Strategy to Emerging Waterborne Diseases due to Climate Change
Project Leader: Dr. Thammarat Koottatep, Asian Institute of Technology (AIT), THAILAND
Email: thamarat@ait.ac.th

ARCP2011-20NSY-McEvoy
Project Title: Assessment of Climate Change Risks and Adaptation Options for Secondary Cities in Southwest Bangladesh and Central Viet Nam
Project Leader: Dr. Darryn Mcevoy, Global Cities Research Institute, Royal Melbourne Institute of Technology University, AUSTRALIA
Email: darryn.mcevoy@rmit.edu.au

ARCP2011-21NSY-Manurung
Project Title: Reconstruction of Sea-level Change in Southeast Asia (RESELECASEA) Waters Using Combined Coastal Sea Level Data and Satellite Altimetry Data
Project Leader: Dr. Parluhutan Manurung, National Coordinating for Survey and Mapping Agency (BAKOSURTANAL), INDONESIA
Email: parluhutan@bakosurtanal.go.id

ARCP2011-22NSG-Liu
Project Title: The Impact of Global Warming on Ocean-Atmosphere Feedback Strength at Tropical Indian Ocean (Proposal Development)
Project Leader: Dr. Lin Liu, First Institute of Oceanography, State Oceanic Administration, CHINA
Email: liul@fio.org.cn

CAPaBLE 2011/12 Projects

CBA2011-01CMY-Kawai
Project Title: Capacity Building of Biodiversity Research in the Coastal Zones of the Asia-Pacific Region: Phycology Taxonomy Analysis Training using Genetic Marker
Project Leader: Prof. Hiroshi Kawai, EMECS Secretariat & Kobe University Research Centre for Inland Seas, JAPAN
Email: furukawa@emecs.or.jp; kawai@kobe-u.ac.jp

CBA2011-02CMY-Kaihotsu
Project Title: Drought Monitoring System Development by Integrating In-situ Data, Satellite Data and Numerical Model Output
Project Leader: Prof. Ichirow Kaihotsu, Hiroshima University, JAPAN
Email: kaihotu@hiroshima-u.ac.jp

CBA2011-03NSY-WCRP
Project Title: WCRP Open Science Conference: Climate Research in Service to Society
Project Leader: Prof. Guoxiong Wu, LASG, Institute of Atmospheric Physics, Chinese Academy of Science, CHINA
Email: gxwu@lasg.iap.ac.cn; RBoscolo@wmo.int

CBA2011-04NSY-IHDP
Project Title: IHDP Training Workshops on Asian Development Pathways in the Context of Transitions Towards a "Green Economy"
Project Leader: Dr. Anantha Kumar Duraiappah, International Human Dimensions Programme, IHDP
Email: duraiappah@ihdp.unu.edu

CBA2011-05NSY-Schang
Project Title: National Dialogues on Adapting Biodiversity Management to Climate Change
Project Leader: Dr. Scott Schang, Environmental Law Institute, UNITED STATES OF AMERICA
Email: schang@eli.org

CBA2011-06NSY-LOICZ
Project Title: Young LOICZ Forum 2011: Capacity Building in the Asia-Pacific Region
Project Leader: Dr. Cheng Tang, Yantai Institute of Coastal Zone Research (YIC), Chinese Academy of Sciences, CHINA
Email: ctang@yic.ac.cn

CBA2011-07NMY-Abawi
Project Title: Building Scientific Capacity in Seasonal Climate Forecasting (SCF) for Improved Risk Management Decisions in a Changing Climate
Project Leader: Prof. Yahya Aabawi, National Climate Centre, Bureau of Meteorology, AUSTRALIA
Email: y.abawi@bom.gov.au; yahya.abawi@usq.edu.au

CBA2011-08NSY-Baker
Project Title: Towards Engagement in the United Nations Regular Process for Global Assessment of the Marine Environment: Strengthening Capacity of Developing Countries in the Seas of East Asia
Project Leader: Dr Elaine Baker, UNEP GRID-Arendal/The University of Sydney, AUSTRALIA
Email: elaine.baker@sydney.edu.au

