

Message from the Director

IN THIS ISSUE:

Message from the Director	1
Message from the Steering Committee Chair	2
News from the Secretariat	2
Newly Funded Projects	
2006/2007 ARCP Projects	6
2006/2007 CAPaBLE Capacity Building Projects	7
2006/2007 CAPaBLE Comprehensive Research Projects	10
APN Supported Projects:	
APN 2005-06-NSY-Brigham Grette: Past Global Changes (PAGES) Second Open Science Meeting: "Paleoclimate, Environmental Sustainability and Our Future"	11
APN 2005-09-NSY-Srivastava: 6th Open Meeting of the Human Dimensions of Global Environmental Change Research Community: "International Security, Globalization and Global Environmental Change"	12
APN 2005-11-NSY-Bawa: DIVERSITAS First Open Science Conference 2005: Travel Fund for Scientists from Developing Countries in the Asia-Pacific Region	13
APN 2005-24-NSG-Babar: Scoping Workshop on the Impact of Global Change on the Availability of Fodder and Forage Production and the Performance of Livestock in South Asia 14	
CAPaBLE Programme Updates:	
APN 2004-CB07-NSY-Glantz: Prototype Training Workshop for Educators on Climate Change, Seasonality and Environmental Hazards in Southeast Asia	15
People and Projects	17
Calendar	19



On 22-24 March 2006, the APN's 11th Inter-Governmental Meeting (IGM) and Scientific Planning Group (SPG) Meeting were jointly held in Bangkok, at the Siam City Hotel. More than 60 people from the APN's 21 member countries and 5 global change research partners attended the meetings. We were pleased to be able to hold the IGM/SPG in Thailand, the country where the APN was born 10 years ago at the first IGM in Chiang Mai. The APN was fortunate to be welcomed by the Permanent Secretary of the Ministry of Natural Resources and Environment of Thailand, Mr. Petipong Pungbun Na Ayudhaya at the opening ceremony of the IGM/SPG.

The IGM/SPG was the final event in 2005/06, a milestone for the APN. In 2005/06 the APN entered its second phase and implementation of numerous actions in the Second Strategic Plan (2005-2010), which was adopted at the 10th IGM/SPG, were carried out. Members endorsed the revisions made to the Framework Document and the new Terms of Reference; they also accepted the Draft Operating Plan which was devised to help guide the APN through its second phase and through 2006/2007. The APN is pleased with the outcomes of the IGM/SPG. The IGM/SPG reintroduced sessions for member countries and global change partners to provide updates as one the endeavours to enhance communications among member countries and further elaborate the activities in the future. Together with the discussion during the sessions on science agenda, policy agenda, and science-policy interactions, expectation to the APN from member countries were strongly expressed, and many hints for future activities were shown. It was also supported by the

IGM/SPG that the APN should further strive for continued recognition in 2006/2007 following the growing international recognition for the APN in 2005/2006 as in the SBSTA 22 of UNFCCC (May, Bonn) and the Gleneagles G8 Summit (July).

Prior to the IGM/SPG, the APN's 2nd Scoping Workshop on Global Earth Observations and the Capacity Building Needs of the Region was held with 41 participants. Specific capacity building needs were identified and how to meet the needs was also suggested with the recognition to enhance collaboration with scientific communities under current international initiatives. In conjunction with this (but not limited to GEOSS related activities), the Inter-American Institute for Global Change Research (IAI) and the APN agreed to foster inter-regional collaboration on Global Change issues that were of interest to APN and IAI and to conclude a Memorandum of Understanding for that purpose during the IGM.

As these illustrate, I am convinced that the 11th IGM/SPG placed a steady big step for the continuing success in the Second Strategic Phase of the APN. As the first actions, the APN is going to have series of events during May, presentation on CAPaBLE at the 14th UN Commission on Sustainable Development (CSD 14, 5 May, New York), hosting the Asia-Pacific Session at the 7th International Conference on Environmental Management of Enclosed Coastal Seas (EMECS 7, 10 May, Caen, France) and participating in a side event on research needs and priorities at the 24th Subsidiary Body for Scientific and Technological Advice of UNFCCC (SBSTA 24, 19 May, Bonn). I hope we have the chance to meet you at those occasions and others for the further development of our activities.

CROSSWORD CHALLENGE

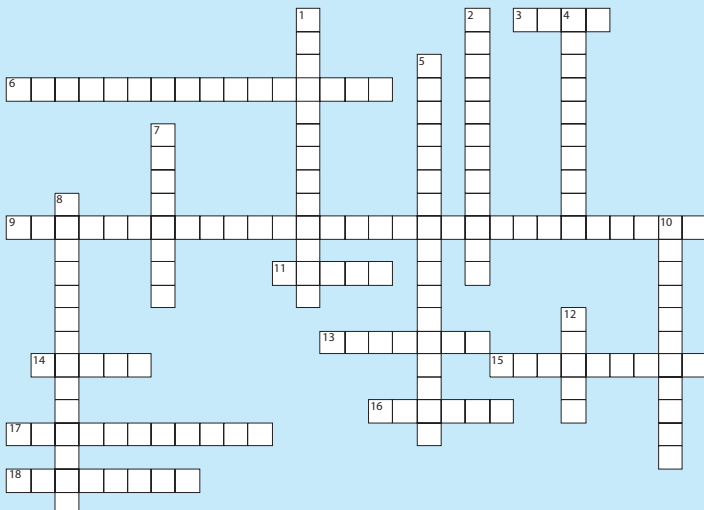
ACROSS

3. "International Security, Globalization, and Global Environmental Change" was the title of ____'s meeting.
- 6 Global change directly affects ____ and fodder production.
- 9 The DIVERSITAS First OSM closely followed the ____ launch, examining changes in beneficial ecosystem changes and the economic consequences of biodiversity loss.
- 11 ____ held its second OSM in Beijing in August 2005.
- 13 ____ released by domestic ruminant livestock is considered to be one of the largest sources on a

DOWN

- 14 The single most adverse affect of environmental change is the shortage of ____.
- 15 ____ percent of the world's human and livestock population inhabit.
- 16 International Mechanism of Scientific Expertise on Biodiversity.
- 17 the natural flow of the seasons
- 18 Climate related ____ are, for the most part, seasonal.
- 1 The purpose of Climate Affair activities is to build human ____ capacity.
2. "____, Environmental Sustainability and our

- Future" was the theme of the PAGES OSM.
4. An international programme dedicated to biodiversity science.
5. The ____ commits the community to lobby for and get involved in the initial steps toward an IMOSEB.
7. Hoofed, even toed mammals with horns with stomachs divided into four chambers.
8. Dr. Glantz has developed a program and written a book on ____.
10. Over ____ participants attended the IHDP Open meeting, from 85 countries.
12. The APN's 11th IGM/SPG was hosted by ____ in Bangkok, Thailand.



Try the APN Crossword Challenge! All answers can be found throughout the newsletter, so read the newsletter and then test your knowledge on Global Change. The solution will be posted on the APN website one month following the newsletter publication.

Message from the Steering Committee Chair



It is pleasing to report that the APN is as vigorous as ever. A very successful Inter-Governmental Meeting (IGM) and Scientific Planning

Group (SPG) meeting, APN's annual meeting, recently convened in Bangkok, Thailand. Government representatives from 20 of our member countries approved the allocation of grants to facilitate research and capacity development in the Asia-Pacific region. During the meeting, stakeholders had the opportunity to reflect on the achievements of the APN over the last year and to discuss ways in which the APN could better serve its membership. It was agreed that the APN's mandate of helping to

find pathways to sustainable development through research on issues of global change is as vital and relevant now as it was when the APN was established 11 years ago.

The APN's annual meetings gave participants an occasion to strengthen relationships within the community and to establish new networks. Certainly, the 11th IGM/SPG was no exception; it was great to meet new Government representatives, as well as renew relationships with those who have been in the APN family for some time.

Members of the APN had the opportunity to publicly thank the members of the APN Secretariat who worked hard to maintain the

momentum of the APN over the last year. To continue this momentum, I would like to ask all members to provide support to the Secretariat so that we are able to strengthen the APN and better serve our community. With this said however, the APN certainly 'punches above its weight' when one considers what it has achieved. We are resource limited, therefore can not support all of the worthy projects presented to us each year. Despite our challenge, we continue to be proactive and seek ways to collaborate with organisations, nationally, regionally and internationally to leverage resources into this very important region of the planet. On behalf of the APN, I invite you to join with us in this task and to approach us with ideas of how we can engage you.

The Asia Pacific Network for Global Change Research (APN)* is an inter-governmental network whose mission is to enable investigation of change in the Earth's life support systems as it occurs in the Asia-Pacific region to:

1. Identify, explain and predict changes in the context of both natural and anthropogenic forcing,
2. Assess potential regional and global vulnerability of natural and human systems, and
3. Contribute, from the science perspective, to the development of policy options for appropriate responses to global change that will also contribute to sustainable development.

*"The APN defines "global change research" as "research regarding global change (the set of natural and human-induced changes in the Earth's physical and biological systems that, when aggregated, are significant at a global scale) and its implications for sustainable development in the Asia-Pacific region."

News from the Secretariat

APN 2nd Scoping Workshop on Global Earth Observations and the Capacity Building Needs of the Region:

Focus — Climate

The Second Scoping Workshop on Global Earth Observations and the Capacity Building Needs of the Region: Focus — Climate was held at the Siam City Hotel, Bangkok, Thailand, from 19-21 March 2006. This follow-up workshop was organized jointly by the Asia-Pacific Network for Global Change Research (APN), the US National Science Foundation (NSF), the Ministry of Environment, Japan (MOEJ), the National Institute of

Environmental Studies (NIES), Japan and the Ministry of Natural Resources and Environment, Thailand (MONRE). The workshop was attended by 42 participants from 16 countries throughout Asia and the Pacific region. Participants from several key organizations, namely the International START Secretariat, Washington D.C., the Intergovernmental Oceanographic Commission (UNESCO), and the Paris and US Climate Change Science Program (US National Science Foundation), also attended.

