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Message from the Director



The APN 4th Steering Committee (SC) Meeting, which convened in Jakarta, Indonesia, 25-26 August, marked another challenging step forward.

During the meeting, activities following the 11th IGM/SPG were reviewed and plans for the 12th IGM/SPG, to be held in Hawaii, were discussed. Prior to the SC meeting, a Sub-Regional Committee meeting was held. The meeting confirmed the need to promote research and capacity development for global change through sub-regional activities.

I would like to express my gratitude to the Ministry of Environment, Indonesia and the national Focal Point (nFP) for Indonesia for hosting the meetings. Furthermore, I extend my appreciation to the participants of the meetings. Without your contributions, the meetings would not have been as fruitful as they were.

In July, the 2006 Annual Regional Call for Proposals and the CAPaBLE Call for Proposals were simultaneously launched. The deadline for submissions has passed and we are pleased with the response that we received from proponents in the Asia-Pacific region.

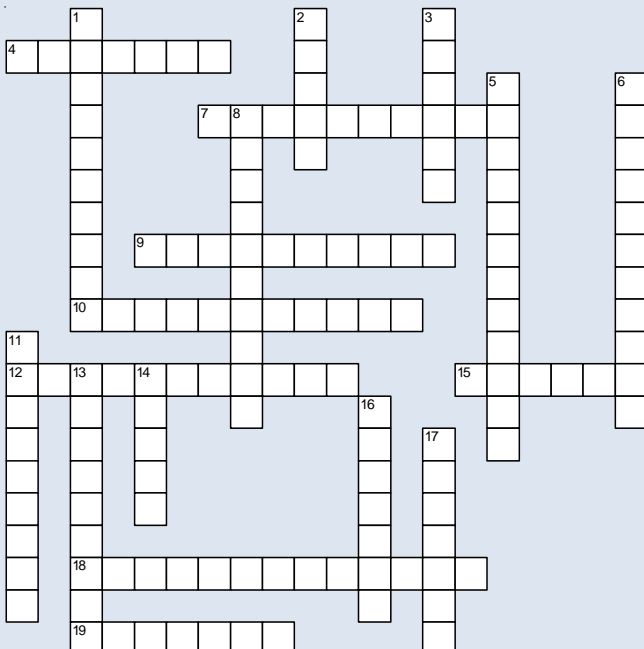
Furthermore, with the streamlined process and recently added Frequently Asked Questions

(FAQs), to the guide for proponents, there were fewer inquiries about the how-to's of the process this year. If you have any suggestions on how the proposals process can be improved further, we are happy to receive feedback.

In the northern hemisphere, summer is over and fall has come. Fall is always a season for development. The second International Young Scientists Conference and ESSP Open Science Conference, with the Theme, "Global Environmental Change: Regional Challenges," are being held back-to-back in Beijing, 7-12 November.

The APN is co-funding these events, to provide travel support for scientists from developing countries, together with the Earth Systems Science Partnership (ESSP) and other global research organizations. These events will be a great opportunity to further promote global and regional collaboration on global change research and I encourage you to attend.

Also in the fall, the Subsidiary Body for Scientific and Technological Advice (SBSTA) 25, COP12-COP/MOP2 and the Group on Earth Observations (GEO III) will be held. The APN will surely be represented at these events. We look forward to sharing our knowledge and experience on global change research. I hope to see you there!



CROSSWORD CHALLENGE

Across

- 4 During the last decades, the frequency of having rainfall events increased in the ____ River Basin
- 7 also called the peak flow meter
- 9 Transport and ____ sector are considered the major contributors of pollution in urban areas
- 10 The quality of ambient air in nearly all mega-cities of South Asia Region
- 12 A human system directly affected by the emissions of particulate matter
- 15 The University Professor and APN SPG member for Japan who receives an Environment Award
- 18 These are kind of activities that are energy intensive resulting in the emission of a number of trace gas species and particulate matter
- 19 The rising of minimum temperatures more than maximum ones reduces ____ fluctuations

Down

- 1 Recognized as a real kind of environment that could fill the various gaps among developed and developing countries, experts, teachers, and other stakeholders
- 2 A new research program of the ESSP on the coupled human environment system in the Monsoon Asia Region
- 3 In order to acquire quick information on environmental education, an online TV net meeting ____ among Japan, Malaysia and other countries must be set up
- 5 As this increases, more people are being exposed to outdoor pollution, resulting in serious health consequences
- 6 The type of environment where Rapid Assessments focused
- 8 Used to categorized SPM, SO, NO, CO, O3, and benzene that have a range of health effects
- 11 "F" stands for ____ in UNFCCC
- 13 "S" stands for ____ in SPM
- 14 An APN member country where no significant urban-non-urban bias was found
- 16 This is where the 2nd YSC Conference and ESSP Open Conference will be held
- 17 Type of aerosols found to be highly toxic

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 deadline for the APN's 2006 Call of Proposals has passed and that there has been a very positive response to both of the APN's pillars of activities, the Annual Regional Call and the Capacity Development Programme, CAPaBLE.

In the coming months, APN experts will be working hard to review all the proposals that were submitted and eventually make recommendations for funding at the 12th IGM/SPG to be held in Honolulu, Hawaii, March 2007.

In addition, the Steering Committee of the APN just held an important and useful meeting in Jakarta. The meeting reviewed the progress of this year's work-plan and looked at options for a range of work in the future.

In flying into Jakarta, particularly across Borneo, the extent of this year's series of forest fires was clearly evident from the plane. It was even more evident from ground with the extensive smoke haze covering Jakarta during our whole meeting.

It shows that despite Government regulations, there is still a tremendous need for training at the local level and the need to provide meaningful alternatives for farmers and developers who are using 'old technology' as a means of land clearing without being held responsible for the huge environmental cost born by all their neighbours.

Visibility in some parts of Southeast Asia was reportedly down to only 200m causing not only airports to close, but also a need for many people in the region to stay indoors. In a similar vane, the local Jakarta newspaper reported that following National Day celebrations, used paper plates and cups, along with other rubbish, were carefully collected



after the function and neatly tied into rubbish bags; the bags were then thrown in the local river.

This was so close to a positive outcome and highlights the need for that extra step in training and awareness. This demonstrates why the work in the Asia-Pacific global change research community is so vital.

