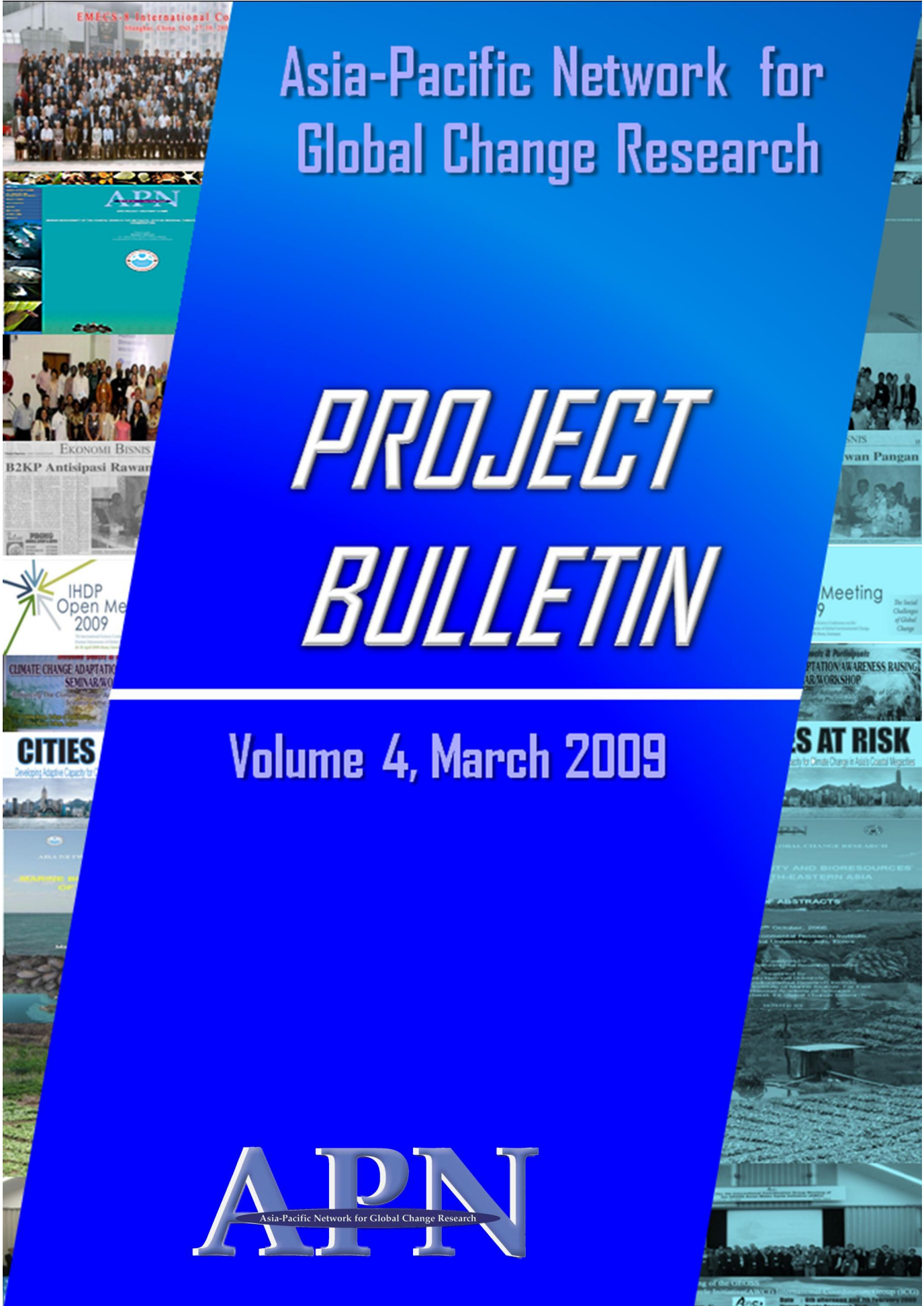
Asia-Pacific Network for Global Change Research
PROJECT BULLETIN
Volume 4, March 2009
APN
Asia-Pacific Network for Global Change Research

APN Project Bulletin
Volume 4, March 2009

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Preface

The Asia-Pacific Network for Global Change Research is an international network of member 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 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.

Changes in the Earth system are clearly impacting the societies and economies of the countries within the Asia-Pacific region. These countries support more than half of the world's population. Recent research and supporting observations have provided new insights into some of these changes and their impacts but have, at the same time, opened a number of new and challenging scientific issues. The APN seeks to identify such emerging issues and to promote and encourage regional cooperative research to address these. In doing so, the APN assures that the results of this research contribute to the development of a sound scientific base for decision- and policy-making related to issues for which global change is an important factor.

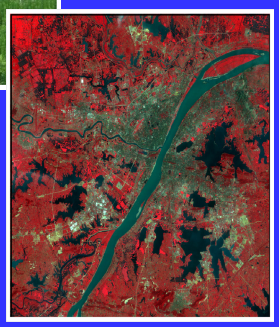
As part of its dissemination activities, the present publication outlines abstracts of currently-funded activities in the APN under its Annual Regional Call for Research Proposals (ARCP) and its Capacity Development Programme, CAPaBLE.