The key objective of the workshop was to re-visit the outcomes of the

APN Scoping Workshop held in Tokyo, Japan, late last year (reported in APN Newsletter Volume 12, Issue 1 of January 2006), and update the identified capacity building needs of the countries in the Asia-Pacific region necessary for research and monitoring related to climate change and its impacts. Discussions also included the role of the APN in such research and underpinning systematic observations to create road maps for designing ideas appropriate for capacity building activities in the Asia-Pacific. Furthermore, discussions focused on the exchange of information on observational data needs,



GEOSS Group Photo, Siam City Hotel, Bangkok, Thailand



Members of the GEOSS Organizing Committee and Chair

experience and views on climate change and adaptation strategies among the countries in the Asia-Pacific region and the facilitation of further activities to address the capacity building needs for climate change-related issues in relation to implementation of a ten-year plan for GEOSS in the region.

The entire proceedings of the workshop over the two and a half days were conducted in seven sessions. Session I included presentations on the objectives of the workshop and on the outcome of the first scoping workshop held in Tokyo 17-18 November 2005. Three expert presentations, which focused on the current status of GEOSS and Japan's perspective, and GEOSS in relation to climate change in the Asia-Pacific context including capacity building aspects, were made in Session II. The key messages that came out of these presentations were (i) current observational systems in the Asia-Pacific are very weak; (ii) relevant data accessibility is very poor, and (iii) capacity building activities in climate change research need stronger emphasis at both, institutional and individual levels.

Sessions III and IV were break-out discussion sessions for deliberations on the identified theme areas namely, (1) sharing information of the present situation: Earth observation and climate change researches among APN countries; (2) sharing information of the present situation and future plans of climate change research among APN countries; (3) finding gaps in individual countries and the Asia-Pacific region; (4) identifying actions

needed to overcome gaps; (5) identifying future collaboration among countries in the Asia-Pacific region and the role of the APN to support them; and (6) identifying priority action plans focusing on capacity building needs of the Asia-Pacific region in observational data requirements and on vulnerability and adaptation to climate change for sustainable development.

Participants collectively identified several sensitive and fragile 'exposure' systems (hot spots) in the Asia-Pacific region for which conventional *in-situ* and remotely-sensed observational data at appropriate spatial and temporal scales are required for advancing the current understanding of climate variability and climate change. A systematic observation of sensitive and fragile systems (hot spots) in the region was considered important as early warning indicators of global warming. It was suggested that appropriate outreach activities to policy-makers and the general public is also needed to enhance their support to GEOSS. The key messages that emerged from deliberations were:

- ▶ Much existing data is not accessible to researchers in Asia and the Pacific, either nationally or internationally. Resolution of this barrier requires promoting political commitment to data sharing; removing practical barriers by enhancing electronic interconnectivity and meta data; and data rescue and digitization.
- ▶ Substantial ongoing research and surface observation is needed to calibrate and verify algorithms and satellite products.

- ▶ The provision of necessary resources to improve and make available existing archives of observed data will require largely national efforts to be complimented with international support on technology transfer and human resource training / capacity building for analytical interpretations and appropriate use for societal benefits.

Participants agreed that, since the fundamental driver that sustains observational networks is the utility of the data and information generated, it is important to build capacities in the region to utilize the data emerging from all available sources and networks. Some key capacity building needs of the Asia-Pacific region as regards information exchange and data needs were identified as:

- ▶ a need to improve networks for the exchange of information — workshops to provide training on developing national websites would be desirable;
- ▶ regional capacity building to promote technology-related information networks; and
- ▶ assistance to improve data acquisition and storage, to obtain access to the Internet, and to build capacity to develop databases.

Participants reported that the level and quality of adaptation in most developing countries of the Asia-Pacific region is currently insufficient and falls short of that which is required to cope effectively with present-day risks of extreme weather events and to prevent further growth of vulnerability to

the now inevitable and unavoidable changes in climate. Furthermore, participants felt that the capacity of earth observation in each individual country of the Asia-Pacific region vary in their effectiveness because of the existing challenges of the maintenance and sustainability of the operations of national meteorological services and other relevant agencies. Human resource issues also compound these issues, in particular the lack of technically and scientifically trained personal. It was thought that many developing countries in Asia and the Pacific lack systems for real time or near real time data processing, analysis and transferring the processed product as daily, weekly, monthly and seasonal weather forecasts to farmers and other user communities. The capacity to acquire, process and utilize remotely sensed satellite data for meteorological/ climatological applications and for land use management through GIS tools is also quite different among countries of the region.

Workshop participants re-iterated the factors, identified at the workshop in Tokyo, which limit the scientific and technical capacity in the Asia-Pacific region on coping with and developing adaptive strategies to climate change. The identified current constraints and needs of observation include:

(i) availability of long-term station-wise meteorological/ climatological data, particularly historical records in digitized form, (ii) concise data set on national socio-economic developments, and (iii) credible projections of future climate scenarios in the Asia-Pacific region. All participants were drawn



GEOSS Session

... a number of factors play major roles in enhancing the capacity building activities in the region for implementing GEOSS-related activities.



11th IGM/SPG Group Photo, Siam City Hotel, Bangkok, Thailand

to the critical issue that non-availability of credible regional and local climate change scenarios at various temporal scales to enable sector-specific vulnerability analysis, lack of appreciation of the uncertainty in currently available climate change projections and the limitations of various downscaling approaches.

Participants deliberated on ways and means to strengthen regional cooperation in the Asia-Pacific region. It was thought that a number of factors play major roles in enhancing the capacity building activities in the region for implementing the GEOSS related activities. In addition, it was felt that the precise targets for capacity building activities on both observational systems and related host of issues of data availability, analysis and interpretation for enhancing the ability to cope with the impacts of climate change and the development of adaptation strategies need to be addressed urgently through a two-way interaction between the APN and the GEOSS Sub-Committee on Capacity Building.

The key recommendations on activities to address capacity building needs in the region that the APN could address in the coming years are summarized below:

- (i) Use the APN's existing activities to promote new GEOSS related capacity building needs;
- (ii) Strengthen the role of APN national Focal Points (nFPs) and Scientific Planning Group (SPG) members;

- (iii) Facilitate the improvement of access to data and established data centers;
- (iv) Institutionalize capacity building activities; and
- (v) Expand access to funding opportunities.

In Sessions V and VI, Plenary presentations on the outcome of the discussions during break-out sessions were made and open discussions were held to examine improvements in and collation of the priority action plans. A broad agreement was reached among participants on these thematic priority issues, regarding the capacity building needs of the region. Session VII was a closing Plenary Session wherein a summary presentation was made on the workshop recommendations for Priority Action. The Chair concluded by thanking all the participants for their open and frank contributions, the donors who made the workshops possible and to all those who worked behind the scenes to make the workshop such a success.

11th Inter-Governmental Meeting (IGM) and Scientific Planning Group Meeting (SPG), Bangkok, Thailand. 22-24 March, 2006

The APN's 11th IGM/SPG, hosted by the Ministry of Natural Resources and Environment, Thailand, convened in Bangkok, Thailand at the Siam City Hotel. Special thanks to the IGM Chair, Dr. Ampan Pintokanuk (APN national Focal Point representative for Thailand), the Vice-Chair, Dr. Michael Stoddard (APN national Focal Point for Australia), and the SPG-Chairs, Professor Nobuo Mimura (Japan) and Dr. Tsogtbaatar Jamsran (Mongolia) for their outstanding efforts at guiding the 11th IGM/SPG to success. The APN would also like to thank our global change partners, IAI, IGBP, IHDP, MAIRS, and START for their active participation at the APN's annual meetings in Bangkok.

Mr. Petipong Pungbun Na Ayudhya, Permanent Secretary of the Ministry of Natural Resources and



Permanent Secretary Petipong Pungbun Na Ayudhya of the Ministry of Natural Resources and Environment, Thailand giving the Opening Address.



The APN Secretariat Director, Mr. Hiroki Hashizume, welcoming participants to the APN's 11th IGM/SPG.

Environment of Thailand gave an opening speech. In his speech Permanent Secretary Petipong Pungbun Na Ayudhya reported that the Ministry of Natural Resources and Environment (MONRE) has been working to shape Government policies and turn the resulting policies into meaningful practice for achieving a more sustainable approach to natural resource and environmental management. In order to realize this, MONRE has established a National Environmental Quality Promotion and Protection Policy, the National Agenda 21 and the Five-year National Environmental Quality Promotion Action Plan. To meet the challenge of achieving its vision, MONRE has implemented a 4-year policy and strategy that seeks to find a balance between environmental protection, economic development and social enhancement and point the way forward.

Mr. Hiroki Hashizume, APN Secretariat Director, in his welcome address, highlighted the international recognition that the APN has received over the past year, particularly at SBSTA 22, of the UNFCCC, and at the Gleneagles G8 Summit, where the APN was mentioned as "a measure to promote global change research and the capacity building of developing country experts." The APN Director reported that the Republic of Korea has generously agreed to make a financial contribution for activities in 2006/2007. The meeting showed their appreciation to the Republic of Korea for their support. Mr. Hashizume then mentioned the two APN Scoping Workshops, which encourage collaboration with scientific communities under current international initiatives, on Global Earth Observations Systems of Systems (GEOSS) and the Capacity Building Needs of the Region, carried out in 2005/2006.



Delegates from the Russian Federation (left), Republic of Korea (middle) and the People's Republic of China (right).

The IGM approved nine (9) new projects and five (5) continuing projects for funding in 2006/2007 from an activities budget of USD \$690,000. The IGM also approved ten (10) new capacity building projects under the APN CAPaBLE Programme and three (3) CRP's amounting to USD \$325,000.

The aforementioned projects selected cover a variety of important global change issues and activities throughout the Asia-Pacific region. The full list is included on page 6.

The Secretariat was very pleased with the many positive outcomes from the IGM/SPG, particularly the endorsement of the revised Framework Document and the new Terms of References. The IGM/SPG also gave a clear indication of what we must aim to achieve over the next year.

As agreed at the meeting we will be actively working to:

- ▶ Ensure continued interaction with APN members, including the Steering Committee, national Focal Points and Scientific Planning Group members;
- ▶ Collate the country reports and disseminate the information to members;
- ▶ Carry out the short-term actions outlined in the Draft Operating Plan;
- ▶ Support the Resources Development Committee to secure future resources; and
- ▶ Implement the agreed budget plan with a specific focus on science activities.