The APN fosters work that aims to understand the issues, find acceptable alternatives that do not hinder legitimate development aspirations, but at the same time, are sustainable and do not adversely affect the lives and livelihoods of neighbours. I encourage you all to support and become involved in this effort.



The Asia-Pacific Network for Global Change Research (APN)* is an international network of Governments 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 (human-induced) 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

Prof. Mimura Receives Japan's Civil Engineering Award



On behalf of the APN, I would like to extend our congratulations to Prof. Nobuo Mimura, APN Scientific Planning Group (SPG) member for Japan and APN SPG Co-Chair for being presented with the Environment Award 2005, by the Japan Society of Civil Engineers.

Prof. Mimura is a Professor at Center for Water Environment Studies at Ibaraki University. The Japan Society of Civil Engineer (JSCE) is one of the most prestigious academic societies in Japan. Each year, the

Environment Award is presented to recognize outstanding achievement in the development and/or operation of technologies and systems to reduce environmental loads, conserve the environment and contribute to the creation of a more affluent environment.

This year, the award was given to Prof. Mimura for his series of researches and international collaboration on impact assessment and adaptation concerning global warming and sea level rise.

In the JSCE journal, Prof Mimura expressed his gratitude to the researchers in the Asia-Pacific region with whom he worked, as

well as to his colleagues and students at Ibaraki University and in the academic society. He noted that he felt the award was not only presented to him, but to everyone involved in the work.



Recent APN Publications

APN Asia-Pacific Network for Global Change Research

The **APN** is an **inter-governmental** network fostering **global change** research and links between **science** and **policy-making** in the Asia-Pacific region.

Mission

The mission of the APN 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.

Main Activities

Annual Regional Call for Proposals
- supporting regional global change research

CAPaBLE Programme
- enhancing scientific capacity in developing countries to improve decision-making in focus areas of global change and sustainable development

APN's Programmes
ARCP Programme CAPaBLE Programme

For more information, visit: www.apn-gcr.org

The APN relies heavily on the generosity and commitment of all its member countries for financial and in-kind support.

APN General Poster

APN **CAPaBLE**

MAKING A DIFFERENCE

Scientific Capacity Building/Enhancement for Sustainable Development in Developing Countries (CAPaBLE)

What is the aim of CAPaBLE?

PHASE II 2006-2008: Water and Food Security

enhancing scientific capacity in developing countries to improve their decision-making in the target areas related to **water and food security** that are directly linked to sustainable development

How does CAPaBLE achieve its objectives?

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

Capacity Building
National Climate Change Public Awareness and Outreach in Sri Lanka

young Scientists
Training Seminars on Methodological Issues Related to the Human Dimension of Global Environmental Change

For more information, please visit: www.apn-gcr.org

CAPaBLE Poster

Asia-Pacific Network for Global Change Research (APN)

Strengthening PARTNERSHIPS in the global change community

A key goal of the APN is to strengthen cooperative relations amongst the global change research community.

APN Investment in ESSP and GC core/joint projects ARCP & CAPaBLE, FY 2006-07

ESSP Projects	16%
GC Core/Joint Projects	12%
Others	66%

The APN works closely with the 4 global change programmes under the Earth System Science Partnership

What projects has the APN funded?

ESSP Projects
ESSP 2nd Young Scientists' Conference and Open Science Conference
Global Water System Hotspots in the Asian Region: Mega-Cities and Dams - 2nd GWSP Asia Network Meeting (GWSP)
Scoping Workshop on SA RAP Results for Designing Future Research Agenda and Capacity Building Requirements (MAIRS)
Improving Policy Responses to Interactions between Global Environmental Change and Food Security Across the IGP (GECAFS)

Global Change Core/Joint Projects
Institutional Dimensions of Global Environmental Change: Water, Trade and Environment (IHDP)
Integrated Vulnerability Assessment of Coastal Areas in the Southeast Asia and East Asian Region (LOICZ)
Developing an Integrated Framework for Science Policy Interactions towards Enhanced Management of Coastal Systems in South Asia (LOICZ)
Strengthening Scientific Capacity in the Surface Ocean Lower Atmosphere Study: The 2007 SOLAS Open Science Meeting in Xiamen, China (SOLAS)
Institutional Dimensions of Global Environmental Change Synthesis Conference (IDGEC)

For more information, visit: www.apn-gcr.org

ESSP Partnership Poster

Global Environmental Change: Regional Challenges

An Earth System Science Partnership Global Environmental Change Open Science Conference

Beijing International Convention Centre, Beijing, China
9-12 November 2006

Major Themes

- **Earth System Science Approach:** New advances in studies of the physical, biogeochemical, biodiversity, and human dimensions aspects of global environmental change.
- **Science for Sustainability:** Global environmental change research relating to carbon, food, human health, and water; as reflected in the ESSP Joint Projects.
- **Integrated Regional Studies:** The dynamics, impacts and consequences of the interactions between natural and social systems at regional scales, including extreme events, and how they connect with global-scale phenomena.
- **Global Change in Monsoon Asia:** Global environmental change research in monsoon Asia.

A Partnership Approach to Global Change Activities

Global Change Research & Capacity Building Programs - Bright Future with APN-IAI Partnership



The effects of global environmental change are increasingly felt by societies, as local and regional vulnerabilities become apparent. Two regional organizations, the Inter-American Institute for Global Change Research (IAI) and the Asia-Pacific Network for Global Change Research (APN), address these regional vulnerabilities with their research and capacity building programs on global change phenomena, adaptation and mitigation.

The IAI, an intergovernmental organization with 19 member countries in the Americas, has built research networks in the Americas over the past 14 years. Through a stringent peer review process, the IAI's programs assure scientific excellence. All its programs are based on international cooperation and the open exchange of scientific information.

The first round of the IAI's 5-year Collaborative Research Networks (CRN-I) came to a successful conclusion in August 2006. CRN-I and its associated smaller projects were led by over 400 scientists in the Americas and created a stronger and more cohesive science community in the region. CRN-I projects promoted 177 workshops, provided opportunities for 1,947 students & young professionals to participate in conferences, seminars, workshops and training courses, and supported 619 students and young researchers to complete their degrees from 1999 through 2005.