The APN supports and encourages the dissemination of the information contained in this publication and specifically notes that the potential results of the present research and capacity development activities can facilitate policy development relating to Global Change in the Asia-Pacific Region.

This publication is also available on the APN website
www.apn-gcr.org

Secretariat
Asia-Pacific Network for Global Change Research (APN)

Section One: Projects funded under the Annual Regional Call for Research Proposals (ARCP)



Left: Weather station installed at the host institute for the collection of weather data for modelling in ARCP2008-07CMY-Dutta (see Project Brief on page 12). Centre: One of the project sites for land surveying in ARCP2008-06CMY-Li (see Project Brief on page 11). Right: Wuhan 2006 Landsat TM image in ARCP2008-17NMY-Sellers (see Project Brief on page 22).

1.1 ARCP2008-01CMY-Ziegler

Project Title: Sediment Dynamics and Down-Stream Linkages in Tropical Streams as Affected by Projected Land-cover/Land-use and Climatic Change

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APN Funding: US$120,000 (For 3 Years)

Project Summary

The research being conducted is increasing the understanding of how water quality in headwater streams in montane mainland SE Asia will be affected by plausible changes in both climate and land-cover/land-use (LCLU). The goals of the project are two-fold: 1) investigate the issue during a field study in Thailand; and 2) develop the capacity to conduct similar projects in China, India, and Viet Nam. The Thailand field study is coordinating with an on-going NASA-funded investigation of the role of land-cover change in altering regional hydrological processes under a changing climate. Using the sediment dynamics and down-stream linkage data being determined in our field study, we are attempting to distinguish the degree to which various types of anthropogenic change will affect erosion, sediment delivery, and water quality. The project is generating new data regarding the potential effects of climate change. This information is important for developing sound mitigation strategies, as well as determining non-linear vulnerabilities of natural and human systems. Our efforts are including the transfer of knowledge generated in the study to officials who make policy related to sustainability in region.

Papers Submitted for Publication

- *Guardiola-Claramonte, M, PA Troch, AD Ziegler, TW Giambelluca, JB Vogler, MA Nullet. 2008. Local hydrologic effects of introducing non-native vegetation in a tropical catchment. Ecohydrology (in press).*
- *Wood, S.H., A.D. Ziegler. 2008. Floodplain sediment from recent 50-year-recurrence floods of the Ping River in northern Thailand. Hydrology and Earth Systems Science (in press).*
- *Fox, FM, JB Vogler, OL Sen, AD Ziegler, TW Giambelluca. Simulating land-cover change in Montane Mainland Southeast Asia. Global Change Biology (submitted).*
- *Sidle RC, AD Ziegler. Runoff and sediment transport on elephant paths: case study in northern Thailand. Journal of Environmental Quality (submitted).*

1.2 ARCP2008-02CMY-David

Project Title: Integrated Vulnerability Assessment of Coastal Areas in the Southeast Asia and East Asian Region

Project Leader

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APN Funding: US$80,000 (For 3 Years)

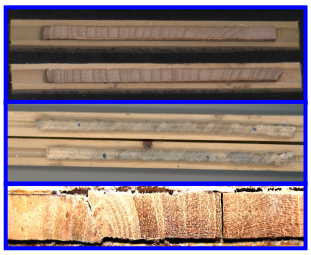
Project Summary

This project recognised that, despite the increasing amount of scientific research that has contributed to improving the general understanding of Global Environmental Change (GEC) and the potential impacts of such change on coastal areas, there are still considerable gaps in our knowledge with respect to how multiple bio-geographical and anthropogenic processes interact to create risk. We proposed to address this problem with a regional collaborative effort to focus on the risk potential in coastal areas in the Southeast Asian and East Asian region. The influence of the complex and dynamic social, economic and environmental factors found in this region on the vulnerability of coastal communities to GEC including natural hazards, as well as the ability of those affected to cope, recover and adapt to such changes and shocks need to be comprehensively assessed. Our goal is to achieve an integrated analysis of these processes, their effects on human communities, and their implications for management and governance of coastal systems and adaptation capacities. Our method of approach is to focus on training workshops, which will expose the regional participants to available tools for assessment (e.g. DINAS-COAST DIVA) and, at the same time, bring together secondary and primary data obtained by scientists from collaborating countries. Further refinement of tools to better suit the region will also be carried out as identified necessary by participants. The guiding principle of the entire endeavour is to effectively influence policy and decision makers in the selection of strategic and sustainable adaptive measures to reduce the future impact of GEC.

Pages from the publication: David, L.T. et al. 2008. Sea Level Rise Vulnerability of Southeast Asian Coasts. LOICZ IN PRINT, Issue 3, 2008.

1.3 ARCP2008-03CMY-Baguinon

Project Title: Collaborative Studies in Tropical Asian Dendrochronology: Addressing Challenges in Climatology and Forest Ecology



(Top) 2nd APN Project Meeting in UP Los Baños. (Above) Tree-ring samples of different species in Philippines, India and Sri Lanka collected during the field surveys.