The 11th IGM/SPG Proceedings will also shortly be available on the APN website <<http://www.apn-gcr.org>>. A hard copy of the full proceedings can be obtained from the Secretariat.



Prof. Nobuo Mimura, APN Scientific Planning Group Member for Japan and SPG Co-Chair, reporting to the IGM on the recommendation for ARCP funding.



Dr. Gerhard Bruelman, Scientific Officer, IAI Directorate, presenting on recent activities of the IAI.

Newly Funded Projects

2006/2007 ARCP Projects

PROJECT REFERENCE:
ARCP2006-06NMY

PROJECT TITLE:
Sediment Dynamics and Down-Stream Linkages in Tropical Streams as Affected by Projected Land-cover/Land-use and Climatic Change — Thailand Phase

PROJECT LEADER:
Dr. Alan D. Ziegler, Affiliated Assistant Research Professor; Department of Geography; 2424 Maile Way 445 Saunders Hall, Honolulu, Hawaii 96822 USA. Email: adz@hawaii.edu

ABSTRACT:
The proposed project will increase understanding of how water in headwater streams in montane mainland Southeast Asia (MMSEA) will be affected by plausible changes in both climate and land-cover/land-use. The goals of the project are two-fold: (1) investigate the issue successfully during a field study in Thailand; and (2) develop the capacity to conduct similar projects in three other developing countries in Asia. Using the sediment dynamics and down-stream linkage data that will be determined in the field study, the project will attempt to distinguish the degree that various types of anthropogenic change will affect erosion, sediment delivery, and water quality. The project will generate new data regarding the potential effects of climate change, which could be useful in developing sound mitigation strategies, as well as determining non-linear vulnerabilities of natural (e.g., aquatic life) and human systems (e.g., water quality decline of municipal water). The knowledge generated will be transferred to appropriate officials who make policy related to sustainability in MMSEA.

PROJECT REFERENCE:
ARCP2006-07NMY

PROJECT TITLE:
The International Integrated Data Access and Transfer in Asia (IIDATA) Project

PROJECT LEADER:
Dr. Toshio Koike; The University of Tokyo, Hongo 7-3-1, Bunkyo-ku, Tokyo 113-8656, JAPAN. Email:

tkoike@hydra.t.u-tokyo.ac.jp

ABSTRACT:
The project will establish water data sharing and exchange policies and data management strategies in the Asian region that will enable (1) integrated data access and transfer among Asia national research groups and between these groups and international organizations such as WMO and UNESCO, and (2) effective transfer of observation information and scientific knowledge to water resources policy- and decision-making groups. These capabilities will aim toward building up national/regional capacity to conduct water cycle research in a more efficient, coordinated manner and to exploit research results for solving societal issues associated with the water cycle features in Asia. In this way the IIDATA effort will contribute to APN activities in support of the Global Earth Observation System of Systems (GEOSS), especially within the context of the GEOSS Work Packet Two Year (2006-2007) Target #042.

PROJECT REFERENCE:
ARCP2006-08NMY

PROJECT TITLE:
Integrated Support System for Managing Environmental Change and Human Impact on Tropical Coastal Ecosystems in East Asia and the Pacific

PROJECT LEADER:
Prof. Kazuo Nadaoka; Tokyo Institute of Technology, W8-13 Okayama West 8 Building, 2-12-1 Ookayama, Meguro-ku, Tokyo, JAPAN. Email: nadaoka@mei.titech.ac.jp

ABSTRACT:
Through collation of historical data and additional field observations, the project will combine information from the physical (e.g., changes in coastal zone physiography, composition, dynamics), natural (changes in flora and fauna), and social (e.g., population growth and human activities) disciplines into a cohesive analytical framework (i.e., spatial analysis and numerical modeling) to establish major environmental changes, linkages, patterns and short- and long-term

trends within and among the human and natural systems of tropical coastal environment in East Asia and the Pacific. Specifically, it will focus on sediment and nutrient regimes in inland and shallow marine coastal systems. The project envisions production of user-friendly tools capable of hind-casting development patterns and for building scenarios to explore various management options of the coastal zone.

PROJECT REFERENCE:
ARCP2006-09NMY

PROJECT TITLE:
Integrated Vulnerability Assessment of Coastal Areas in the Southeast Asia and East Asian Region

PROJECT LEADER:
Dr. Laura T. David; Marine Science Institute, University of the Philippines, Velasquez St. UP Diliman, Quezon City, PHILIPPINES. Email: ldavid@upmsi.ph; lt_d_pawikan@yahoo.com

ABSTRACT:
This project addresses the knowledge gaps on how multiple bio-geographical and anthropogenic processes interact to create risk in coastal areas. Its objectives are to: (1) determine the vulnerability gradients across the coastal areas of the SEA-EA region considering the coupled human and ecological systems; (2) understand the multi-scale dimensions and inputs on the adaptive capacities of human communities toward the vulnerability of coasts, of conflicts and competition over lands, sea areas, and resources in the region; and (3) determine efficient and effective strategies to link GEC research results with policy making, governance and conflict resolution. Among its expected outcomes are: biogeophysical and human-based indicators of vulnerability at different levels; protocols and guidelines for inter-comparability of indicators at different scales; protocols for data collection and synthesis for vulnerability assessment; new methodology for vulnerability assessment; updated databases on coastal systems in SEA-EA; appropriate management strategies and governance structure;

and appropriate strategies to communicate risks and vulnerability of coastal areas to different stakeholders.

PROJECT REFERENCE:
ARCP2006-10NMY

PROJECT TITLE:
Linking Climate Change Adaptation to Sustainable Development in Southeast Asia: A Synthesis of Activities.

PROJECT LEADER:
Dr. Rodel D. Lasco; World Agroforestry Centre (ICRAF), 2F CFNR, University of the Philippines, College, 4031 Laguna, PHILIPPINES. Email: rlasco@cgiar.org

ABSTRACT:
Limited information is available on how developing countries in the region adapt to climate change. This project will seek to identify the most appropriate climate change adaptation strategies for the natural resources and agriculture sector, as well as rural communities through a synthesis of climate change adaptation and related research in the SE Asian region. It will bring together the policy and science community, in the participating countries, to discuss what the appropriate climate change adaptation strategies are and how they can be linked to the sustainable development agenda of the countries involved. A key output will be policy recommendations to facilitate the mainstreaming of climate change adaptation to sustainable development planning.

PROJECT REFERENCE:
ARCP2006-11NMY

PROJECT TITLE:
Developing an Integrated Framework for Science-Policy Interactions towards Enhanced

Management of Coastal Systems in South Asia

PROJECT LEADER:
Dr. Nalin Wikramanayake; LOICZ Regional Node for South Asia, National Science Foundation, 47/05, Maitland Place, Colombo 07, SRI LANKA. Email: tomwiks@yahoo.com, dir@nsf.ac.lk

ABSTRACT:
Current assessments of coastal changes do not capture adequately the interaction between humans and natural systems. The goal of this project is to develop a process for science to inform policy to sustain coastal livelihoods through: (1) the development of a framework that identifies the pathways by which natural and anthropogenic forcing factors affect human well being, and (2) to use it to assess science-policy interaction in the management of coastal zone. Policy options will be developed for the study areas after assessing the relevance of existing policies.

PROJECT REFERENCE:
ARCP2006-12NMY

PROJECT TITLE:
Climate and Crop Disease Risk Management: An International Initiative in the Asia-Pacific Region

PROJECT LEADER:
Dr. Abdul Kalam Samsul Huda; University of Western Sydney, Hawkesbury Campus, Locked Bag 1797, Penrith South DC., NSW 1797, AUSTRALIA. Email: s.huda@uws.edu.au

ABSTRACT:
The project aims to integrate existing climate, crop, and epidemiological research in the development of a regional predictive model for proactive agricultural risk management. The model will be validated through concurrent

application to index crops in selected areas giving opportunities for developing risk communication strategies through engagement with local stakeholders. Management strategies, relating to pesticide usage to meet climatic circumstances, will be researched in the interests of safe and strategic food production. The proposed project will target three economically important annual crops at risk from climate-sensitive diseases, namely peanut, canola and mustard.

PROJECT REFERENCE:
ARCP2006-13NMY

PROJECT TITLE:
Investigation on the Impacts of Urban-Rural Air Pollution on Air Quality and Climate in Southeast Asia

PROJECT LEADER:
Dr. Nguyen Thi Kim Oanh; Environmental Engineering and Management, School of Environment, Resource and Development, Asian Institute of Technology, Pathmthani, 12120, THAILAND. Email: kimoanh@ait.ac.th

ABSTRACT:
Air pollution in the Asian developing countries is serious and associated with adverse effects on human health and economics. Atmospheric particulate matter or aerosol, for instance, has serious effects on health. Likewise these aerosols interact directly and/or indirectly with the earth radiation energy balance and can subsequently affect global climate (IPCC 2001). The project aims to characterize and evaluate the air pollution levels in Southeast Asia with focus on particles and key gaseous pollutants. The study will measure climate change-relevant properties of

particles in the ambient air in the selected cities and expand it further to other developing countries in Asia. Its outcomes include database on ambient air pollution and climate forcing potential in selected areas, quantitative source contributions of urban air pollution, policy recommendation for reduction of air pollution emission and effects, and scientific papers.

PROJECT REFERENCE:
ARCP2006-14NSY

PROJECT TITLE:
Global Water System Hotspots in the Asian Region: Mega Cities and Dams — 2nd GWSP-Asia Network Meeting

PROJECT LEADER:
Dr. Jianyao Chen; Sun Yat-sen University (Zhongshan University) 135 West Xin Gang Road, Guangzhou 510275, P.R. CHINA. Email: chenjyao@mail.sysu.edu.cn; chenjianyao@hotmail.com

ABSTRACT:
The project will bring together scientists, policy-makers and administrators in a workshop called "Global Water System Hotspots in Asia Region: Mega Cities and Dams" — 2nd GWSP-Asia Network meeting, to be held on 8-10 June 2006 in Guangzhou, China. The main goals of the workshop are to summarize existing state of knowledge on current cumulative impacts of mega cities and that of dams in Asia, and to set and launch a research agenda for mega cities and dams in Asia in the context of the global water system. The project will also create databases on dams and mega cities under the umbrella of GWSP-Asia Network.