In June 2006, 12 projects began operation in the second round of the CRN (CRN-II). This new 5-year science



program, involves over 40 institutions in 18 countries. The program encourages research networks focusing on emerging issues. Together with its CRN-II scientists, the IAI is playing

an active role in steering science towards greater interdisciplinarity. A human dimensions grant program to accompany the CRN-II has just been approved. A greater dialogue between individual CRNs and with the member countries has also been initiated in order to increase the relevance of the science output to the member countries and their societies. The CRN projects are expected to contribute to the understanding of environmental change issues and their socio-economic impacts, and to strengthen the regional capacity to deal with threats from and vulnerabilities to global change while supporting sustainable development.

The IAI and the APN have recently signed a Memorandum of Understanding (MOU) which provides a framework for cooperation and for specific collaborations that enhance regional-global synergisms to research in the Americas and the Asia-Pacific region. IAI's and APN's combined experience in program design and management, and their collaborators' scientific expertise promise major advances in international science, the understanding of global change and the ability to adapt to and benefit from changing global conditions. Together, the IAI and APN represent 40 countries, and their science and capacity-building programs will have a major impact on informed decision-making processes of both regions.

The IAI and APN already play an active role in strengthening engagement of developing countries in climate change research through the United Nations Framework Convention on Climate Change (UNFCCC) and its Subsidiary Body for Scientific and Technological Advice (SBSTA). At its last meeting, held in Bonn, Germany from 18 to 26 May 2006, the SBSTA noted the importance of enhancing two-way communication and cooperation between the Parties to the Convention and international research programs to meet the research needs of the Convention. Having brought global change science to their regions, the APN and IAI are now set to bring their regions' expertise and concerns to the globe.

APN Out and About

3rd Coastal Zone Asia-Pacific (CZAP) Conference, 27 August-1 September, Batam, Indonesia

About 350 international coastal scientists attended the 3rd Coastal Zone Asia-Pacific (CZAP) Conference, in Batam, Indonesia from 27 August to 1 September this year. The conference was opened by the Indonesian Minister of Marine Affairs and Fisheries. APN sponsored three speakers to attend the CZAP conference; Professor Nick Harvey (University of Adelaide, Australia); Associate Professor Poh Poh Wong (National University of Singapore); and Maricel Tapia (APN Secretariat).

A plenary presentation by Professor Nick Harvey titled 'Global Change and Coastal Management' noted that the issue of 'global change' had not been significant in the two previous CZAP conferences held in 2002 and 2004 in Bangkok and Brisbane respectively. Professor Harvey stressed the importance of global change issues for the Asia-Pacific coastal region, the most important of which is global warming and accelerated sea-level rise.

The potential impacts from this are compounded by current issues; such as unsustainable use of coastal resources; coastal impacts from poor catchment management; population increase and



Pulau Abang Village, Indonesia, site of a COREMAP II community-based coral reef management program

urbanisation pressure; coastal resource and development pressure on rural coasts. Methods for tackling these issues such as integrated coastal management have few examples of best practice in the Asia-Pacific region. There is a need to recognize the diversity of coastal management practices in the region; to develop appropriate national and local policies and accompany this by appropriate education.

A key message in Professor Harvey's plenary was to showcase the first APN sponsored book project 'Global Change and Integrated Coastal Management: the Asia-Pacific Region'. Professor Harvey gave an overview of this book, recently published by Springer, and outlined its contents.

In a separate session on Global Change, Maricel Tapia gave an excellent talk titled 'The Asia-Pacific Network for Global Change Research: Focus on Activities in Global Change Coastal Zone Management'. In the same session, Associate Professor Poh Poh



Prof. Harvey., Prof. Wong and Ms. Tapia on board a small fishing vessel near Pulau Abang Village, Indonesia

Wong gave a talk on 'Tsunami Impacts and Implications for Coastal Management in the Asia-Pacific Region. Collectively the talks by Prof Harvey, A/Prof Wong and Ms Tapia managed to achieve two outcomes. First, they managed to give prominence to the importance of the issue of global change for coastal management in the region. Second, the talks raised awareness of APN, its activities and it's sponsored coastal research in the region.

After the main conference Prof Harvey, A/ Prof Wong and Ms Tapia all attended a field trip to Pulau Abang to observe firsthand one of the sites of the COREMAP II community based coral reef management program (RPTK). This program has developed alternative income generating activities in the area such as setting up of fish lures (rumpon) in the fishing zone, and home industry (fish-cracker) carried out by the women. The field trip finished with a visit to a local reef using a glass-bottomed boat.

16th Asia-Pacific Seminar On Climate Change, 5-8 September, Jakarta, Indonesia

The Sixteenth Asia-Pacific Seminar on Climate Change was held in Jakarta, Indonesia from 5-8 September 2006. The Seminar was jointly organized by the Ministry of the Environment, Japan (MOEJ),

the Australian Greenhouse Office (AGO), the Ministry of the Environment, Republic of Indonesia (MOEI) and the Overseas Environmental Cooperation Center, Japan (OECC).

Since its commencement in 1991, the Seminar has become well recognized as a major regional effort to address climate change and acted as a progressive vehicle for information exchange and mutual understanding through very important interactions among the participants and thus providing a useful framework for international cooperation in this field.

The Seminar was attended by government officials from twenty-one (21) countries, and representatives of several UN and other organizations. A number of resource persons from research institutes, local governments, universities and private companies, also attended the Seminar.

The goal of the Seminar was to facilitate exchange of views, experiences and best practices on climate change-related efforts in the Asia-Pacific region. For the 16th Seminar, participants discussed *climate change and development* as a general theme, seeking region's possible approach to realizing a climate friendly and climate change-resilient society.

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...from page 5 - 16th Asia-Pacific Seminar On Climate Change

Under this general theme, four specific topics were discussed, including clean development mechanism (CDM), adaptation to climate change, education, training, and public awareness, and co-benefits of climate change-related efforts. The outcome of the Seminar provides inputs to other fora, including the Better Air Quality Asia 2006 (BAQ2006), to be held in Yogyakarta in December 2006.

The Seminar commenced with an opening statement by H.E. Dr. Rachmat Witoelar, State



Minister of Environment, Republic of Indonesia. The keynote address by Mr. Toshiro Kojima, Vice Minister for Global Environmental Affairs, MOEJ, on behalf of the organizers, was read out by Mr. Osamu Mizuno, Director, Office of International Strategies on Climate Change, MOEJ.