Project Leader
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APN Funding: US$70,000 (For 2 Years)

Project Summary

The project has developed a dendrochronology laboratory in the University of the Philippines Los Baños (UPLB) to complement the existing laboratories in India and Thailand in providing new information about regional climate and environmental change. The same laboratory is planned to be set-up in Sri Lanka although has not been realised yet due to security reasons. These facilities were engaged in an intensive investigation of tree species in the Indomalayan sub-region, enhancing regional capability for paleo-climatological research. Furthermore, the project conducted an investigation and documentation of tree species with annual rings in per-humid and humid tropics to expand the existing network of tree species useful for climate and ecological studies and to publish a series of field guides of useful tree species from the respective regions. The data generated were presented during the 2nd APN Project Meeting, which was held from 5-9 December 2008 in UPLB. Mechanisms on publishing the collaborative dendrochronology research results in a journal and publication of a two-volume field guide on tropical trees with potential for dendrochronology were also discussed in the workshop. It is expected that the results from this project will provide a better understanding of the variability and dynamics of climate across the Asian tropics and monitor the response of tropical forest systems to changes in climate and ecology. This information will be provided to governmental agencies, along with suggestions for implementation toward improved risk assessment policies and improved disaster-readiness capabilities. In order to move forward, the project team is currently discussing to prepare a proposal to extend the research project for another two years.

1.4 ARCP2008-04CMY-Park

Project Title: Regional Collaborative Research on Climate Change Impacts on Surface Water Quality in Eastern Monsoon Asia: Towards Sound Management of Climate Risks

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APN Funding: US$80,000 (For 2 Years)

Project Summary
Freshwater resources in East Asia are vulnerable to climate change due to hydrological variability associated with the monsoon climate and increasing water demand from rapid economic growth. To obtain scientific information essential for assessing climate change impacts on surface water quality, the project uses a combined approach of academic meetings (Module 1), field studies (Module 2), and the development of risk assessment and management systems (Module 3). The first 'scoping' workshop was held in Chuncheon, Korea from 7-9 October 2007, with the primary aim to provide an overview of key issues related to climate change impacts on surface water quality in East Asia. At the 'synthesis' workshop held 18-20 February 2009 in Kota Kinabalu, Malaysia, data collected from our field monitoring and local sources were evaluated to assess 'climate risks' associated with changes in surface water quality as a function of changes in hydroclimate. Building on a regional pilot project on water quality monitoring in four countries in 2006, cross-site comparison of seasonal differences in surface water quality was conducted at nine watersheds in eight East Asian countries as a core activity of the first year research. In the second year, time-intensive water quality monitoring has been conducted at three focal sites in Korea, Lao PDR, and Malaysia to examine short-term water quality changes in response to rainfall variability and extremes. Scientific data collected from two workshops and field-monitoring work will be translated into practical information for the assessment and management of climate risks on surface water quality in East Asia.

Publication

- *Park, J.-H. Inam, E, Kim, K.-W. (Eds.) 2007. Proceedings of The 1st International Workshop on Climate Change Impacts on Surface Water Quality in East Asian Watersheds held October 8-9, 2007, Chuncheon, Korea. International Environmental Research Center.*

Publication Pending

- *Park, J.-H., Kim, B., Lei, D., Mitchell, M.J., and Shibata, H. Potential effects of climate variability and extremity on watershed biogeochemical processes and water quality – a synthesis for Northeast Asia. Biogeochemistry (in review).*

1.5 ARCP2008-05CMY-Adrianov

Project Title: Biodiversity of the Coastal Zones in the North West (NW) Pacific: Status, Regional Threats, Expected Changes and Conservation

Project Leader
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APN Funding: US$80,000 (For 2 Years)

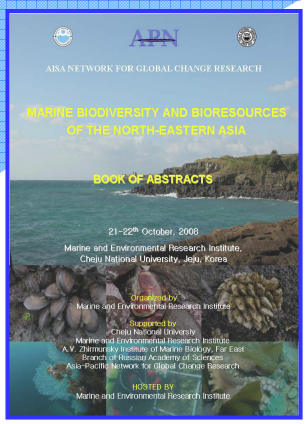
Project Summary
The project activities in 2007-2008 included fieldwork, preparation of literature synthesis reports and scientific papers, analysis of the state of marine biodiversity research in China and Russia and two workshops held in China and the Republic of Korea (ROK). Fieldwork in the northwestern part of the Sea of Japan (biofouling, intertidal and meiofauna communities, their composition and dynamics) and on Jeju Island in ROK (intertidal biodiversity) was conducted. Workshops with the participation of the Russian, Chinese and Korean scientists were held at the Institute of Oceanology, CAS, Qingdao, China (October 2007) and at Cheju National University, Jeju, ROK (October 2008), with two volumes of full-length papers published as outcomes of the workshops. A synthesis of data on biofouling communities and introduced fouling organisms in the northwestern Sea of Japan was compiled, and new data obtained on the introduction of animal species. A predictive model of possible future biodiversity changes was developed based on the Holocene biotic modifications of coastal communities in the Sea of Japan. Biodiversity of the intertidal zone of two large island ecosystems (Russky Island in the Sea of Japan and Kunashir Island, Kurile Islands) is described in detail as a basis for long-term biodiversity and environmental monitoring. Summary reports on the biodiversity of several key large invertebrate groups (molluscs, octocorals, nemerteans) in the northwestern Pacific were prepared as well as a review of the state of marine biodiversity studies in China.