CBA2011-09NSY-Aligaen
Project Title: Climate Change Integrated Education Model: Building Adaptive Capacity for the Next Generation (Malaysia, Indonesia, Thailand, Philippines and Lao PDR)
Project Leader: Mr. Julito C. Aligaen, Southeast Asian Ministers of Education Organization Regional Education Centre for Science and Math (SEAMEO RECSAM), MALAYSIA
Email: juli_aligaen@recsam.edu.my

CBA2011-10NSY-Ngari
Project Title: International Workshop on Climate and Oceanic Fisheries
Project Leader: Mr. Arona Ngari, Cook Islands Meteorological Service, COOK ISLANDS
Email: angari@met.gov.ck

CBA2011-11NSY-Tienhaara
Project Title: Climate Change Governance in the Asia-Pacific Region: Agency, Accountability and Adaptativeness
Project Leader: Dr. Kyla Tienhaara, Regulatory Institutions Network, College of Asia & the Pacific, Australian National University, AUSTRALIA
Email: Kyla.Tienhaara@anu.edu.au

CBA2011-12NMY-Hasson
Project Title: Capacity Building in Advanced Remote Sensing (RS) & Geographic Information System (GIS) Techniques for Studying Snow and Ice Dynamics in Hindu Kush-Karakoram-Himalaya (HKH) Region
Project Leader: Mr. Shabeh Ui Hasson, Global Change Impact Studies Centre, PAKISTAN
Email: shabeh.hasson@gcisc.org.pk; shabeh@gmail.com

The Scientific Capacity Building/Enhancement for Sustainable Development in Developing Countries (CAPaBLE) programme, which was launched in April 2003, is an initiative to realize parts 107 to 114 of the Johannesburg Plan of Implementation (JPOI) for the World Summit on Sustainable Development (WSSD) and is registered as a WSSD Type II Partnership Initiative. Of particular relevance is Part 111 of JPOI:

> *"Establish regular channels between policy-makers and the scientific community for requesting and receiving science and technology advice for the implementation of Agenda 21, and create and strengthen networks for science and education for sustainable development, at all levels, with the aim of sharing experiences and best practices, and building scientific capacities, particularly in developing countries".*

The CAPaBLE programme is enhancing scientific capacity in developing countries to improve decision-making relating to issues that are directly linked to their sustainable development. This effort is being achieved through a two-track process of capacity enhancement for experienced leading scientists and capacity development for early-career scientists under the APN Annual Call for Proposals.

CBA2011-13NSY-Tolentino
Project Title: Institutionalizing Agroforestry as a Climate Change Adaptation Strategy through Local Capacity and Policy Development in Southeast Asia
Project Leader: Dr. Lutgarda Tolentino, Philippine Agroforestry Education and Research Network, PHILIPPINES
Email: secretariat@pafern.org.ph; llt2003@yahoo.com

CBA2011-14NSY-Ng
Project Title: Water Safety from Source to Tap – Strategies and Implementations
Project Leader: Assoc. Prof. How Yong Ng, Centre for Water Research, Division of Environmental Science and Engineering, National University of Singapore, SINGAPORE
Email: esenghy@nus.edu.sg

CBA2011-15NSY-Wagan
Project Title: Capability Enhancement of the Local Experts from State Universities and Colleges in Assessing Climate Change Vulnerability and Adaptive Capacity of Crop-based Farming Systems in Various Agroecological Settings
Project Leader: Dr. Amparo M. Wagan, FSSRI-Agricultural Systems Cluster, College of Agriculture, UPLB, PHILIPPINES
Email: amwagan@uplb.edu.ph; amparowagan@yahoo.mail