Mr. Taka Hiraishi, Senior Consultant, Institute for Global Environmental Strategies (IGES), Japan, chaired the Seminar. Mr. Sum Thy, Head, Office of Climate Change, the Ministry of Environment, Cambodia, Mr. Dadang Hilman, Head, Division for Adaptation to Climate Change, MOEI, Mr. Normand Tremblay, Senior Advisor, Environment Canada, and Mr. Marcus Cahill, Assistant Director, Global Climate Change Negotiation Team, AGO chaired substantive sessions of the Seminar.

The Chairperson of the Seminar provided an overview on the relevance and interactions between the issue of climate change and development. Participants generally recognized that these two issues are closely inter-related, and to achieve sustainable development in the Asia-Pacific region, there is a strong need to address both of them in a holistic and integrated manner.

The Seminar reaffirmed the issue of climate change and development has been dealt with in layers of global, regional, national and local governance, and there are different stakeholders with key functions and relevant expertise. Also, the Seminar recognized that the attention to the issue of integration of climate change concerns into development planning and activities is growing by national and local governments as well as by bilateral and multilateral development assistance agencies, and gradually the number of relevant programmes is increasing.

The importance of planning stage was highlighted by participants, and many participants suggested that concerns of climate change and development should be effectively integrated at the planning stage. It was stressed that the proper alignment of the policy formulation as well as implementation would be vital.

In order to achieve sustainable development with climate change concerns integrated, elaboration of basic development scenarios may involve the process of ensuring the development and deployment of sound technologies, and of establishing effective and efficient institutions

and management, which may trigger the reform of social systems and introduction of holistic actions. Some participants pointed out efforts should be intensified both on mitigation of and adaptation to climate change in this regard.

The Seminar acknowledged that the involvement of national development planning departments, together with departments in charge of environmental protection in consideration of climate-related actions (both mitigation and adaptation) is important for effective mainstreaming of climate change concerns into national development.

At the same time, many participants noted that integration of long-term climate implications into national development planning is a pre-requisite for a sound long-term development planning. In this regard, the Seminar also noted the usefulness to have a clear vision of a society to be developed as a goal, which would help more holistic and integrated development efforts.

In some countries, climate change concerns are already being integrated into national development goals, through national development plans, or domestic legal and policy instruments, yet, many participants emphasized that there would be more needs to do so. Thus, many participants indicated collaboration of authorities as well as experts of climate change and development planning domains should be substantively expanded.

It was noted that local governance has some strengths of effective integration of climate change concerns into development activities, especially when they take into account of other tangible local co-benefits such as improved air and water

quality, mitigated traffic congestions, and increased employment. Replication of successful efforts at local government level would be useful, where appropriate, in the Asia-Pacific region.

The need for harmonization of different criteria, standard and procedures in existing institutions of development assistance vis-à-vis climate change, was addressed and as a practical approach, a suggestion was made to integrate climate change aspects into policy tools such as project design matrix (PDM), and a climate impact integration assessment - a similar procedure as EIA.

The Seminar reiterated that international cooperation is one of the important drivers to encourage activities to address climate change issues. Currently, several activities are in place with a certain track record of success. Participants expressed that such activities should be further strengthened through increasing the level of participation by and the ownership of countries and stakeholders.

Among others, the Seminar highlighted the importance of regional cooperation in the field of science, as the uncertainty of climate change has been a major obstacle for effective policy development and decision-making in many countries. In this regard, efforts made by the Asia-Pacific Network for Global Change Research (APN) is highly valued, and many participants expressed their hope that its activities would enhance scientific knowledge and translate it into relevant policies.

ARCP Funded Projects

Assessment of the Effects of High Particulate Pollutants on Pulmonary Health Status in Selected Mega-cities of South Asia (APN2005-20-NMY-Mitra)

The process of urbanization provides unique opportunities to improve the lifestyles of human beings. However, often, particularly in the developing world, the quality of urban life is negatively impacted by exposure to high urban pollution levels. As urbanization increases, more and more people are being exposed to outdoor pollution, resulting in serious health consequences, particularly related to pulmonary health.

In developing countries, the use of old and new technologies, especially in the transport and



industrial sector, which are considered to be the sectors most responsible for pollution in urban areas, masks the efficacy of policy interventions implemented to improve the air quality. The increasing consumption pattern, proportionate with the changing socio-economic status, due to development, further deteriorates the air quality especially in developing countries, where resources for correcting measures are often scarcely available.

The World Health Organization (WHO 2002) estimated that urban air pollution is responsible for approximately 800,000 deaths annually and 4.6 million lost life-years worldwide. Most

importantly, it was expected that almost two-thirds of the estimated numbers account for lives lost in Asia. These estimates have serious worries for the Asian region because of the nature of air pollutants, conditions and magnitude of exposure, the health status and health care facilities differ in Asia compared to America and Europe.

The urban population of South Asia is growing at a very fast rate, more than ever in the mega-cities of this region where more than 20% per year (observed during 1950-2000 period for Delhi, Kolkata, Karachi and Dhaka) growth rate has been noted. The ambient air quality in nearly all of these mega-cities is substandard, due mainly to the presence of high-suspended particulate matter.

The average concentration of suspended particulate matter (SPM) has been reported to be in the range of 148-259 $\mu\text{g}/\text{m}^3$ for Delhi, 260-380 $\mu\text{g}/\text{m}^3$ for Kolkata, 233-318 $\mu\text{g}/\text{m}^3$ for Karachi, 663 $\mu\text{g}/\text{m}^3$ for Dhaka and about 250 $\mu\text{g}/\text{m}^3$ for Kathmandu. These values are much higher than the normal prescribed values (as per Indian standards, $>210 \mu\text{g}/\text{m}^3$ SPM concentration is the critical level for residential areas). The deterioration of ambient air quality in South Asian countries is attributed to human induced developmental activities. These activities are energy intensive and result in the emission of a number of trace gas species and particulate matter.

The World Health Organization estimated that humans, exposed to ambient air containing more than 100 $\mu\text{g}/\text{m}^3$ concentrations of SPM, can develop severe cardiovascular and respiratory problems, lung cancer and even mortality, due to acute respiratory infections in children.

The emissions of particulate matter directly affect human health by affecting the respiratory system. It is well established that exposure to pollutants like SPM, SO, NO_x, CO, O₃, benzene etc., can have a range of health effects, particularly if serious pollution episodes occur (WHO, 1994). Both physical, (such as particle size) and chemical compositions (such as the presence of sulfate, nitrate, organic acids, metals, black carbon, lead etc.) of aerosols are responsible for impacting human health.