2006/2007 CAPaBLE Capacity Building Projects

PROJECT REFERENCE:
CBA2006-01NSY

PROJECT TITLE:
Capacity Building and Meeting Research Needs on the Ecology of Global Change in Island Landscapes of the Republic of Palau

PROJECT LEADER:
Dr. Harley I. Manner; University of Guam; UOG Station, Mangilao, 96923 USA. Email: hmanner@uog9.uog.edu

ABSTRACT:
There is little baseline information on Palau's terrestrial ecosystems, particularly on the Island of Babeldaob where the construction of a trans-island road, coupled with the pressures for economic growth and modernization, is severely affecting the viability of the island's ecosystems. Using planning and scoping workshops and field training, the project aims to increase

capacity by training Palauan to conduct research on their ecosystems so that they can develop the management initiatives needed for sustainable ecosystem protection. The outcomes of the project include: linking of Palau within the Pacific Asia Biodiversity Transect (PABITRA) network of sites for long-term ecological research; participation of and increased

capability of Palau's scientists and residents in the analysis and conservation of their island ecosystems; better communication and involvement of scientists in the regions; greater understanding of island ecosystem dynamics and their effects in island landscapes; and contributions to questions of island biogeography.

PROJECT REFERENCE:

CBA2006-02NSY

PROJECT TITLE:

ESSP 2nd Young Scientist's Global Change Conference and Open Science Conference. Beijing, China 7-12 November, 2006.

PROJECT LEADERS:

Prof. Roland Fuchs;
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Email: rfuchs@agu.org

Dr. Qin Dahe;
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46, Zhongguancun
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Email: cdccc@cma.gov.cn

ABSTRACT:

Funding for the Young Scientists Conference will support selected young scientists from the APN region to participate in the 2nd Young Scientists Global Change Conference on 7-8 November 2006, continuing through the ESSP Conference on 9-12 November 2006, in Beijing, China. The conference will promote the generation and transfer of new findings and methodologies; it will help identify and assist in the career development of promising young scientists in the region and their involvement with the APN and the community of global change scientists represented by the ESSP. The young scientists will become part of an overall network of scientists interested in global change in the Monsoon Asia region. Products will include a conference booklet with abstract and program details and (as with the 1st YSC) one, or more, special journal issues containing full papers. More importantly, the conference will stimulate competition, encourage excellence, identify and reward outstanding research, facilitate collaboration, and assist young scientists in becoming integral parts of the international scientific programs and networks.

Following the first Global Environmental Change Open Science Conference in July 2001, which brought together 1400 scientists and other interested parties from 105 countries, the

Earth Science System Partnership (ESSP) has created four major interdisciplinary studies of carbon, food, health and water to explore the relationship between global environmental change and sustainable development. In addition, the ESSP has initiated the first of a series of integrated regional studies (with APN support). The ESSP Global Environmental Change Open Science Conference on 9-12 November 2006 in Beijing, China is a timely event to bring together researchers working on global environmental change to present advances in Earth System Science and lay plans for the future. The outcomes of the conference will be higher visibility for the ESSP and the APN across a broad community, further development of cohesiveness within and planning of the ESSP, recommendations for Programme directions and involvement of governments and others, and input into the future evolution of major initiatives.

PROJECT REFERENCE:

CBA2006-03NSY

PROJECT TITLE:

Integrated Participatory Analysis of Sustainability in the Greater Mekong Sub-region (GMS)

PROJECT LEADER:

Dr. Ramon C. Sevilla; Mekong
Institute, Khon Kaen 40002,
THAILAND.
Email: ramon@mekonginstitute.org;
cavadasevilla@gmail.com

ABSTRACT:

The project targets underprivileged areas of the Greater Mekong Sub-region with the aim of training young researchers and young professionals on methods and approaches to Global Change and Sustainability research, policy dialogue between researchers and decision-makers, and dissemination. The project envisions creating a common awareness of problems, training the participants to provide solutions at a specific and context-adapted level, and engaging them in problem-/issue-related networking activities. Aside from building the capacity of young researchers and professionals, case studies from underprivileged areas of the GMS will be published and a special issue of the *International Journal of Global Environmental Issues* on 'Sustainability in the Greater Mekong Sub-region' will be released.

PROJECT REFERENCE:

CBA2006-04NMY

PROJECT TITLE:

Removing Barriers to Capacity Building in Least Developed Countries: Transferring Tools and Methodologies for Managing Vulnerability and Adaptation to Climate Change

PROJECT LEADER:

Mr. Bhujangarao Dharmaji; IUCN –
The World Conservation Union,
53, Horton Place, Colombo-7, SRI
LANKA.
Email: rao@iucnsl.org

ABSTRACT:

The adaptive capacities of local governments to climate change in least developed countries (LDC) are often inadequate. There are hardly any information system or databases in place that can provide information on best practice guidelines for managing vulnerability and mainstream adaptation process into local livelihoods. This project envisages to link adaptation policy framework, at the ground level, with the national priorities to help build scientific capacity of APN LDC members. The approach for the sub-regional workshops will be multi-thematic, cross-cutting, and will involve multi-stakeholders representing aspiring scientists, community leaders, policy-makers, academia and civil society. A competency based training module will be developed including hands-on use of remote sensing and geographic information systems (GIS). The sub-regional consultations will also lay emphasis on documenting community-based adaptation approaches and will provide a neutral platform for sharing lessons learnt and best practice guidelines.

PROJECT REFERENCE:

CBA2006-05NMY

PROJECT TITLE:

Final title to be determined

PROJECT LEADERS:

Mr. Taito Nakalevu;
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Prof. Bill Aalbersberg;
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University of the South Pacific
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Suva, FIJI.

Email: aalbersberg@usp.ac.fj

ABSTRACT:

The project will be refocused to combine two proposals submitted to the APN, abstracts of which are included below:

The project will build the capacity of participant churches to use climate variability information and knowledge of the impacts of climate change to manage risks and assist adaptation to extreme events such as drought, flood, cyclones and high temperatures. Key activities of the project include: training core groups of pastors to support climate education and public awareness in churches throughout the region; developing/publishing educational materials for faith-based institutions; strengthening partnerships among church and scientific/technical institutions supporting climate research, assessment and adaptation efforts; and reinforcement of sustainable development and equity efforts in the region.

The Pacific Island marine and terrestrial ecosystems have some of the most significant biological diversity in the world, where there are pristine ecosystems and habitats, some of which harbour endemic species. These unique habitats are under threat from the effects of climate change and variability. Pacific Island communities depend on these for their livelihood and for maintaining their traditions and culture. The project will build regional capacity of four Pacific Island countries, targeting specifically on the youth, to understand climate change and variability implications on biodiversity. It will use drama as an innovative tool to raise public awareness and undertake adaptation implementations as a basis for increasing community and environment resilience and ensure food security and sustainable livelihoods.

PROJECT REFERENCE:

CBA2006-06NSY

PROJECT TITLE:

Greenhouse Gas (GHG) and Aerosol Emissions under Different Vegetation Land Use in the Mekong River Basin Sub-region

PROJECT LEADER:

Dr. Sirintornthep Towprayoon; The Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi, 91 Pracha Uthit Road, Bangmod, Tungkru, Bangkok 10140, THAILAND.

Email: sirin@jgsee.kmutt.ac.th

ABSTRACT:

Mitigation of greenhouse gas and aerosol emissions from biogenic sources and biomass activities associated to different vegetation land use requires know-how transfer to regional scientists to perform measurements and to establish appropriate emission inventories. The project has two-fold objectives: (1) to improve the capacity of scientists from the Mekong River Basin Sub-region in GHG and aerosol emission inventories by providing up-to-date information on different vegetation land use in the region and setting a GIS database of GHG and aerosol emissions from biogenic and biomass burning activities associated to the different vegetation land use of the region; and (2) to provide scientific information to policy makers for formulation and implementation of control strategies contributing to sustainable improvement of the regional air quality and on a global scale to global warming mitigation. The outcome of the project activities will contribute to ensure the involvement of countries from the region in the international effort to improve GHG and aerosol emission inventories, and ultimately to the regional sustainable development.

PROJECT REFERENCE:

CBA2006-07NSY

PROJECT TITLE:

Institutional Dimensions of Global Environmental Change: Water, Trade and Environment

PROJECT LEADER:

Dr. Louis Lebel; Unit for Social and Environmental Research Faculty of Social Science, Chiang Mai University, Chiang Mai 50200, THAILAND. Email:

lbel@loxinfo.co.th;

louis@sea.user.org

ABSTRACT:

The workshop on Institutional Dimensions of Global Environmental Change: Water, Trade, and Environment will be held on 13-26

October 2006, in Chiang Mai, Thailand. It will focus on the role of institutions in causing and mitigating global environmental problems, with substantive focus on water and trade. The two-week workshop will strengthen the skills of participants in institutional analysis through application of key concepts and theories to in-depths case studies about water and trade regimes. A Science-Policy Forum at the mid-point of the workshop will give participants practical experience in interacting with multiple stakeholders around a set of salient water and trade issues. The ultimate goal is to encourage young social scientists from developing countries and countries in transition to engage with global environmental change issues.

PROJECT REFERENCE:

CBA2006-08NSY

PROJECT TITLE:

International Workshop on Coping with Agrometeorological Risks and Uncertainties: Challenges and Opportunities, 16-18 October 2006, New Delhi, India

PROJECT LEADER:

Dr. M.J. Salinger; National Institute of Water and Atmospheric Research, P.O. Box 109 695, Newmarket, Auckland, NEW ZEALAND. Email: j.salinger@niwa.co.nz

ABSTRACT:

The International Workshop on Coping with Agrometeorological Risks and Uncertainties: Challenges and Opportunities, to be held on 16-18 October 2006 in New Delhi, India, aims to: (1) identify and assess the components of farmers' agrometeorological coping strategies with risks and uncertainties in different regions of the world; (2) discuss the major challenges of these coping strategies; (3) review opportunities for farmers to cope with these risks and uncertainties; (4) provide on-farm examples of appropriate coping strategies; (5) review the use of crop insurance strategies and schemes to reduce the vulnerability of the farming communities; and (6) discuss and recommend suitable policy options. Leading experts in several fields will be presenting discussion papers to address the above objectives, and as an output, the proceedings will be published as a special issue of *Agriculture and*

Forest Meteorology Journal, published by Elsevier. The recommendations of the workshop will be considered at the 14th session of the Commission for Agricultural Meteorology of WMO to develop an implementation plan.