Selected Publications

Eight peer-reviewed papers and two books have been published to date. Selected publications include:

K.A. Lutaenko (Ed.) 2008. Biodiversity of the Marginal Seas of the Northwestern Pacific Ocean: Proceedings of the Workshop, Institute of Oceanology CAS, Qingdao, China, November 21-23, 2007. Qingdao: IOCAS, 2007. 105 pp.

K.A. Lutaenko (Ed.) 2008. Marine Biodiversity and Bioresources of the North-Eastern Asia: Proceedings of the Workshop, Cheju National University, Jeju City, Korea, October 21-22, 2008.



1.6 ARCP2008-06CMY-Li

Project Title: Quantification of Land-Use Urbanization Level in Three Developing Asian Countries based on the Analysis of Scale Effects in Landscape Patterns

Project Leader

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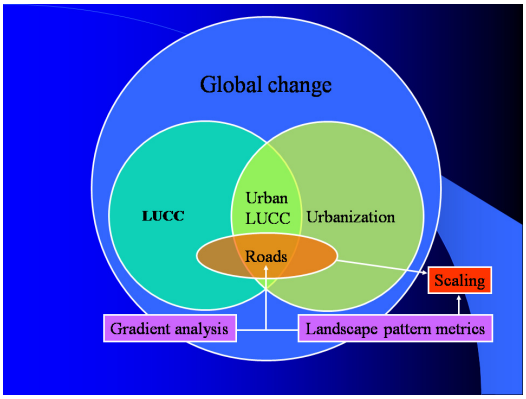
APN Funding: US$40,000 (For 2 years)



Framework of analysis connecting land use patterns with urbanisation processes and integrate natural and social sciences in land use and land cover change.

Project Summary

Initial results of the project showed that the desakota region of three cities has different characteristics and stages of urbanisation, in which Metro Manila was found in the highest stage of urbanisation and earliest stage of suburb urbanisation. Shanghai demonstrated a high degree of urbanisation and obvious suburb urbanisation and Hanoi had a lower level of urbanisation and unobvious suburb urbanisation. Urbanisation, as a major driving force of land use and land cover change (LUCC), is a significant cause of global change. The project quantified the level of urbanisation from the aspect of land use and connecting land use patterns with urbanisation processes to integrate natural and social sciences in LUCC activities. Other project outputs included training on advanced methods of remote sensing technology and GIS and urban landscape pattern analysis for five young scientists from China, Philippines and Viet Nam, which was conducted from 11-14 May 2008. An integrated technical report has been written and will be distributed to stakeholders and policy-makers.

Selected Publications

Eight peer-reviewed papers have been published to date. Selected publications include:

- *Huang, J.S., **Li, J.L.,** Hilario, F.D., Hoang, M.H., et al. Urbanization Study and Comparison of Three Asian Megacities: Shanghai, Metro Manila and Hanoi. International Journal of Sustainable Development & World Ecology, 15 (2009):484–495*
- *Huang, L., Li, J.L., et al. Scale Impacts of Land Cover and Vegetation Corridors on Urban Thermal Behavior in Nanjing, China. Theor .Appl. Climatol., 2008, 94(3-4):241-257.*

1.7 ARCP2008-07CMY-Dutta

Project Title: Perturbation and Coastal Zone Systems in the Asia-Pacific Region: Holistic Approaches and Tools for Vulnerability Assessment and Sustainable Management Strategy

Project Leader
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Participants at the Project Brainstorming Workshop held in Hanoi, Viet Nam on 16-17 June 2008.

APN Funding: US$80,000 (For 2 Years)

Project Summary

There is increasing concern that current management practices for coastal zone areas in most Asia-Pacific countries are not sustainable. The extent of these concerns is expected to be further exacerbated by adverse impacts from global climate change, including extreme climatic events and sea level rise. Sustainable coastal zone management strategies are imperative in order to avoid extreme social upheaval in both developing and developed countries in the Asia-Pacific region. Significant knowledge gaps prevent the development of such strategies, particularly for developing countries, where much of the population, significant infrastructure and large economic enterprises such as shrimp fisheries are concentrated in the coastal zones. Lives, livelihoods, infrastructure and the environment are at risk from flood events and information to facilitate effective planning is required. This project will result in a computer tool capable of predicting the impacts of flood events and water quality on coastal areas in various countries in the Asia-Pacific region. The model will be made available free of charge to researchers in Australia, Bangladesh, Japan, Sri Lanka, Thailand and Viet Nam. Researchers in these countries will then be able to assess risks and develop sustainable coastal zone management strategies. In addition, the project will provide a policy report detailing key issues and recommending specific action for each of the above countries in order to ensure sustainable management of coastal zone systems in the face of environmental impacts associated with climate change. Importantly, this will result in enhanced institutional capacity in the participating countries.