CBA2011-16NSY-Li
Project Title: Demonstration Study on Advancing Global Change Research Approaches Based on Inter-Agency Collaboration and Data Infrastructure of GENESI and GeoBrain
Project Leader: Prof. Guoqing Li, The Centre for Earth Observation and Digital Earth, CHINA
Email: gqli@ceode.ac.cn

CBA2011-17NSG-Devy
Project Title: Building Partnerships for Developing a South Asian Canopy Science Research Program
Project Leader: Dr. M. Soubadra Devy, Ashoka Trust for Research in Ecology and the Environment, INDIA
Email: soubadra@atree.org

CBA2011-18NSY-Peñalba
Project Title: Awareness Raising and Capacity Building on Alternative Water Management for Communal Irrigator's Association in the Philippines
Project Leader: Dr. Linda Peñalba, Institute of Agrarian and Rurban Development Studies, College of Public Affairs, University of the Philippines Los Baños, PHILIPPINES
Email: lmpenalba@yahoo.com

CRP2011-01CMY-Pereira
Project Title: Strengthening Capacity for Policy Research on Mainstreaming Adaptation to Climate Change in Agriculture and Water Sectors
Project Leader: Dr. Joy Jacqueline Pereira, Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM), MALAYSIA
Email: joy@ukm.my

APN Country Representatives

National Focal Points (nFP) and Scientific Planning Group (SPG) Members

AUSTRALIA
(FP) Identifying nominees is in progress
(SPG) Identifying nominees is in progress

BANGLADESH
A. N. Shamsuddin Azad CHOWDHURY (FP)
Joint Secretary Administration
Ministry of Environment and Forests
Tel: +880-2-7167240
Email: jsadmin@moef.gov.bd; chowdhurynasim@yahoo.com

Md. Giashuddin MIAH (SPG)
Professor
Department of Agroforestry and Environment, Bangabandhu Seikh Mijibur Rahman Agricultural University
Tel: +880-2-9205327
Email: giash1960@gmail.com

BHUTAN
G. Karma CHHOPEL (FP)
Head, Water Resources
National Environment Commission
Tel: + 975-2-323384
Email: gkchhopel@hotmail.co

Peldon TSHERING (SPG)
Head, Policy Coordination Services
National Environment Commission
Tel: + 975-2-323384
Email: Peldonnec.gov.bt

CAMBODIA
Sundara SEM (FP)
Director
Department of ASEAN and International Cooperation
Ministry of Environment
Tel: +855-23-213-462
Email: semsundara@yahoo.com; moe_dic@yahoo.com

Khieu HOURT (SPG)
Senior Management Officer
Ministry of Agriculture, Forestry and Fishery
Tel: +855-23-220-897
Email: hourt-2010@hotmail.com

CHINA
Chengyong SUN (FP)
Deputy Director General
Department of Social Development
Ministry of Science and Technology
Tel: +86-10-5888-1437
Email: suncy@most.cn

Wenjie DONG (SPG)
Executive Associative Dean
State Key Laboratory of Earth Surface Processes and Resource Ecology
College of Global Change and Earth System Science, Beijing Normal University
Tel: +86-10-5880-2219
Email: dongwj@bnu.edu.cn

FIJI
(FP) Identifying nominees is in progress
(SPG) Identifying nominees is in progress

INDIA
Subodh SHARMA (FP)
Adviser
Ministry of Environment and Forests
Tel: +91-11-2436-0861
Email: subodh.kumar@nic.in; subodh14@yahoo.com

B.N. GOSWAMI (SPG)
Director
Indian Institute of Tropical Meteorology
Tel: +91-020-2589-3924
Email: goswami@tropmet.res.in

INDONESIA
Hermien ROOSITA (FP)
Executive Secretary, The State Ministry of Environment
Tel: +62-21-8580112
Email: dyahpoerwayanti@gmail.com

Erna Sri ADININGSIH (SPG)
Director
Aerospace Analysis and Information Centre
National Institute of Aeronautics and Space
Tel: +62-21-31927982
Email: ernas@lapan.go.id; ernasri@yahoo.com