PROJECT REFERENCE:

CBA2006-09NSY

PROJECT TITLE:

Scoping Workshop on South Asia MAIRS Rapid Assessment Project's (SA/RAP) Results for Designing Future Research Agenda and Capacity Building Requirements

PROJECT LEADER:

Dr. Sibaji Raja; Astroparticle Physics & Space Science Programme, Bose Institute, 93/1, A.P.C. Road, Kolakata 700 009, INDIA. Email:

sibaji@bosemain.boseinst.ac.in;

sibajiraha@yahoo.co.uk

ABSTRACT:

The South Asia's Rapid Assessment Programme (SA/RAP) under ESSP's Monsoon Asia Integrated Regional Study (MAIRS) currently synthesizes global change related research in South Asia, which includes all the components of physical and human dimensions of change in the Earth system. The scoping workshop will discuss the key issues emerging out of the SA/RAP program to design an appropriate research agenda and identify key areas for capacity building in the future in South Asia. Lead authors of various chapters of SA/RAP, key regional contributors in different chapters, international experts and reviewers, START and SASCOM members will participate in the workshop. The expected outcome is the identification of key research areas of Global Change for capacity development in South Asia and the development of future collaborative research projects for submission to various international and national funding agencies which could be incorporated in the ESSP's MAIRS programme.

PROJECT REFERENCE:

CBA2006-10NSY

PROJECT TITLE:

Institutional Dimensions of Global Environmental Change (IDGEC) Synthesis Conference, Institutions for Sustainable Development in the Face of Global Environmental Change: Questioning-Explaining-Demystifying (QED)

The Annual Call for Regional Proposals process (ACRP) and the CAPaBLE programme proposals process will be launched in May/June. More details will shortly be available on the APN website.

PROJECT LEADER:

Dr. Agus P. Sari; Pelangi Ecosecurities, Jalan Jenderal Sudirman Kav 58, Jakarta 12190, INDONESIA.
Email: apsari@pelangi.or.id

ABSTRACT:

The Synthesis Conference will harvest the results of 8 years of research on the institutional dimensions of global environmental change. Participants will evaluate the project's results against its Science

Plan and distil its findings in edited volumes and summary articles. Invited knowledge brokers and practitioners will give recommendations on how IDGEC findings can best be presented and applied. IDGEC's research fellows and young scientists from within the larger GEC research community are charged with identifying gaps in IDGEC's research and making recommendations for pertinent research questions for a second

phase of research. The synthesis products will include: (i) edited volumes aimed at a scientific audience; (ii) a summary paper emphasizing the policy relevance of IDGEC findings; and (iii) a scoping document outlining future directions in research in this field. These products will greatly raise awareness of IDGEC science in GEC and policy-making arenas.

2006/2007 CAPaBLE Comprehensive Research Projects**PROJECT REFERENCE:**

CRP2006-01NMY

PROJECT TITLE:

Improving Policy Responses to Interactions between Global Environmental Change and Food Security across the Indo-Gangetic Plain (IGP)

PROJECT LEADER:

Mr. Ajaya Dixit; Nepal Water Conservation Foundation, Post Box 222, Patan Dhoka, Lalitpur, NEPAL..
Email: nwcf@wlink.com.np

ABSTRACT:

The research will address key technical, policy and resource-management concerns related to how GEC-induced changes in water availability and access will affect the food systems which underpin food security in the Indo-Gangetic Plain (IGP). The project will help to (1) raise awareness among the policy community and resource managers in the IGP of the regional food security issues relating to changed water availability and access due to climate and other global change issues; (2) integrate natural, social, economic and policy research in developing decision support systems to help make informed policy for food security and environmental management; (3) enhance capacity in the natural resource management and livelihoods research sectors related to food security; and (4) consolidate regional collaboration across the four countries, linked to other APN countries and the international research community through ESSP-GECAFS. Research outputs will directly address several issues relating to climate change and food security as raised in the IPCC TAR and Agenda 21/WSSD.

PROJECT REFERENCE:

CRP2006-02NMY

PROJECT TITLE:

Integrated Model Development for Water and Food Security Assessments and Analysis of the Potential of Mitigation Options and Sustainable Development Opportunities in Temperate Northeast Asia

PROJECT LEADER:

Prof. Xiaodong Yan; START Regional Centre for Temperate East Asia, Deshengmenwai Qijiahuozi START TEA, Institute of Atmospheric Physics, Chinese Academy of Sciences, 1100029, Beijing, P.R. CHINA. Email: yxd@tea.ac.cn

ABSTRACT:

Food production is one of the major human activities for the temperate northeast Asia, including north China, Mongolia, and southeast Russia, and plays a crucial role in local socio-economic development. Water scarcity and land degradation have put the local sustainable agriculture development in great danger due to climate change and intensified human activities, seriously threatening regional water and food security. The main objective of this comprehensive research project is to develop an integrated model system to assess the potential mitigation options and sustainable development opportunities in relation to water and food security at a local scale, providing the policy-makers the needed information to achieve regional sustainable development. It also aims to build capacity and raise awareness through participatory assessment and the dissemination of the project findings and model.

PROJECT REFERENCE:

CRP2006-03NMY

PROJECT TITLE:

Climate Change in Southeast Asia and Assessment on Impacts, Vulnerability and Adaptation on Rice Production and Water Resources

PROJECT LEADER:

Dr. Attachai Jintrawet; Multiple Cropping Center, Faculty of Agriculture, Chiang Mai University, Chiang Mai 50200, THAILAND.
Email: attachai@chiangmai.ac.th

ABSTRACT:

This research aims to produce high resolution, long-term regional climate scenarios as well as near-term climate prediction for the Southeast Asia region and analyze the sensitivity and exposure of food crop agriculture system as well as hydrological regime in the major watersheds in Southeast Asia to future climate risk based on the climate scenarios. The sensitivity analysis will provide information on how climate change may impact food production and water resource in the selected study areas in the Southeast Asian countries. The exposure of the system to climate risk and the sensitivity of the systems to climate change will lead to identifying "hot spot" for the vulnerability and adaptation assessment, which would give fundamental information for the policy makers in the region for developing future climate policy planning. The output of the project will contribute directly to the preparation of Second National Communication to UNFCCC for the countries in the region as well as to the IPCC assessment report.

APN Supported Projects

Past Global Changes (PAGES) Second Open Science Meeting: "Paleoclimate, Environmental Sustainability and Our Future" (APN 2005-06-NSY-Brigham-Grette)



"The farther backward you can look the farther forward you are likely to see." —Winston Churchill

Projections of future climate change with an accuracy that provides a basis for mitigation and adaptation strategies relies crucially on our knowledge of natural climatic and environmental variability, processes of global change and long-term impacts of humans. Much of this basic knowledge can only be obtained from studies of global change in the past. In August 2005, the PAGES (Past Global Changes) community gathered in Beijing for its second Open Science Meeting (OSM) to discuss the latest discoveries in past climate change research around the theme "Paleoclimate, Environmental Sustainability and Our Future". More than 370 scientists from 45 countries attended the conference, particularly attracting participants from the rapidly growing community of Asian and Pacific-rim scientists engaged in climate change research.

The broad questions addressed by oral and poster presentations, as well as a panel discussion, included: What is the pre-industrial historical context of present and future global change? How did land, ocean and ice interrelate during climate transitions? How did people in the past interact with environment and climate? What specific answers do Asian regional scale studies provide to these global scale questions? It is noticeable that this set of questions would have been just as timely for the first OSM in London in 1998. However, it is equally obvious that the answers offered by the presentations are much more detailed now than seven years ago, owing to substantial progress in the field of past global change, such as in climate-environment reconstructions for the late

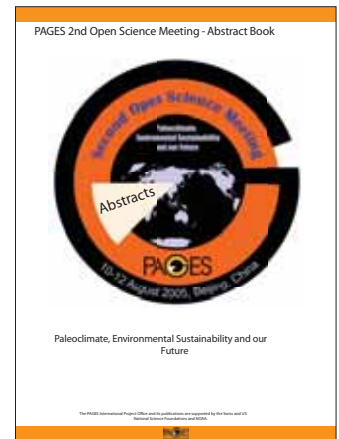
Holocene, reconstructing and modeling past global changes across remote regions and hemispheres, understanding the relevance of climate modes in the past, especially rapid change, and quantifying feedback mechanisms of past environmental change on climate.

The issues raised at the conference concerning the causes and sensitivity of the Earth System to past climate change remain highly relevant, especially given the rapid economic growth anticipated throughout India, China and Southeast Asia, and the projected global impacts of continuing increases in greenhouse gas emissions from the developed and developing world. The focus of this meeting provided a collaborative forum for policy-relevant knowledge, placing future change in the proper perspective without regard to international boundaries.

There were numerous scientific highlights, not only presentations of the state-of-the-art in specific fields of paleoscience from invited speakers, but also exciting new high-quality studies and datasets from less well-known scientists. Young research talent was acknowledged by selecting three posters for short presentations to the plenary, and by book prizes to five students for their poster contributions. There were other highlights beyond the purely scientific results, including, for example, the remarkable harmony that was attained between modeling and reconstruction approaches, providing a promising foundation for data-model-based paleoresearch in the future. The similar process of convergence between disciplines in the study of the human aspects of past global change was also evident. Many contributions included humans as a component of the Earth System, both as an additional information source and to demonstrate the relevance of paleoresearch.

Another more general success was in community building, achieved especially through the attendance and integration of many scientists from Asia and developing countries, and researchers in early career stages. This effort was supported by travel funding of a total of over \$100,000 from the APN, START, TWAS, the Indian Department of Science and Technology, the Chinese Academy of Sciences, the National Natural Science Foundation of China, and PAGES. Bringing together scientists from a wide range of countries and varied scientific backgrounds led to many fruitful discussions, and feedback received from participants and funding recipients indicates that these discussions have already led to new international collaborative projects. Other contacts were established and are actively being pursued. Many of these outcomes would not have been possible without the funding made available to researchers from developing countries.