1.8 ARCP2008-08CMY-Chen

Project Title: Asian Mega-Deltas: Monsoon Circulation in Relation to Deltaic-Coastal Hazards and Future Mitigation: Millennial to Seasonal Dimensions

Project Leader
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APN Funding: US$58,000 (For 2 Years)

Selected photographs from the EMECS-8 and APN/IGCP delta conferences.

Project Summary

This project, currently in its second year, involves deltas of the Hanjiang River, Huanghe (Yellow), Changjiang (Yangtze), Zhujiang (Pearl), Song Hong (Red), Mekong, Chao Phraya, Ayeyarwady (Irrawaddy), Ganges- Brahmaputra (B-G), and Indus etc. Continuing effort is being made to the Asian monsoon climate change and environmental response on the targeted delta-coasts. The project leaders have maintained effective communication with project members of each representative region, in terms of the establishment of a new database, fieldwork updates, and the selection of criteria that will be applied to the climate hazardous assessment as an important part of the project objectives. Following the APN-IGCP-475 delta conference, held in Dhaka, Bangladesh from 6-13 January 2008, another significant combined delta conference in conjunction with the 8th EMECS International Conference was successfully held in Shanghai, China and Qingdao from 27 October-3 November 2008. The APN/IGCP delta conference included 2.5 days of thematic presentations and discussions, a 1-day field trip in the Yangtze delta, and a 2.5-day field trip in the Yellow River delta (both abandoned and modern delta). These were participated by 150 delta participants from 16 countries (approximately 60 participants were from overseas). The forum provided all participants with a unique opportunity, not only to demonstrate their project results, but also to test the criteria selected for the monsoonal environmental hazard assessment. The field trips to the Yangtze and Yellow river delta coast covering a distance of 2000 km rendered all a better understanding of the East Asia monsoon mechanism that significantly imposes on these two large-scale delta regions, causing tremendous environmental damage along the coast. Through the project implemented in 2008, there has been considerable progress achieved towards the project objectives.

1.9 ARCP2008-09CMY-Espaldon

Project Title: Assessing the Vulnerability of Communities and Understanding Policy Implications of Adaptation Responses to Flood-Related Landslides in Asia

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APN Funding: US$70,000 (For 2 Years)

Field visit to a landslide area.

Project Summary

The project aims to identify landslide prone areas in selected countries in Asia such as China, Nepal, Philippines and Viet Nam and assess their vulnerability to flood-related landslide events by developing an agent-based modelling framework that could be used as a tool for decision- and policy-making. As these countries represent parts of Asia (i.e. East, South, and Southeast) with different economic, political, social, and cultural settings, the project seeks to compare the adaptive behaviour of vulnerable people and adaptation decisions of policy-makers. The specific objectives are: 1) to characterise the demographic, socio-economic, climatic, biophysical and institutional aspects contributing to vulnerability; 2) to study the capacity of communities to deal with landslides and analyse the adaptation mechanisms after these events; 3) to evaluate existing policies and available measures to respond to the occurrence of such disasters; 4) to make recommendations to improve the capacity to cope with them; and 5) to train researchers on the practical use of complementary methods for vulnerability assessment.

Two paper presentations for the Southeast Asia Geography Association 2008 International Conference:

Assessment of Vulnerability of Communities and Understanding Policy Implications of Adaptation Responses to Flood-related Landslides in Infanta, Quezon

Differential Vulnerabilities in Social Adaptation of Communities in Infanta, Quezon

1.10 ARCP2008-10CMY-Sheikh

Project Title: Development and Application of Climate Extreme Indices and Indicators for Monitoring Trends in Climate Extremes and their Socio-Economic Impacts in South Asian Countries

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APN Funding: US$82,600 (For 2 Years)

Resource persons and participants at the APN Technical Meeting on Climate Extreme Indices for South Asia, held in Kathmandu, Nepal from 21-25 April, 2008.

Project Summary

In this project an expanded network of meteorological stations over South Asia, i.e. Bangladesh: Temperature (26), Precipitation (20); India: Temperature (121), Precipitation (146); Pakistan: Temperature (32), Precipitation (32); and Sri Lanka: Temperature (11), Precipitation (11) and the 27 Expert Team on Climate Change Detection and Monitoring Indices (ETCCDMI) core climate indices (compared to 19 earlier used) have been used by the participating countries. The participating countries, after having converted the time series data of key climate variables of temperature (maximum and minimum) and daily rainfall totals into high quality metadata by passing the data through homogeneity and quality control tests, have calculated the climate extreme indices for their respective countries. The country-wide results so obtained were then averaged for all of South Asia. Trend graphs, histograms and spatial pictures were prepared to see trends in climate extremes and study their behaviour over different parts of South Asia. A comprehensive report in this regard is being prepared. Five research studies: 1) Indices of temperature and rainfall extremes over South Asia; 2) Impact of altitude on extremes; 3) Extremes in climatic zones; 4) Impact of urbanisation on extremes; and 5) Relationship between extremes and synoptic and large-scale factors, as per the decision taken in the APN Meeting held in Kathmandu, Nepal from 21-25 April 2008; are in the process of being completed. The results will be presented and discussed at a meeting to be held later this year as a continuation of the present project.