JAPAN
Yutaka MATSUZAWA (FP)
Director
Global Environment Research Office
Ministry of the Environment
Tel: +81-3-5521-8247
Email: yutaka_matsuzawa@env.go.jp

Kensuke FUKUSHI (SPG)
Associate Professor
Integrated Research System for Sustainability Science and Department of Urban Engineering, University of Tokyo
Tel: +81-3-5841-1542
Email: fukushi@ir3s.u-tokyo.ac.jp

LAO PEOPLE'S DEMOCRATIC RREPUBLIC
Bountanh BOUNVILAY (FP)
Deputy Director General
Water Resources and Environment Research Institute
Tel: +856-21-219-003
Email: boun28@yahoo.com

Oulaphone ONGKEO (SPG)
Deputy Chief of Division, Water Resources and Environment Research Institute
Tel: +856-21-219-003
Email: oulaphone75@yahoo.com; oulaphone@wrea.gov.la

MALAYSIA
Kok Seng YAP (FP)
Director-General
Malaysian Meteorological Department
Tel: +60-3-7967-8046
Email: yks@met.gov.my

Subramaniam MOTEN (SPG)
Head of Research Division,
Malaysian Meteorological Department
Tel: +60-3-8787-2161
Email: subra@met.gov.my

MONGOLIA
Bayarbat DASHZEVEG (FP)
Secretary for National Committee to Combat Desertification, Ministry of Nature, Environment and Tourism
Tel: +976-51-264627
Email: bayarbt@yahoo.com

Tsogtbaatar JAMSRAN (SPG)
Director of GeoEcology Institute of Mongolian Academy of Sciences
Tel: +976-11-325487
Email: geoeco@magicnet.mn

NEPAL
Meena KHANAL (FP)
Joint Secretary, Ministry of Environment, Science and Technology
Tel: +977-1-4211996
Email: meenakhanal@most.gov.np; meenakhanal@hotmail.com

Madan Lall SHRESTHA (SPG)
Academician, Nepal Academy of Science and Technology
Tel: +977-1-4241403
Email: madanls@hotmail.com; malashre@gmail.com

NEW ZEALAND
Andrew MATTHEWS (FP) (SPG)
Commissioner, New Zealand National Commission for UNESCO
Tel: +64-4-9761741
Email: wa.matthews@gmail.com

PAKISTAN
Syed Mujtaba HUSSAIN (FP)
Deputy Secretary (Climate Change)
Ministry of Environment
Tel: +92-51-924-5537
Email: hussainmujtaba@hotmail.com

Amir MUHAMMED (SPG)
Rector
National University of Computer and Emerging Sciences
Tel: +92-51-285-5032
Email: amir.muhammed@nu.edu.pk; amir.muhammed@gmail.com

PHILIPPINES
Eriberto C. ARGETE (FP)
Planning and Policy Studies Office
Department of Environment and Natural Resources
Tel: +63-2-925-2328
Email: ecappodir@yahoo.com

Marcial AMARO Jr (SPG)
Director
Ecosystems Research and Development Bureau (ERDB)
Tel: +63-49-536-3628
Email: erdb@denr.gov.ph

REPUBLIC OF KOREA
Eunhae JEONG (FP)
Director
Global Environmental Office
Ministry of Environment
Tel: +82-2-2110-6557
Email: trees@korea.kr

Chang-keun SONG (SPG)
Senior Researcher
National Institute of Environmental Research
Tel: +82-32-560-7910
Email: cksong@me.go.kr

RUSSIAN FEDERATION
Andrey V. ADRIANOV (FP)
Institute of Marine Biology
Far East Branch, Russian Academy of Sciences
Email: inmarbio@mail.primorye.ru

Alexander STERIN (SPG)
Deputy Director
Russian Research Institute for Hydrometeorological Information, World Data Centre (RIHMI-WDC)
Tel: +7-499-795-2467
Email: sterin@meteo.ru