The meeting culminated in a lively plenary discussion on the future role of PAGES in assisting and promoting paleoclimate studies and synthesis worldwide. The second OSM provided a much too rare opportunity to discuss the various core themes relevant to PAGES and to foster a community spirit that encourages international participation and capacity building, and hence drives bottom-up initiatives under the PAGES banner. Instead of waiting another seven



The OSM abstract book is available to download, free of charge, from the PAGES online Product Database (www.pages-igbp.org/cgi-bin/WebObjects/products). An online poster exhibition (www.pages2005.org/posters.html) is currently displaying 90 of the OSM posters; these are available to view and download. A collection of the plenary lectures is in preparation for the new open-access journal of EGU "Climate of the Past".

years for such an opportunity, PAGES plans to hold the next OSM four years from now, in 2009, in the United States.

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Participants from 45 countries attended the PAGES 2nd Open Science Meeting in Beijing, China.

6th Open Meeting of the Human Dimensions of Global Environmental Change Research Community: "International Security, Globalization and Global Environmental Change" (APN 2005-09-NSY-Srivastava)

The beautiful rococo building of the Bonn University in Germany was the venue for the sixth Open Meeting from October 9-13, 2005. Its title, "International Security, Globalization and Global Environmental Change," aptly reflected current global realities. In addition, the structure of the conference was deliberately chosen to address the main objectives of this meeting: developing the research agenda on human dimensions, identifying areas of future research, promoting capacity building of young researchers and fostering the translation of scientific knowledge into the policy arena.



The conference was a great success, with more than 900 participants attending from over 85 countries; thus representing a nearly three-fold increase from the previous Open Meeting in Montreal, and making it the world's largest social science event on global environmental change to date. The five-day event consisted of four plenary sessions and nearly 130 parallel sessions. While the official opening featured high-level keynote speakers from the policy arena, the daily morning plenaries included top researchers and also policy representatives, with presentations and discussions on provocative and thought-provoking topics. These plenary sessions addressed topics such as the policy relevance of human dimensions research, how to ground this research in present global realities, the weaknesses and benefits of interdisciplinary research, and a stock-taking of human dimensions research to-date.

Its 128 parallel sessions, chosen in a highly competitive and two-tiered selection process, centred around

various areas of human dimensions research, such as adaptation, resilience, coastal zones, environmental history, human security, globalization, carbon/food/health, industrial transformation, institutions, land-use/cover-change, methods, regional approaches, science-policy interface, sustainable development and urbanization.

Poster presentations were organized around these same themes to give up-and-coming researchers the chance to showcase their work throughout several sessions during the week, in the exhibition hall. In addition, numerous side events and social gatherings were organized. As Open Meetings bring together many scholars from many countries, they provide a considerable logistical and cost-effective aid to bring teams of scholars together, giving them chances to discuss ongoing projects or build plans for new ones.

Placing the 6th Open Meeting back-to-back with a series of training seminars was an innovative way to focus on capacity building and to actively involve, as well as specially prepare, 60 young researchers to take part and present their research at the ensuing large international conference. Here, established and newly rising researchers from more than 35 countries (one-third of them in the Asia-Pacific region) truly had the opportunity to mix during one of the numerous parallel sessions or one of the many informal social gatherings.

The 6th Open Meeting sought to strengthen IHDP's institutional alliances, as well as broaden its funding base. Thus strategic partnerships were pursued with co-organizing institutions such as CIESIN, IIASA, IGES, the University of Bonn, and UNU. This enabled not only more innovative cooperation on sessions, but also set the stage for future collaborative efforts. Furthermore, a strong focus on interdisciplinary and inter-regionalism encouraged new and innovative collaboration and comparison between and among previously disparate fields.

A particular showcase was given for the Land-Use and Land-Cover Change (LUCC) project, which ended 10 years of successful research and findings and embedded its final synthesis and hand-over to the Global Land Project (GLP) within the 6th Open Meeting. Another specific platform was given for the outcomes of IHDP's Arizona Workshop in 2004, focusing on the cross-cutting themes of Vulnerability, Adaptation and Resilience. IHDP is in the process of providing a comprehensive publication on these topics to help lead the debate within the social sciences by presenting its efforts so far at defining and outlining these terms.

Finally, numerous established or emerging groups took the opportunity to arrange side meetings where topics of mutual interest could be discussed. Meetings were convened, for example, by the IHDP Scientific Committee, IHDP's core projects and regional networks such as the Mountain Research Initiative (MRI) and the Population-Environment Research Initiative (PERN).

In addition to making numerous materials, abstracts, and presentations available online, discussions are currently underway with several publishers to put out a book, or series of books, on excellent papers from the 6th Open Meeting.

The participants are also being encouraged to stay in touch with the human dimensions community in one of the numerous other events coming up in the near future, such as the biennial International Human Dimensions Workshop (IHDW) in October 2006 in Chiang Mai, Thailand; or the Earth-System Science Partnership (ESSP) Open Science Conference taking place in November 2006 in Beijing, China.

A further reflection of the importance of the Asian-Pacific region is the venue of the next 7th Open Meeting, to be held in New Delhi, India, with TERI (the Energies Research Institute) taking the lead in organizing. Date TBA.



DIVERSITAS First Open Science Conference 2005: Travel Fund for Scientists from Developing Countries in the Asia-Pacific Region (APN 2005-11-NSY-Bawa)

DIVERSITAS, the international programme dedicated to biodiversity science, placed under the auspices of ICSU, IUIMS, IUBS, SCOPE and UNESCO, received a grant from the APN to contribute to its first Open Science Conference. The Conference entitled "Integrating biodiversity science for human well-being" took place in Oaxaca, Mexico, from 9-12 November 2005.

The conference assembled many perspectives from the natural and social sciences to highlight the causes and consequences of biodiversity loss. Following closely the Millennium Ecosystem Assessment launch, it examined changes in beneficial ecosystem services and the economic consequences of biodiversity loss. The conference featured a mix of plenary lectures, symposia, oral and poster sessions, presented by invited speakers, as well as scientists selected from a call for abstracts on the three following themes:

- 1) How is biodiversity changing, and why?;
- 2) What are the consequences of biodiversity changes for

ecosystems and for the delivery of ecosystem services?; and
3) What can we do to promote a more sustainable use of biodiversity and improve human well-being?

This was the first international conference of this type, entirely dedicated to the many facets of biodiversity science. The conference was a success, attracting close to 700 scientists and policy-makers from 60 countries, including a large number of young scientists and participants from developing countries. It received wide press coverage, with more than 100 press articles worldwide, and an editorial in *Science*, on the opening of the conference (*Science*, vol 310, 11 Nov 2005, Dirzo R. and M. Loreau, "Biodiversity science evolves").

APN funded participants actively contributed to the conference, by presenting talks or organising a symposium. K. Ma (China) gave a presentation on the main biodiversity scientific programmes in China (National Committees meeting); K. Bawa (India/USA) organised a symposium on

sustaining partnerships for community-based conservation; A. Sridhar (India) gave a talk on community-based approaches to marine conservation in India; B. Sinha (India) talked about assessing traditional institutions for conservations in India; Priyadarshan Dharma Rajan (India) gave a talk related to agro biodiversity, J. Gladwin (India) was an invited speaker at a symposium on agro biodiversity; V. Amoroso (Philippines) talked about participatory inventory of plants in Natural Parks in the Philippines, E. Webb (Thailand) was an invited speaker at a symposium on remote sensing and biodiversity, A. Ramana was an invited speaker at a symposium on implementation of multilateral agreements as they apply to plant genetic resources (India). All abstracts are posted on the DIVERSITAS web site.

The conference adopted the "Oaxaca Declaration" which commits the community to lobby for and get involved in the initial steps toward an International Mechanism of Scientific Expertise on Biodiversity (IMoSEB), to accomplish for biodiversity what IPCC is doing for climate change. The Oaxaca Declaration follows up on a call made at an earlier conference held in Paris, in January 2005, entitled "Biodiversity: Science and Governance", which assembled close to 2,000 participants from the biodiversity science and policy environments worldwide, including some heads of states, in which the French President, J Chirac, called for such a new mechanism for biodiversity. The Oaxaca Declaration, approved in plenary, and read by M Loreau, Chair of the Scientific Committee of DIVERSITAS, ends as follows: "In agreement with the recommendations of the Paris



Prof. Michel Loreau, Chair of the DIVERSITAS Scientific Committee, reading the "Oaxaca declaration."

Conference, they urge national governments and United Nations bodies to establish a properly resourced international scientific panel that includes an intergovernmental component and that aims at providing, on a regular basis, validated and independent scientific information relating to biodiversity to governments, international conventions, non-governmental organisations, policy makers and the wider public". For the full text of the Oaxaca declaration, go to: <http://www.diversitas-international.org>

As a follow up to the Paris and Oaxaca Declaration, a consultation on this new "International Mechanism of Scientific Expertise on Biodiversity (IMoSEB)" has been launched. An International Steering Committee for this consultation met in Paris, in February 2006. The initiative is coordinated by a small secretariat funded by the French government, in which DIVERSITAS and the French Biodiversity Institute (IFB) share coordinating responsibilities.



The Ex-Convento Santo Domingo, in Oaxaca, Mexico, was the venue of the First DIVERSITAS Open Science Conference.

Scoping Workshop on the Impact of Global Change on the Availability of Fodder and Forage Production and the Performance of Livestock in South Asia (APN 2005-24-NSG-Babar)

The APN awarded a seed grant to develop the proposal "Impacts of Global Change on the Availability of Fodder and Forage and the Performance of Livestock in South Asia," submitted in 2004. The proposal submitted to the APN aimed to understand and develop strategies to mitigate the harmful impacts of livestock-related gas emissions, which directly affect the socio-economic welfare of large populations in South Asia. Global change directly affects livestock systems and fodder production, particularly in the Asian sub-continent where 21% of the world's human and livestock population inhabit.

The APN sponsored a scoping workshop, 15-16 December 2005, in Lahore, Pakistan, to further strengthen the methodologies of the proposal. Participants of the workshop included 25 eminent scientists from the region, engaged in livestock and fodder research and two, Canadian scientists engaged in monitoring GHG emissions from livestock systems. The workshop was conducted in four sessions, at which participants discussed the looming crisis of global warming that threatens food security in the region. During the workshop, an inventory of local research, and methods for monitoring GHG emissions from ruminant livestock systems, were discussed. Potential crop and feeding strategies, that simultaneously improve performance and lower GHG emissions, were also identified.