1.11 ARCP2008-11CMY-Samarawickrema

Project Title: Developing an Integrated Framework for Science Policy Interactions towards Enhanced Management of Coastal Systems in South Asia

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APN Funding: US$100,000 (For 2 years)
(US$30,000 is expected for a further 1 year)

Project Summary

A significant proportion of the population and the economy of the South Asian region are based within the coastal zone. The sustainable management of the coastal zone requires an understanding of the pressures exerted by natural and anthropogenic drivers in the catchments, in the open ocean, and within the coastal zone itself; and how the natural and social systems respond to these pressures. The goal of the present project is to develop a framework that integrates natural and social science approaches to the assessment of coastal change and represents the social and economic impacts of changes in natural systems. This framework will be tested in seven case study sites in four countries and then used to assess science-policy interactions and to propose policy options for these sites. The project is being implemented by the South Asian Regional Node of the Land-Ocean Interactions in the Coastal Zone (LOICZ) project. The goals of the project are related to the LOICZ Science Plan and priority topics. The project involves natural and social scientists and managers from fourteen institutions in four countries. Additional funding will be obtained from LOICZ and other regional and national sources.

Papers Presented and Pending Publication

Wikramanayake, P.N. (2008) "Integrated Study of Natural and Social Systems for Improved Coastal Zone Management" 7th International Conference on Coastal and Port Engineering in Developing Countries (COPEDEC), Dubai, February, 2008.

Roy, J., Banerji, R., Bhattacharya, S. and Guha, I. "Estimating Cost Of Adaptation To Inundation Of Islands: Case Study From Indian Sundarbans" Abstract accepted for the 7th International Science Conference on the Human Aspects of Global Environmental Change (IHDP Open Meeting), April, 2009

Study site in Chittagong coast, Bangladesh

1.12 ARCP2008-12NSY-Webb

Project Title: Historical Reconstruction and Mapping of Pacific Island Coasts (PI-Coast Map)

Project Leader
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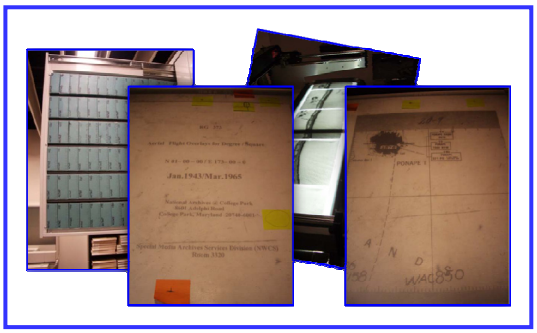
APN Funding: US$50,000 (For 1 Year)



Some of the records recovered from the Pacific Islands in US National Archives in Washington, D.C.

Project Summary
Projections of sea level rise from global climate change are major causes of concerns for Pacific island communities, particularly those on low-lying atolls with densely populated coastlines. While sea level estimates in the tropical Pacific indicate an upwards trend in many areas, the use of historical data to analyse land use patterns and shoreline change suggests that sea level is not necessarily the root cause of observed coastal inundations and beach erosion. To separate out the potential effects of global climate change from local effects and human interactions, time series information provided by historical air photos and satellite imagery is needed to reconstruct the evolution of coastlines and coastal developments on Pacific islands. Data based assessments of the likely causes of change in coastal environments are in turn essential to better inform national adaptation and mitigation strategies aimed at reducing the predicted effects of climate change. This project aims to support ongoing work by SOPAC in this area by sourcing and, where possible acquiring historical air photos and other information for reconstructing past coastal environments of Pacific islands. The project has three main components: 1) scoping sources of historical data for Pacific island coasts from national archives, libraries, research institutes, public bodies and private companies in a number of Pacific rim and Pacific island countries; 2) preparing a pilot data repository for historical images to increase accessibility; and (3) holding a regional workshop on the potential use of such data for improving our understanding of the underlying causes of change in coastal environments, and how the data can be used to assist the design of long term monitoring strategies for coastal processes.

1.13 ARCP2008-13NMY-Fukami

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

Project Leader

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APN Funding: US$42,000 (For 1 Year)
(Year 2 expected funding is US$42,000)

Participants at the 4th ICG meeting of the GEOSS/AWCI in Kyoto, Japan on 6-7 February 2008.