The total suspended particulate matter (SPM) can travel deep into the human respiratory system depending upon the particle sizes. Different kinds of aerosols have different effects, for example sulfate aerosols have been found to be highly toxic. These SPM particles also carry with them toxic substances (such as toxic metals) which find their way into human respiratory organs. Generally, it is believed that particles less than 10 μm (PM₁₀) can travel to the thoracic region and particles less than



The ambient air quality in nearly all of the mega-cities in South Asia is substandard, due mainly to the presence of high-suspended particulate matter.



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ARCP Funded Projects

...from page 7 - *Assessment of the Effects of High Particulate*

2.5 μ in diameter, can travel to alveolic areas of the lungs.

It is estimated that when exposed to 10 $\mu\text{g}/\text{m}^3$ increase in PM_{10} , there is a 3% chance increase in respiratory disease and of 0.5% chance increase in mortality. These values require further investigation for developing countries for the reason that the estimation is based on studies carried out in the developed world.

In view of the significant importance of assessment of the effects of particulate pollutants on pulmonary health status in South Asia, an APN-sponsored research project of two-year duration has been launched in the South Asia in 2005 targeting the selected areas in mega-cities of South Asia namely Colombo, Delhi, Dhaka, Kathmandu, Kolkata and Lahore.

One of the unique features of this project is that for the first time, each of the five country teams (Bangladesh, India, Nepal, Pakistan and Sri Lanka) participating in this project consists of aerosols scientists and medical professionals. The other unique feature of this ongoing activity is that each country team uses common protocol for aerosols measurements and common

health survey protocol with standardized sample sizes of target population.

The project teams convened their first meeting, in Colombo, in July 2005. The objective of the meeting was to identify and finalize common protocols for the identification of target population; health survey; monitoring of respiratory health status; and monitoring of aerosols.

Furthermore, aerosol scientists and medical experts considered the logistics available in target mega-cities of South Asia. Each country team has since been measuring aerosol concentrations, as well as monitoring the respiratory health status of the target population (using peak flow meter/ spirometer) in six of the South Asian mega-cities using the common protocols. In addition, seasonal health status surveys are being carried out in the native

languages of the region.

Presently, the voluminous data, so far collected, is being digitized for analysis and results. The project envisages organizing a 'Science-Policy Workshop' in the first half of 2007, in New Delhi, to disseminate the results of this activity among policy-makers and the general masses.

References:

1. WHO, 1994. *Acute effects of smog episodes, WHO regional publication, Copenhagen, European series No. 43.*
2. World Health Organization (WHO), 2002. *The World Health Report 2002: Reducing Risks, Promoting Healthy Life. Geneva, Switzerland.*

The APN2005-20-NMY Project envisages organizing a 'Science-Policy Workshop' in the first half of 2007, in New Delhi, to disseminate the results of this activity among policy-makers and the general masses.



Participants of the workshop on the Assessment of the Effects of High Particulate Pollutants on Pulmonary Health Status in Selected Mega-cities of South Asia

Integrated Regional Studies of Global Change in Monsoon Asia: Phase I: APN/SCOPE/START Rapid Assessment Project of Global Change in Monsoon Asia (APN2005-04-CMY-Snidvongs)

Some environmental changes are attributable to natural causes. Others are, directly or indirectly, human-induced. We need to know which changes we must adapt to and what causes of

change can be reversed. In particular, we need to know about possible thresholds and irreversible changes that may threaten sustainability of economic development.

To outline the problem and our related knowledge, in 2003, START, in collaboration with SCOPE, proposed to conduct Rapid Assessments of Environmental Change in South Asia,

continued on page 9...

ARCP Funded Projects

...from page 8 - *Integrated Regional Studies*

Southeast Asia, and in Temperate East Asia. The APN co-funded this project. About 60 scientists from the region were engaged in workshops and contributed many chapters for the Rapid Assessments. START is currently preparing the manuscripts for publication.

The Monsoon Asia Integrated Regional Study (MAIRS, www.mairs-essp.org) is a new research program of the Earth System Science Partnership (ESSP: www.essp.org) on the coupled human and environment system in the monsoon Asia region. MAIRS builds on START's Rapid Assessments, the results of projects belonging to the ESSP family, as well as on other Earth System research.

This very brief overview of results from the project confirms that rapid assessment with regional experts can be an efficient way to integrate scientists, expand capacity for research and to initiate a new research programme.

The human environment. Since the 1970s, Asia has experienced rapid economic growth through industrialization — urban populations have grown rapidly and societies have developed progressively. Over 30% of its population now lives in cities. Rapid urbanization has been juxtaposed by high rates of economic growth, as well as severe environmental problems.

Urbanization however, also generates substantial opportunities to improve resource-use efficiency in buildings, transport networks and industries. Urbanization, therefore, provides as much an opportunity for the future, as much as it is a threat.

The biophysical environment. The focus in Rapid Assessments has been on the biophysical environment and particularly its climatology.

Temperature. The overall trend in temperature in South Asia, Southeast Asia and Temperate East Asia is only slightly different from the global average of a rise of 0.5°C over the last 100 years — slightly more in Temperate East Asia and slightly less in South Asia. In India, no significant urban – non-urban bias was found. Also common to all regions is that minimum temperatures rise more than maximum ones, reducing diurnal fluctuations.

Precipitation. Monsoon rainfall is trendless when considered over a long period of time and across a very large area. The inter-annual variability is random and dominates rainfall fluctuations on all space scales. However, notable trends exist on some smaller spatial scales.

Extreme events. A significant decrease in the frequency of cyclonic disturbances was found in South Asia. During the last decades, the frequency of severe cyclonic storms has almost doubled in Temperate East Asia and the frequency of heavy rainfall events increased in Yangtze River Basin.

Air quality. Almost all the urban centers in South Asia have poor air quality and the concentrations of suspended particulate matter (SPM) exceed official standards. Transport and industrial sectors are the major contributors. In Temperate East Asia, air quality did not reach the national standard for Grade II in 70% of the cities. SPM was the main pollutant and in some cities SO₂ pollution was severe. Widespread acid rain is observed in Temperate East Asia.