The Vice Chancellor of the University of Veterinary and Animal Sciences, Lahore, Pakistan, gave a

welcome address in which he highlighted the importance of the issue of global change and its effect on fodder and forage livestock production. The single most adverse effect of environmental change is the shortage of water which has adversely affected the crop and fodder production in the region. The Vice Chancellor stated that in a recent report presented to the Prime Minister of Pakistan, the Global Change Impact Studies Centre of Pakistan concluded that global warming will lead to increased evaporation of oceans and that precipitation over mountainous regions will have higher content of rain and lesser of snow. This will result in an increase in fluctuation in the availability of water in the Indus river system. Melting glaciers will increase the flow of water and if the water is not stored, it will go to waste. This is directly affecting the climatic temperature and physiology of plants and animals. The Vice Chancellor was pleased with the proposal and thought that a proposal on this important issue is a positive step that would contribute significantly in this area of research. He assured the collaborators of his full cooperation and support for the project.

Changes in the environment may have a major impact on the performance of livestock. The environment is further threatened by the emission of greenhouse gases, which contributes to global warming. There is an urgent need to study the impact of ruminants on climate change, and in turn, the impact of climate change on livestock performance. Because climate change also threatens to

further increase poverty in the region, there is a dire need for all nations to protect the world from adverse climate change to ensure the availability of food. Dr. Amir Muhammad, APN Scientific Planning Group (SPG) member for Pakistan and renowned scientist in the region, gave a key note address and reported on global warming and how it is affecting different aspects of human and livestock life. Dr. Muhammad further informed participants about the APN's role in global change research.

In the first session, Mr. Babar Yaqoob Fateh Muhammad, Secretary, Department of Livestock and Dairy Development, Punjab, described how methane, a greenhouse gas whose atmospheric concentration has increased dramatically over the last century, has become the largest potential contributor to global warming. Methane released into the atmosphere by domestic ruminant livestock is considered to be one of the three largest sources, on a global scale. The emission of methane by cattle, buffalo, sheep and goats, represents a carbon loss pathway that results in reduced productivity. If the energy lost in generating methane could be redirected into weight gain or milk production, it would be cost effective for the producer, as well as provide a means of reducing methane emissions into the atmosphere. In order to determine the effects of gas emissions by ruminant livestock, further modern research is needed. It is hoped that the results of this workshop will encourage further work and that the recommendations will be used in developing future strategies in this important field of animal sciences.

In the following three sessions, participants discussed various aspects of livestock and fodder production, as well as the direct and indirect effects of global change on livestock production systems. Dr. Alan Fredeen, Professor of Nutrition at the Nova Scotia Agricultural College, Canada, presented recommendations based on comments and discussions that



Speaker: Dr. Amir Muhammad and panellists



Training Workshop in Session

took place during the two-day workshop, in the concluding session. To date, the research efforts on livestock and fodder production and the effects of global change on livestock production systems in India, Pakistan and Bangladesh have been limited. Dr. Fredeen stressed the need to commence research as soon as possible. There is a need not only to generate data, but more fundamentally, to develop a stronger regional base of equipment and research expertise on this subject. Sufficient data may also allow for an

adjustment of national GHG inventories.

Dr. Amir Muhammad, the Vice Chancellor, UVAS and Dr. Pervaiz Amir suggested final amendments to the proposal. The Dean of the Faculty of Animal Production and Technology thanked the participants for attending the workshop and for their contributions. The Chairman of the session, Dr. Manzoor Ahmad, then thanked the audience and formally closed the workshop.

Capable Programme Updates

Prototype Training Workshop for Educators on Climate Change, Seasonality and Environmental Hazards in Southeast Asia (APN 2004-CB07-NSY-Glantz)

This workshop, held in Bangkok, Thailand from 6–9 March 2006, was organized by the National Center for Atmospheric Research's (NCAR) Center for Capacity Building (CCB) and supported from its inception by a CAPaBLE grant from APN, with additional support from the US National Oceanic and Atmospheric Administration's Office of Global Programs.

Workshop organizers pursued three dominant objectives: (1) to introduce participants to key concepts related to the 'Climate Affairs' notion and to climate and climate-related impacts assessment, (2) to discuss the importance of "Climate" in the 21st Century and the need for education and training activities for university students and

people already in the workforce, and (3) to explore the importance of the interactions among climate change, seasonality and environmental hazards in Southeast Asia.

Participants were drawn from a variety of educational and training institutions in the region, including India, Malaysia, Philippines, P.R. China, Sri Lanka, Thailand and Viet Nam. The 30 participants included undergraduate and graduate educators, university administrators, engineers, climate and health specialists, disaster preparedness specialists, political scientists, and geographers.

This activity was focused on Southeast Asia in part because of

the wide range of hazards that people in the region face year in and year out and in part because countries in Southeast Asia feel that they are part of the same region for political, cultural and shared natural hazard reasons. The notion of "Greater Southeast Asia" was raised, because the regional climate regime and weather systems, as well as cultural similarities, do not stop at political borders. India was added to the workshop in order to identify pathways to bring the Climate Affairs concept to the Asian sub-continent. Each participant could interpret the meaning and utility of Climate Affairs with regard to his or her own personal, as well as their institutions,' needs. Organizers hoped to build awareness of and generate interest in, specifically, Climate Affairs and, more generally, in the multifaceted "affairs" template, which consists of science, impacts, policy and law, politics, economics and ethics and equity issues.

Many concepts were referred to, described or discussed throughout the workshop, such as the following: climate affairs, deep climate change, seasonality, forecasting by analogy, creeping environmental problems,

adaptation, "a step beyond" adaptation, superstorms, seasons of superstorms, capacity building, early and earliest warning systems, "climate century," greater Southeast Asia, usable science, "backing the public into science literacy," "climate, water and weather affairs," educate educators, lessons learned vs. lessons identified, the issue-attention cycle, Nature's bank analogy, "hawks, doves and owls" analogy, decision-making under uncertainty (DMUU), and Spare Time University.

In perusing the Internet, one can see that historians have generally considered each century of the past 500 years as having been dominated by a country. Britain, for example, dominated the 19th century; France the 18th century. Some historians argue that America dominated the 20th century. We contend that the 21st century will be dominated not by a country or a person, but by climate. Despite the intermittent wars, epidemics and political and ideological conflicts that will inevitably occur, climate (variability, change, extremes and seasonality) will prominently influence life on earth and will have positive and negative impacts on the well-being of people, societies, cultures and governments. We have to keep reminding ourselves that climate is not just a hazard or a constraint to



Group Photo of workshop participants



Training Workshop in Session

development. It is a resource, when used properly. In other words, climate is not all “doom and gloom.” There is a sunny side to climate.

The purpose of Climate Affairs activities is to build human and institutional capacity (i.e., awareness and understanding) about climate’s influence on societies and society’s influence on climate. Climate Affairs serves as a way to spark interest in climate knowledge and foster climate literacy.

Climate Affairs also provides what could be called a “soft path” to science education for the public by “backing the public into science literacy” through a focus on climate, water and weather impacts on societies and on ecosystems. In addition, by training educators and trainers, they become potential consultants and advisors on climate-related issues. In turn, they educate and train undergraduates, graduates and people in the workforce who within a few years are likely to become influential in the policy process in government agencies, educational institutions and corporate structures. Target audiences for capacity building in Climate Affairs are direct (educators, trainers) and indirect (students, civil society, people young and old in the climate-sensitive workforce).

The substantive aspect of the workshop was to focus attention on an important but relatively neglected aspect of climate: seasonality, or the natural flow of the seasons. Most human activities

are influenced by this expected sequence. And many climate, water and weather related hazards are also seasonal. As global warming continues to occur, it is foreseeable that the expected flow of the seasons to which people have become accustomed will be altered in disruptive ways yet to be identified.

Dr. Glantz started the presentation with a couple of quotations about seasonality taken from Chambers et al. (1981): “It is difficult to find any aspect of rural life in the tropical Third World which is not touched by seasonality,” and “Does seasonality make some people poor and keep them poor?” He proposed that most people and governments, whether in an industrialized country or a developing one, are more dependent on the natural flow of the seasons (more correctly, the perception of the natural flow) than they realize. Climate-related hazards are, for the most part, seasonal. Streamflow, droughts, floods, fires, frosts and tropical storms are variable according to the rhythm of the seasons. There are other seasons: the hunger season, growing season, fishing season, clothing seasons, and so forth. He suggested that most people are attuned to the natural (expected) changing of the seasons, and that any disruption of that expected flow will result in hardship for the few billion people who live off the land.

Workshop discussions on climate, water and weather affairs for

educational activities at university and training centers sparked ideas about new activities for possible development at each of the institutions represented, which ranged from developing a seminar at the undergraduate level in Sri Lanka to creating a diploma program for undergraduates in India and a Masters program in Malaysia. Also, considerable interest was generated in furthering research on the regional climate change-seasonality-environmental hazard nexus.

An unexpected result of the workshop was “capacity building by proxy.” Many of the participants, who were being exposed to Climate Affairs for the first time as a potential educational activity, directed questions about setting up Climate Affairs activities on a university campus to one of the participants, the director of the only Climate Affairs program in the region. He had established a few years ago, with the assistance of NCAR and the United University, the University of Malaya’s Center for Climate Affairs. Participants wanted to know firsthand how he was able to generate interest and support of the university’s administrators and faculty in setting up his Center.

Several possible projects and activities were proposed at the workshop and are expected to be pursued by the participants. As one expects with workshops, its potential effects may continue for many years to come.