Project Summary

This project aims to enhance and utilise regional cooperation to achieve the following three targets with the use of the resources and knowledge available at various specialised institutions in the Asia Pacific Region under the framework of the Asian Water Cycle Initiative (AWCI) contributing to the Global Earth Observation System of Systems (GEOSS): 1) to convert observations and data, both through space borne platforms and data integration initiatives, to usable information for flood reduction; 2) to improve quantitative forecasts for coupled precipitation - flood-forecasting systems; and 3) to facilitate flood risk assessment through the provision of scenarios and data for exposure estimation. In the first year of the present project, a working group (WG) research session was conducted, as was a flood WG for the 4th Conference of the Asia-Pacific Association of Hydrology and Water Resources (APHW) and the 3rd International Coordination Group (ICG) Meeting of GEOSS-AWCI from 3-6 November 2008 in Beijing, China. The group members agreed to enhance demonstration projects for the above objectives and to undertake necessary capacity building workshops for their implementation. Further discussion was made at the 4th ICG Meeting from 6-7 February 2009 in Kyoto, Japan. Through these capacity building workshops, technical cooperation among member countries and the implementation of the demonstration projects, substantial progress is expected to be made.

1.14 ARCP2008-14NMY-Okladnikov

Project Title: Human Impact on Land-Cover Changes in the Heart of Asia

Project Leader
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APN Funding: US$40,000 (For 1 Year)
(Year 2 expected funding is US$18,000)

(Top) Fieldwork at the test sites in Siberia. (Above) Dr. Olga N. Krankina during the Initial Planning Meeting in ENVIROMIS-2008 International Conference, Tomsk, Russia.

Project Summary
Understanding human impact on land-cover and the capacity to monitor change over time is fundamental to sound research and informed decision-making to address global change and ensure sustainable development. While remote sensing technology is evolving rapidly and multiple land-cover products have been developed, the lack of reliable information on land-cover remains a major obstacle for developing sound land-use policies. There is significant disagreement among the available land-cover products, particularly in the proposed study region in the heart of Asia where validation sites are sparse, the impact of climate change is severe, and processes of land-cover change are widespread and strongly influenced by humans. There is significant concentration of disagreement in the distribution of tree cover immediately north of Tomsk and a major area of confusion between herbaceous cover and bare land south of Ulaanbaatar. The analysis of results and synthesis across the study region will focus on understanding the human impact on land-cover, assessment of the response of land-cover to changes in climate and land-use, evaluation of available coarse-resolution land-cover products, and development of summary of findings for regional decision-makers. The project will develop tools, methods, data, and collaborations needed to characterise future land-cover dynamics in the region and contribute to broader regional and global efforts to study land-cover and its change. After the completion of the project, these data will be made available on SCERT and NEESPI websites. The project will also contribute to the ongoing effort of GPFC-GOLD and START International to develop a regional network of collaborators involved in observations of land-cover and its change.

1.15 ARCP2008-15NMY-Nikitina

Project Title: Reducing Water Insecurity through Stakeholder Participation in River Basin Management in the Asia-Pacific

Project Leader
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APN Funding: US$45,000 (For 1 Year)
(Year 2 expected funding is US$40,000)

Project Summary

This project is a comparative and synthetic study with new data gathering and analysis of water-related risks and responses to reduce them. It deals with responses to risks that are associated with changes in both water quantity and quality: floods, water shortages, disruption in food production systems and in access to water of a good quality, and the growing vulnerability of urbanised areas. Combination of policies and measures to deal with water-related insecurities is a priority in river basin management. Success of the latter depends on a set of mitigation-adaptation efforts not only by the governments of the Asia-Pacific countries, but also by each of the stakeholders within a basin. The focus of the project is on the roles, opportunities and limitations of major stakeholder groups in river basin water management in five countries of the Asia-Pacific (Red and Mekong in Viet Nam, Amur and Ob in Russia, Salween in China, Ping-Chao Phraya in Thailand, Latrobe in Australia). Coordination of stakeholder actions and partnerships is regarded as a powerful tool in good water governance. It is also a precondition for effective policy processes, capacity building towards basin sustainable development, and transfer of "good practices" across river basins. Development in some instances is reducing vulnerabilities to some social groups, whereas in other instances is exacerbating the burden and risk from large-scale environmental change to the others. Research findings and results in generalisation of major stakeholder groups' responses to a variety of water insecurities across selected river basins and findings about their participation/partnerships are contrasted to those within the global context.

Selected Publications

Dutta, D., J. Alam, K. Umeda, M. Hayashi, S. Hironaka, 2007. A two dimensional hydrodynamic model for flood inundation simulation: a case study in the Lower Mekong River basin, Hydrological Processes, 21:1223-1237.

Bhattarai, R., D. Dutta, 2007. Estimation of Soil Erosion and Sediment Yield Using GIS at Catchment Scale, Water Resources Management Journal, 21:1635–1647.

L.Lebel, Bach T.S., Po Garden, Suong Seng, Le Anh Tuan, Duong Van Truc, 2008. Dykes and dams, drains and diversions: the promise of flood protection (in press, EarthScan).

1.16 ARCP2008-16NMY-Shrestha

Project Title: Impacts of Global Change on the Dynamics of Snow, Glaciers and Runoff over the Himalayan Mountains and their Consequences for Highland and Downstream Regions

Project Leader
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APN Funding: US$40,000 (For 1 Year)
(Year 2 expected funding is US$40,000

Project Initial Meeting in Lalipur, Nepal.