Biodiversity. There is significant loss of biodiversity due to anthropogenic pressures: fishing, defor-

estation, mining, sedimentation, invasion by alien species, hunting and poaching and overexploitation of natural resources. Development of infrastructure often causes the fragmentation of biotopes. Edge effects and the ability of different species to move between patches of biotopes are understudied.

Land cover changes. Large-scale cover change may have a significant impact on local and regional climate. There is some evidence that forest cover decline is slowing down and is even being reversed in some countries.

Almost 40% of China's territory is threatened by soil erosion, approximately half caused by water and the rest by wind. Urbanization is another aspect of land cover change. It has been estimated that the fraction of the global population living in cities in developing countries will increase from today's 37% to over 54% by 2030, leading to 358 cities worldwide (153 in Asia) with a population of over a million people and 27 mega-cities with a population of over ten million (15 in Asia).

Results from the projects confirms that rapid assessment with regional experts can be an efficient way to integrate scientists, expand capacity for research and to initiate a new research programme.



Global Water System Hotspots in the Asian Region: Mega Cities and Dams Workshop -2nd GWSP-Asia Network Meeting (ARCP2006-14-NSY-Chen)

A workshop on *Global Water System Hotspots in the Asian Region: Mega Cities and Dams* convened 8-10 June, in Guangzhou, China. It was organized by the School of Geography and Planning, Sun Yat-sen University (SYSU) and the International Project Office (IPO) of the Global Water System Project (GWSP), and held jointly with the international conference "Hydrological Sciences for Managing Water Resources in the Asian Developing World". The workshop was a follow-up to the first GWSP-Asia meeting, held in Kyoto in 2005. Its objective was to compile and summarize existing knowledge related to cumulative impacts of dams and that of mega cities, in Asia, on the global water system.

Approximately 30 participants attended the workshop from 12 countries; China, Germany, India, Indonesia, Japan, Laos, Pakistan, Philippine, Sri Lanka, Thailand, USA and Viet Nam. The workshop was sponsored by the APN, the Chinese National Committee for GWSP (CNC-GWSP), GWSP, Land-Ocean Integration in the Coastal Zone (LOICZ), Monsoon Asia Integrated Regional Study (MAIRS), Research Institute for Humanity and Nature (RIHN), and SYSU.



Participants of the 2nd GWSP-Asia Network Meeting

During the meeting there was specific focus on: water supply security in Asian mega cities; virtual water trade related to mega

cities in Asia, potential benefits and cumulative impacts of dams and water transfer projects in Asia; database and network on mega cities, dams and relevant land use/cover change in Asia; strategy and national policies of water governance in Asia; comparison of mega cities and dams: development stage and water problems, future scenarios for mega city and dam development in Asia; and change of physical, chemical and biological processes related to Asian mega cities and dams, and their implications for the global water system.

Prof. C. Vorosmarty, Co-chair of GWSP and Prof. CM Liu of the Chinese Academy of Sciences (CAS), represented the GWSP-Asia network and gave keynote speeches at the jointly held workshop and conference, at which approximately 300 participants were present. Included among the participants were top officers of the Ministry of Water Resources, China, local Governor, officers of the National Natural Science Foundation, China, as well as experts and stakeholders related to water resources and management.

Around 50 participants attended the opening session of the workshop, which was open to all those attending the conference. The workshop provided participants with the opportunity to not only observe the presentations and listen to discussions, but also for the chance to network among researchers, with varied backgrounds and from different organizations.

During the workshop, there was extensive discussion on the follow-up of GWSP-Asia network. Accordingly, three groups were initiated regarding the following themes: (i) magnitudes and mechanisms of change; (ii) linkages to the broader system (e.g. the climate system, pan evaporation, virtual water); (iii) and

adaptability and mitigation (Theme 3). Representatives from MAIRS and LOICZ introduced the potential study field for cooperation with the GWSP-Asia Network. The programme, as well as all presentations related to the issues of mega cities and dams are available on the GWSP website in PDF format: http://www.gwsp.org/gwspasia_workshop2.html

The proceedings of the complete abstracts and/or full papers will be published in *Issues in Global Water System Research*, and selected papers are to be recommended for publication in Chinese Journals (in English). A database framework for the impacts of mega cities and dams, provided by the GWSP-IPO, was discussed by all participants regarding the ability to adapt it to meet the needs of Asian countries. The initial version of the geo-referenced dam and reservoir database for hydrological analysis was prepared and presented by the University of Yamanashi, Japan.

As an integral part of the GWSP network, GWSP-Asia has already commenced its activities. It has been able to incorporate and expand on the work of the GWSP and contribute to the GWSP Water Atlas, indicator work, and global dam efforts. Other topics suggested included: water quality, Millennium Development Goals (MDGS), biodiversity, future workshops, training courses and student exchange, promoting exchange of science and data, and joint approaches to donors and etc.

During discussions, it was considered that further research on the impacts of mega cities and dams on the global water system, in Asia, should be considered as the next step, through strengthened collaboration among the members of GWSP-Asia and the other related organizations.

CAPaBLE Funded Project

Guidelines for the Environmental Education Focusing on Environmental Ethics and Human Dimension of Global Change (APN2005-CB02-NMY-Taniguchi/Baharuddin)

Satellite Symposium I: *Common Materials for Environmental Education in the Asia-Pacific Region*, coordinated by Professor Azizan Baharuddin of Malaya University, Malaysia, and Satellite Symposium II: *Demonstration of Environmental Education Using On-line TV Net Meeting System Between Japan and Thailand*, coordinated by Professor Fumiaki Taniguchi of Konan University, Japan, were held on 19-20 August 2006 at the Phranakhon Grand View Hotel and Phranakhon Rajabhat University, Bangkok.

These symposia, which were organized jointly by the Japan Academy for Health Behavioral Science, the International Association of Earth-Environment and Global-Citizen, and Phranakhon Rajabhat University, were attended by over 150 people from Canada, Japan, Malaysia, Nepal and Thailand.

The Symposia aimed to use the experience and knowledge, of participating countries, on global change research to formulate guidelines for environmental education and sustainable development. They also hoped to fill existing gaps among teachers

and other stakeholders involved, such as global change experts, decision-makers, etc., by developing methods/modules for environmental education, to be used as base for countries in Asia.

During the symposia, there were several presentations given by experts in their field. Professor Manoj L. Shrestha of Konan University, Nepal, presented on the *Common Materials for Environmental Education and Guidelines: Public Awareness, Management and Biodiversity*. Professor Nancy J. Turner of University of Victoria, Canada, gave a talk on *Environmental Education Materials: Some Examples from British Columbia, Canada*.