SRI LANKA
R.H.S. SAMARATUNGA (FP)
Secretary
Ministry of Environment
Tel: +94-11-2877290
Email: secoffice@menr.lk

G.B. SAMARASINGHE (SPG)
Director General of Meteorology
Department of Meteorology
Tel: +94-11-2694104
Email: sbaladev_24@yahoo.com; meteo1@sltnet.lk

THAILAND
Chote TRACHU (FP)
Permanent Secretary
Ministry of Natural Resources and Environment
Tel: +662-278- 8544
Email: chote.t@mnre.mail.go.th

Jariya BOONJAWAT (SPG)
Associate Professor
Southeast Asia START Regional Centre
Chulalongkorn University
Tel: +662-218-9466
Email: jariya@start.or.th

UNITED STATES OF AMERICA
(FP) Identifying nominees is in progress
(SPG) Identifying nominees is in progress

VIET NAM
Xuan Bao Tam NGUYEN (FP)
Deputy Director General
International Cooperation Department
Ministry of Natural Resources and Environment
Tel: +84-4-7734263
Email: baotam@monre.gov.vn

Kim Chi NGO (SPG)
Head of Research and Development Department on Natural Resource Processing and Environmental Protection
Institute of Natural Products Chemistry
Vietnam Academy of Science and Technology
Email: chikimngo2008@gmail.com

APN Committees and Members

APN STEERING COMMITTEE (SC) MEMBERS

Elected members

1. **Republic of Korea:** Ms. Eunhae JEONG
2. **Sri Lanka:** Dr. R.H.S. SAMARATUNGA
3. **Cambodia:** Mr. Sundara SEM

Ex-officio (SPG Co-Chairs)

1. **Indonesia:** Dr. Erna Sri ADININGSIH
2. **Nepal:** Dr. Madan Lall SHRESTHA

Co-opted members

1. Mr. Louis BROWN (Invited Expert)
2. Prof. Roland FUCHS (Invited Expert)
3. Dr. W. Andrew MATTHEWS (Invited Expert)
4. Mr. Yutaka MATSUZAWA (Donor Member)
5. Mr. Kazuhiko TAKEMOTO (Invited Expert)

INVITED MEMBERS TO THE APN SCIENTIFIC PLANNING GROUP (SPG)

Ailikun
Director, International Program Office of Monsoon Asia Integrated Regional Study (MAIRS)
CHINA
Email: aili@mairs-essp.org

Congbin FU
Director, START Regional Committee for Temperate East Asia
CHINA
Email: fcb@tea.ac.cn

Lance Clive HEATH
Project and Business Development Manager, Australian National University Climate Change Institute
AUSTRALIA
Email: lance.heath@anu.edu.au

Kanayathu Chacko KOSHY
Professor, Centre for Global Sustainability Studies, Universiti Sains Malaysia
MALAYSIA
Email: kanayathu.koshy@gmail.com

Chao Han LIU
Chairman, Southeast Asia START Regional Committee
CHINESE TAIPEI
Email: chliu@cc.ncu.edu.tw

APN CAPACITY DEVELOPMENT COMMITTEE (CDC) MEMBERS

Erna Sri ADININGSIH, SPG Co-Chair, INDONESIA
Email: ernasri@lapan.go.id

Madan Lall SHRESTHA, SPG Co-Chair, NEPAL
Email: madanls1949@gmail.com

Roland FUCHS, invited expert (Senior Fellow, East-West Centre)
Email: fuchsr@eastwestcenter.org

Srikantha HERATH, invited expert (Senior Academic Programme Officer, United Nations University)
Email: Herath@unu.edu

Andrew MATTHEWS, nFP/SPG Member, NEW ZEALAND
Email: wa.matthews@gmail.com

Harini NAGENDRA, invited expert (Faculty Fellow, Ashoka Trust for Research in Ecology and the Environment)
Email: nagendra@atree.org; nagendra@indiana.edu