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GLOBAL CHANGE SYSTEM FOR
ANALYSIS, RESEARCH, AND
TRAINING (START)

Roland FUCHS
Director
International START Secretariat

APN Funded Projects

Projects Funded by APN in 2006/2007
From the Annual Call for Regional
Proposals Process

ARCP2006-06NMY: Sediment
Dynamics and Down-Stream Linkages in
Tropical Streams as Affected by Projected
Land-cover/Land-use and Climatic Change
— Thailand Phase
Project Leader: Dr. Alan D. Ziegler
Email: adz@hawaii.edu

ARCP2006-07NMY: The International
Integrated Data Access and Transfer in
Asia (IIDATA) Project
Project Leader: Dr. Toshio Koike
Email: tkoike@hydra.t.u-tokyo.ac.jp

ARCP2006-08NMY: Integrated Support
System for Managing Environmental
Change and Human Impact on Tropical
Coastal Ecosystems in East Asia and the
Pacific
Project Leader: Prof. Kazuo Nadaoka
Email: nadaoka@mei.titech.ac.jp

ARCP2006-09NMY: Integrated
Vulnerability Assessment of Coastal Areas
in the Southeast Asia and East Asian
Region
Project Leader: Dr. Laura T. David
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ARCP2006-10NMY: Linking Climate
Change Adaptation to Sustainable
Development in Southeast Asia:
A Synthesis of Activities.
Project Leader: Dr. Rodel D. Lasco
Email: rlasco@cgiar.org

ARCP2006-11NMY: Developing an
Integrated Framework for Science
Policy Interactions towards Enhanced
Management of Coastal Systems in
South Asia
Project Leader: Dr. Nalin Wikramanayake
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ARCP2006-12NMY: Climate and
Crop Disease Risk Management:
An International Initiative in the Asia-
Pacific Region
Project Leader: Dr. Abdul Kalam Samsul
Huda Email: s.huda@uws.edu.au

ARCP2006-13NMY: Investigation on
the Impacts of Urban-Rural Air Pollution
on Air Quality and Climate in Southeast
Asia
Project Leader: Dr. Nguyen Thi Kim Oanh
Email: kimoanh@ait.ac.th

ARCP2006-14NSY: Global Water
System Hotspots in the Asian Region:
Mega Cities and Dams —
2nd GWSP-Asia Network Meeting
Project Leader: Dr. Jianyao Chen
Email: chenjianyao@mail.sysu.edu.cn;
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Multi-Year Projects that will continue for one more year

APN2005-07-NMY: Standardization and
Systematization of Carbon-budget
Observation in Asian Terrestrial
Ecosystems Based on AsiaFlux Framework
Project Leader:

APN2005-18NMY: The Human
Dimensions of Urban Ecosystems:
Applying the Human Ecosystems Model
(HEM) to Urban Environmental
Management in ASEAN
Project Leader:

APN2005-20NMY: Assessment of the
Effects of High Particulate Pollutants on
Pulmonary Health **Status in Selected
Mega-cities of South Asia**
Project Leader:

APN2005-21NMY: Agricultural Land
Use Policy in East and South Asia —
Rapidly Changing Landscapes and its
Impacts on Regional Food Security and its
Future Scenario
PROJECT LEADER:

APN2005-22NMY: Asian Ozone
Pollution in Eurasian Perspective
Project Leader: M. E. Babar, University of
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Email: masroorbabar@hotmail.com

CAPaBLE Funded Projects

Projects funded by the APN in 2006/2007
from the CAPaBLE Proposals Process

CAPaBLE Capacity Building Projects

CBA2006-01NSY: Capacity Building and
Meeting Research Needs on the Ecology
of Global Change in Island Landscapes of
the Republic of Palau
Project Leader: Dr. Harley I. Manner
Email: hmanner@uog9.uog.edu

CBA2006-02NSY: ESSP 2nd Young
Scientist's Global Change Conference and
Open Science Conference. Beijing, China
7-12 November, 2006.
Project Leaders: Prof. Roland Fuchs
Email: rfuchs@agu.org
Dr. Qin Dahe Email: cdccc@cma.gov.cn

CBA2006-03NSY: Integrated
Participatory Analysis of Sustainability in
the Greater Mekong Sub-region (GMS)
Project Leader: Dr. Ramon C. Sevilla
Email: ramon@mekonginstitute.org;
cavadasevilla@gmail.com

CBA2006-04NMY: Removing Barriers
to Capacity Building in Least Developed
Countries: Transferring Tools and
Methodologies for Managing Vulnerability
and Adaptation to Climate Change
Project Leader: Mr. Bhujangarao Dharmaji
Email: rao@iucnsl.org

CBA2006-05NMY: Final title to be
determined
Project Leaders: Mr. Taito Nakalevu Email:
taiton@sprep.org; deans@sprep.org
Prof. Bill Aalsbersberg
Email: aalsbersberg_b@usp.ac.fj

CBA2006-06NSY: Greenhouse Gas
(GHG) and Aerosol Emissions under
Different Vegetation Land Use in the
Mekong River Basin Sub-region
Project Leader: Dr. Sirintornthep
Towprayoon
Email: sirin@jgsee.kmutt.ac.th

CBA2006-07NSY: Institutional
Dimensions of Global Environmental
Change: Water, Trade and Environment
Project Leader: Dr. Louis Lebel
Email: llbel@loxinfo.co.th; louis@sea.user.org

CBA2006-08NSY: International
Workshop on Coping with
Agrometeorological Risks and
Uncertainties: Challenges and
Opportunities, 16-18 October 2006, New
Delhi, India
Project Leader: Dr. M.J. Salinger
Email: j.salinger@niwa.co.nz

CBA2006-09NSY: Scoping Workshop
on South Asia MAIRS Rapid Assessment
Project's (SA/RAP) Results for Designing
Future Research Agenda and Capacity
Building Requirements
Project Leader: Dr. Sibaji Raja
Email: sibaji@bosemain.boseinst.ac.in;
sibajiraha@yahoo.co.uk

CBA2006-10NSY: Institutional
Dimensions of Global Environmental
Change (IDGEC) Synthesis Conference,
Institutions for Sustainable Development
in the Face of Global Environmental
Change: Questioning – Explaining –
Demystifying (QED)
Project Leader: Dr. Agus P. Sari
Email: apsari@pelangi.or.id

CAPaBLE Comprehensive Research Projects

CRP2006-01NMY: Improving Policy
Responses to Interactions between Global
Environmental Change and Food Security
across the Indo-Gangetic Plain (IGP)
Project Leader: Mr. Ajaya Dixit Email:
nwcf@wlink.com.np

CRP2006-02NMY: Integrated Model
Development for Water and Food
Security Assessments and Analysis of the
Potential of Mitigation Options and
Sustainable Development Opportunities in
Temperate Northeast Asia
Project Leader: Prof. Xiaodong Yan
Email: yxd@tea.ac.cn

CRP2006-03NMY: Climate Change in
Southeast Asia and Assessment on
Impacts, Vulnerability and Adaptation on
Rice Production and Water Resources
Project Leader: Dr. Attachai Jintrawet
Email: attachai@chiangmai.ac.th

Calendar of Worldwide Global Change Events

Events in **bold** are APN or APN co-sponsored events

2006

13-18 JAN. An International Conference on DELTAS (Borneo venue): Depositional Systems and Stratigraphic Development, University Brunei Darussalam, Brunei
Web: <http://unit.aist.go.jp/igg/rg/cug-rg/ADP/ADP_E/a_what's%20new_en.html>

13-18 JAN. 3rd Annual Meeting of IGCP-475 'Deltas in the Monsoon Asia-Pacific Region (DeltaMAP)'; and 2nd Meeting of CCOP DelSEA Project, University Brunei Darussalam, Brunei
Web: <http://unit.aist.go.jp/igg/rg/cug-rg/ADP/ADP_E/a_what's%20new_en.html>

21-26 JAN. 1st iLEAPS Science Conference. Boulder, USA.
Contact: Michael Boy <boy@ucar.edu> Web: <<http://www.atm.helsinki.fi/ILEAPS/boulder/>>

20-24 FEB. Workshop on "Post-Disaster Assessment and Monitoring of Coastal Ecosystems and Biological and Cultural Diversity in the Indian and Asian Waters." Phuket, Thailand
Further information will be provided at a later date.

6-9 MAR. Prototype Training Workshop for Educators on the Effects of Climate Change on Seasonality and Environmental Hazards, Bangkok, Thailand Contact: D. Jan Stewart <jan@ucar.edu>
Web: <<http://www.ccb.ucar.edu/apn/>>

7-9 MAR. International Symposium: Towards Sustainable Livelihoods and Ecosystems in Mountainous Regions, Chiang Mai, Thailand.
Contact: <uplands@loxinfo.co.th> Web: <<http://www.TheUplandsProgram.net.ms>>

24-26 APR. MAIRS Science Framework Workshop, Kunming, China.

22-27 MAR. 4th World Water Forum. Mexico City, Mexico. Contact: World Water Council <wwc@worldwatercouncil.org>
Web: <http://www.worldwatercouncil.org/announcemnt_stockholm_2004.shtml>

9-12 MAY. EMECS 7. Caen, France. Theme: Sustainable Co-development of Enclosed Coastal Seas: Our Shared Responsibility.
Contact: http://www.emecs.or.jp/emecs7/1stC/EME7_1c.htm

10 MAY. Asia-Pacific Session. Caen, France. Theme: Quality Status of the Asia-Pacific Coast
Contact: http://www.emecs.or.jp/emecs7/1stC/EME7_1c.htm Email: info@apn-gcr.org

11-16 JUNE. The Twelfth Pacific Congress on Marine Science & Technology
PACON 2006: Marine Science and Technology in Asia, Yangon, Myanmar
Contact: Web: <<http://www.hawaii.edu/pacon/>>

18-26 JUNE. UNFCCC/SBSTA24, Bonn, Germany

24-25 JUNE. Eco Asia, 14th Environment Congress for Asia and the Pacific, Saitama, Japan

13-26 OCT. Fifth International Human Dimensions Workshop — Institutional Dimensions of Global Environmental Change: Water, Trade, and the Environment, Chiang Mai, Thailand.
Contact: Web: <<http://www.ihdp.org>>

16-18 OCT. 3rd APHW Conference on Wise Water Resource Management Towards Sustainable Growth and Poverty Reduction, Bangkok, Thailand

7-8 NOV. 2nd International Young Scientists' Global Change Conference Beijing, China

9-12 NOV. The Earth System Science Partnership (ESSP) Global Environmental Change Open Science Conference. Beijing, China
Contact: Martin Rice mrice@essp.org,
Web: <http://www.essp.org/ESSP2006>

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