Dr. Jariya Boonjawat, Associate Professor of Chulalongkorn University, presented on *Environmental Education Materials Focusing on the Global Change Research* and then Dr. Songpol Sukkijbumroong, Professor of Phranakhon Rajabhat University, presented a *Case Study of Environmental Education Materials from the Capacity Building Aspects at the Environmental Education Center*.



Presentors during the Satellite Symposium I: *Common Materials For Environmental Education in the Asia-Pacific Region*

The symposia resulted in the recognition of the real environment, particularly the indigenous environment, as means to fill the various gaps among developed countries and developing countries, and also among experts, teachers and other stakeholders.

It was stressed that it is necessary to establish a fundamental framework that focuses on environmental ethics consisted by soft moral frameworks in the environmental context beyond the scientific dualism.

The need to establish flexible guidelines of environmental education applicable to stakeholders that will cut across all Asian countries was also emphasized. Lastly, it was realized that in order to acquire quick information on environmental education, an on-line TV net meeting system among Japan, Malaysia and other countries concerned with the project must be set up.

To acquire quick information on environmental education, an on-line tv net meeting among countries must be set up.



Participants of the Satellite Symposium II: *Demonstration of Environmental Education Using On-line TV Net System*

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Nga MAI NGOC (SPG)
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Viet Nam Environmental Protection
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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
Email: l david@upmsi.ph;
ltd_pawikan@yahoo.com

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
Email: tomwks@yahoo.com, dir@nsf.ac.lk

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 Networking
Meeting
Project Leader: Dr. Jianyao Chen
Email: chenjianyao@mail.syu.edu.cn;
chenjianyao@hotmail.com

**Muti-Year Projects that will continue for
one more year**

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

Project Leader: Mr. Yoshikazu Ohtani
Email: ohtan03@ffpri.affrc.go.jp

APN2005-07NMY: Standardization and
Systematization of Carbon-budget
Observation in Asian terrestrial
Ecosystems Based on AsiaFlux
Framework
Project Leader: Mr. Yoshikazu Ohtani
Email: ohtan03@ffpri.affrc.go.jp

APN2005-18NMY: The Human
Dimensions of Urban Ecosystems:
Applying the Human Ecosystems Model
(HEM) to Urban Environmental
Management in ASEAN
Project Leader: Dr. Peter Marcotullio
Email: pjmarco@ias.unu.edu

APN2005-20NMY: Assessment of the
Effects of High Particulate Pollutants on
Pulmonary Health Status in Selected
Mega-cities of South Asia
Project Leader: Dr. A.P. Mitra
Email: apmitra@mail.nplindia.ernet.in

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: Dr. Krishnan Sundara
Email: rajan@iitit.net,
rajan@skl.iis.u-tokyo.ac.jp

APN2005-22NMY: Asian Ozone Pollution
in Eurasian Perspective
Project Leader: M. E. Babar, University of
Veterinary and Animal Science, Pakistan
Project Leader: Dr. Hajime Akimoto
Email: akimoto@jammstec.go.jp

CAPaBLE Funded Projects

CAPaBLE Capacity Building Projects

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

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: cdcc@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 Least developed
Countries: Transferring Tools and
Methodologies for Managing Vulnerability
and Adaptation to Climate Change
Project Leader: Mr. Bhujangarao Dharmaji
Email: rao@iucns.org

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

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

CBA2006-07NSY: Institutional Dimensions
for Global Environmental Change: Water,
Trade and Environment
Project Leader: Dr. Louis Lebel
Email: llbel@loxinfo.coth;
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@pelabgi.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. AjayaDixit
Email: nwcf@wink.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 Jintrawat
Email: attachai@chiangmai.ac.th

Calendar of Worldwide Global Change Events

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

2006

APRIL

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

19-21 APR. PICES Symposium on Climate Variability and Ecosystems Impacts in the North Pacific, Honolulu, Hawaii

MAY

1-12 MAY. UNCSO United Nations Commission on Sustainable Development: 14th CSDI Partnership Fair, UN Headquarters, New York

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

15-26 MAY. IOC/Global Sea Level Observing System (GLOSS) Training Course
Contact: info@apn-gcr.org

18-26 MAY. UNFCCC/SBSTA24, Bonn, Germany
Contact: <http://www.iisd.ca/climate/sb24/enbots/>

JUNE

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

14 JUNE. Joint LOICZ – Institute for Coastal Research Conference: Linkages between the German Coastal Research and LOICZ, Geesthacht, Germany

21-23 JUNE. First International Symposium for Climate Change Response, Seoul, Republic of Korea

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

27-29 JUNE. LOICZ II Inaugural Open Science Meeting: Coasts and Coastal People-Scenarios of Change and Responses, Egmond aan Zee, Netherlands

28-29 JUNE. ARCP Project on the Application of the Human Ecosystems Model to Urban Environmental Management in ASEAN: 1st Capacity Building Workshop at AIT, Thailand

JULY

24-27 JULY. AGO/ANU Third International Conference on Climate Impact Assessments, Hilton Cairns, Australia

AUGUST

14-19 AUG. International Field Meeting on Sub-aerially exposed continental shelves since the Middle Pleistocene climatic transition. Exmouth and Ningaloo Reef, Western Australia
Contact: A/Prof. Lindsay Collins
E-mail: l.collins@curtin.edu.au
Web: www.inqua.curtin.edu.au

17 AUG – 1 SEPT. 17th International Sedimentological Congress (ISC), Fukuoka, Japan
Contact: <http://www.isc2006.com>

24 AUG. Workshop on the Trial Liaison Model to SEA, Jakarta, Indonesia

25-26 AUG. 4th Asia-Pacific Network for Global Change Research (APN) Steering Committee Meeting, Jakarta, Indonesia

29 AUG – 2 SEPT. Coastal Zone Asia Pacific Conference, Batam, Indonesia

SEPTEMBER

4-8 SEPT. Carbon Management at Urban and Regional levels: Connecting Development Decisions to Global Issues, Mexico City, Mexico
Contact: www.gcp-urcm.org

9-10 SEPT. AIMES-Young Scientists Network meeting. Focus: urbanization interactions with biogeochemistry and climate, Mexico City, Mexico
Contact: <http://www.cgd.ucar.edu/tss/staff/mahowald/ysn>