Yutaka MATSUZAWA, nFP-Japan/Donor Member
Email: yukata_matsuzawa@env.go.jp

APN SCIENTIFIC PLANNING GROUP (SPG) SUB-COMMITTEE

Erna Sri ADININGSIH, SPG Co-Chair, INDONESIA
Email: ernasri@lapan.go.id

Madan Lall SHRESTHA, SPG Co-Chair, NEPAL
Email: madanls1949@gmail.com

Marcial AMARO Jr., SPG Member, PHILIPPINES
Email: erdb@denr.gov.ph

G.B. SAMARASINGHE, SPG Member, SRI LANKA
Email: sbaladev_24@yahoo.com

Alexander STERIN, SPG Member, RUSSIAN FEDERATION
Email: sterin@meteo.ru

Calendar of Global Change Events

2011

OCTOBER

a 6–7 October
APN 19th Steering Committee Meeting
Phnom Penh, Cambodia

b 10–12 October
UNFCCC Workshop: Gaps and Challenges in Risk Management Approaches in the Face of Climate Impacts
Lima, Peru

c 17–20 October
APN Authors Writing Workshop for a Climate Publication
Kobe, Japan

d 24–28 October
WCRP Open Science Conference, Denver, Colorado, USA.
Website: http://www.wcrp-climate.org/conference2011/

e 27–28 October
APAN Second Climate Change Adaptation Forum
Bangkok, Thailand

NOVEMBER

f 7–9 November
International Scientific Conference: Problems of Adaptation to Climate Change (PACC 2011), Moscow, Russian Federation
Website: http://www.pacc2011.ru

g 7–11 November
Second Asia-Pacific Forestry Week: New Challenges—New Opportunities, Beijing, China
Website: http://www.fao.org/forestry/44155/en/
Contact: ap-forestry-week@fao.org

h 16–17 November
Eight Plenary Session of the Group on Earth Observations (GEO-VIII)
Istanbul, Turkey
http://ww.earthobservations.org/meetings/geo8.html

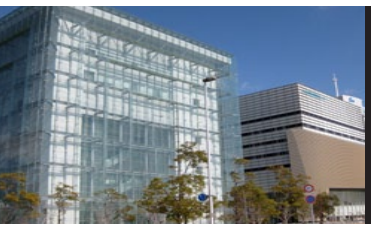
i 28 November – 9 December
UNFCCC COP17/MOP7
Durban, South Africa
http://www.unfccc.int/meetings/cop_17/items/6070.php

2012

j 12–16 March
APN 17th IGM/SPG Meetings
Indonesia

k 26–29 March
Planet Under Pressure: New knowledge, New Solutions, London, UK. Website: http://www.igbp.net/page.php?pid=531

l 4–6 June
EARTH SUMMIT 2012 Sustainable Development—The Peace of the Future, Brazil. Website: http://www.earthsummit2012.org/



APN Secretariat
East Building, 4F, 1-5-2 Wakinohama Kaigan Dori,
Chuo-ku, Kobe 651-0073, JAPAN
Tel: +81-78-230-8017, Fax: +81-78-230-8018
Email: info@apn-gcr.org;
Website: www.apn-gcr.org

Contributors (this issue):
Akio Takemoto, Alva Lim, Erdenesaikan Nyamjav, Erdenesaikhan Nyamjav, Hinda Lotia, Igor Okladnikov, Jim Salinger, Jintana Kawasaki, Juan Pulhin, Kazuhiko Fukami, Kazuhiko Takeuchi, Krisine Garcia, Linda Anne Stevenson, Luohui Liang, Petra Koudelova, Ratisya Radzi, Shimako Takahashi, Shobhakar Dhakal, Suthipong Sthiannopkao, Toshio Koike

Executive Editor:
Linda Anne Stevenson

Editors:
Xiaojun Deng, Ratisya Radzi

Design and layout team:
Xiaojun Deng
Natsuki Niimi
Lizhier Coralde