26-28 SEPT. International Task Team Workshop for the IwaDATA Project, associated with the International Workshop for Earth Observations on Water Management Services, Bangkok, Thailand
Contact: Isao Koike E-mail: koike@ori.u-tokyo.ac.jp

28-30 SEPT. IGBP/SCOR Workshop on Ocean Acidification – Modern Observations and Past Experiences, Lamont-Doherty Earth Observatory, Palisades, New York
Contact: <http://www.igbp-scor.pages.unibe.ch/firstworkshop.html>

OCTOBER

3-6 OCT. Workshop on Sustained Indian Ocean Biogeochemical and Ecological Research (SIBER). Goa, India. Contact: <http://www.ian.umces.edu/siber>

5-7 OCT. Workshop on the Application of Scenarios with References to the effect of Climate Change Fisheries and Coastal Zone Management – Long-Term Scenario Building, Esbjerg, Denmark
Contact - E-mail: fame@sam.sdu.dk
Web: www.sam.sdu.dk/fame

10-12 OCT. Synthesis Meeting for ARCP Project: Linking Climate Change Adaptation to Sustainable Development in Southeast Asia Laguna, Philippines. Contact: Rodel Lasco
Email: r.lasco@cgiar.org, rlasco@laguna.net

13-22 OCT. PICES 15th Annual meeting, Yokohama, Japan. Contact: <http://pices.int/meetings/annual/PICES15/background.aspx>

13-27 OCT. Fifth International Human Dimensions of Global Environmental Change: Water, Trade, and the Environment
Chiang Mai, Thailand
Contact: <http://www.ihd.org>

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

24-27 OCT. Rapid Climate Change International Science Conference, Birmingham, UK
Contact: www.rapid.nerc.ac.uk/rapid2006

23-25 OCT. Data Workshop for Project "Asian Ozone Pollution in Eurasian Perspective"
Contact: info@apn-gcr.org

25-27 OCT. International Workshop on Coping with Agrometeorological Risks and Uncertainties: Challenges and Opportunities, New Delhi, India

30 OCT - 03 NOV. IGFA Meeting, Montreal, Canada
Contact: IGFA@usgcrp.gov

31 OCT – 3 NOV. Argo Data Management Meeting, Tianjin, China. Contact: <http://www.cadc.org.cn/argo-eng/meeting/ADMT-2006.htm>

NOVEMBER

6-8 NOV. Planning Workshop for ARCP Project: Climate and Crop Disease Risk Management: An International Initiative in the Asia-Pacific Region, Hyderabad, India

6-17 NOV. UNFCCC SBSTA 25 and COP/MOP2, Nairobi, Kenya

7-8 NOV. 2nd International Young Scientists' Global Change Conference, Beijing, China
Contact: Martin Rice mrice@essp.org,
Web: <http://www.essp.org/ESSP2006>; www.start.org

continued on page 14...

2006

- 13-17 NOV. Remote Sensing of the Marine Environment (AE13)-part of SPIE's 5th International Symposium on Asia-Pacific Remote Sensing, Goa, India.
Contact: <http://spie.org/conferences/calls/06/ae/>
- 14-16 NOV. SPICE/LOICZ/SEACORM Southeast Asia Coastal Governance and Management Forum: Science Meets Policy for Coastal Management and Capacity Building, Bali, Indonesia
Contact: <http://www.zmt-bremen.de/SPICE/sls>
- 14-25 NOV. Advanced Training Workshop on Southeast Asia Regional Carbon and Water Issues, Chung-Li & Kaohsiung, Taiwan
Contact: www.sarcs.org
- 17-18 NOV. Conference on the Human Dimensions of Global Environmental Change: Resources Policies-Effectiveness, Efficiency and Equity, Berlin, Germany
Contact: <http://web.fu-berlin.de/ffu/akumwelt/bc2006>
- 27 NOV – 1 DEC. International Conference – The Humboldt Current System: Climate, ocean dynamics, ecosystem processes and fisheries, Lima, Peru.
Contact: hcsconference@amauta.rcp.net.pe,
Web: <http://irdal.ird.fr/hcs-conference.imarpe.fao.ird.php3>
- 29-30 NOV. Group on Earth Observations: GEO III, Geneva, Switzerland
- 29 NOV. – 1 DEC. APN Project Workshop: Standardization and Systematization of Carbon-budget Observation in Asian Terrestrial Ecosystems based on AsiaFlux Framework**
Contact: Yoshikazu Ohtani, Email: ohtan03@ffpri.affrc.go.jp
- 6-9 DEC. IDGEC Synthesis Conference: Institutions for Sustainable Development**, Bali, Indonesia
- 11-15 DEC. AGU Fall meeting, San Francisco, USA
Contact - Web: <http://www.agu.org/meetings/fm06/>
- 18-22 DEC. Sub-Regional Workshop on removing barriers to LDC: Transferring tools and methodologies for managing vulnerability and adaptation to climate change**
Contact: Bhunjanggarao Dharmaji, Email: rao@iucnsl.org

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- 21-26 JAN. Arctic Frontiers Science Conference on Food web dynamics and biogeochemical fluxes in the Arctic Ocean, Tromso, Norway.
Contact: www.arctic-frontiers.com
- 23-27 JAN. International Dialogue on Science and Practice in Sustainable Development: Linking knowledge with action, Chiangmai, Thailand
Contact: www.sustdialogue.org
- 21-23 MAR. APN 12th Inter-Governmental Meeting and Scientific Planning Group Meeting**, Honolulu, USA
Contact: info@apn-gcr.org
- 27-28 MAR. Synthesis Workshop on Asian Ozone Pollution from Eurasian Perspective**, FRCGC
Yokohama, Japan
- 28 MAR. - 5 APR. Synthesis Workshop for APN Project: Capacity Building and Meeting Research Needs on the Ecology of Global Change in Island Landscapes of the Republic of Palau**
Contact: Harley Manner, E-mail: hmanner@uog9.uog.edu
- 18-20 APR. GW18 – Earth Summit for Global Warming Mitigation, Miami, USA
Contact: GW18@globalwarming.net
- 24-26 MAY Conference on the Human Dimensions of Global Environmental Change, Amsterdam, The Netherlands
Theme: Earth System Governance: Theories and Strategies for Sustainability
Contact: www.2007amsterdamconference.org

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