Project Summary

Melt-water from the extensive snow cover and glaciers in the Himalayas contributes in generating innumerable streams, which result in perennial river systems of the Himalayan region that are critical for the billions of people inhabiting the mountain slopes and valleys and plains in the south. Consistent with the notion that high-elevation mountain ranges experience greater warming effects, climate change is now most evident in the Himalayan ranges. It all leads to reduction in annual snow replenishment and increased de-glaciations in the region causing a temporary increase followed by reduction in Himalayan river flow. Due to the ruggedness of the Himalayan terrain and inaccessibility of its higher regions, there is a great paucity of adequate scientific data leading to uncertainty and knowledge gaps in understanding and projecting changes in the hydrology of the region in the context of global warming. This study is undertaking a hierarchical modelling approach towards understanding and projecting such changes in river flow as well as consequences to the livelihoods of people in the region. In this first year of the project, high-resolution regional climate models, together with energy budget models, are being validated and used for estimating and projecting snow and glacial melts in selected Himalayan river basins. Similarly, hydrological models are also being validated and used to assess impacts on availability and utilisation of water resources in the selected basins. All these will eventually be used to generate much needed information based on good science for better policies towards promoting adaptation and mitigation measures for sustainable development in the regions.

Publication Pending
An article on the Project is being submitted to Mountain Research Initiative (MRI) for publication in its forthcoming MRI digital newsletter.

1.17 ARCP2008-17NMY-Sellers

Project Title: Peri-Urban Development and Environmental Sustainability: Examples From India and China

Project Leader

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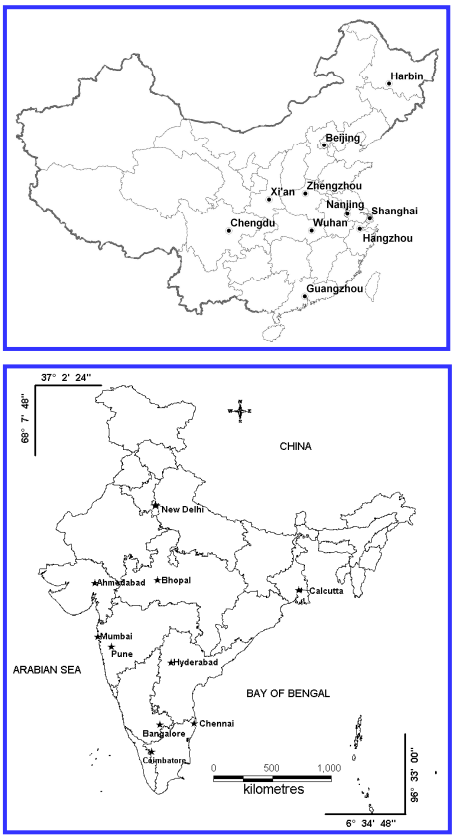
APN Funding: US$40,000 (For 1 Year)
(Year 2 expected funding is US$40,000)

Project Summary

Large-scale urban development is likely to be one of the primary sources of environmental change in Asia over the next decades, and more of this development will take place in India and China than in any other countries. Understanding the dynamics and the ecological consequences of urban expansion is critical to crafting policies and institutions to manage it properly. Comparative analysis of these processes within and between different countries is an indispensable prerequisite to such an understanding. This study has assembled remote sensing, demographic, environmental and other data over a period of 25-30 years for a systematic comparison of urbanising regions in China and India. Data on 20 selected Chinese and Indian cities is being compared to examine overall variations in urban development and in the consequences for environmental change. Detailed case studies in six paired urban regions of China and India will examine the dynamics more closely. Several types of analysis are being carried out or planned: 1) comparative mapping of peri-urban development; 2) explanation of the local, regional and national variations; 3) examination of effects from urban developmental pathways on environmental degradation; 4) fieldwork to provide ground-truth checks and aid data collection; and 5) modelling, presentation of policy implications, and local and international capacity building workshops.



(Top) Map of China showing the ten selected cities for macro case studies. (Above) Map of India showing ten cities selected for macro case studies.

1.18 ARCP2008-18NMY-Braimoh

Project Title: Managing Ecosystem Services in Asia: A Critical Review of Experiences in Montane Upper Tributary Watersheds (ECOSMAG)

Project Leader

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APN Funding: US$45,000 (For 1 Year)
(Year 2 expected funding is US$45,000)

Project Summary

Human well-being depends on the maintenance of ecosystem services. Upper tributary watersheds provide diverse services such as water provision, soil renewal for agriculture, mitigation of floods, groundwater recharge, soil erosion control, nutrient abatement and carbon sequestration. However, policy-makers have found it hard to find ways of incorporating the benefits derived from ecosystem services into decision-making. One reason is the difficulty of characterising ecosystem services in a manner that policy-makers can use. Another is the challenge of negotiating accountable systems of governance and compensation. Several promising but still insufficiently tested governance mechanisms are being explored, for example, payments for ecological services. All approaches need to consider costs and other disadvantages or risks of ecosystem services conservation to various user groups, and trade-offs intrinsic to ecosystem maintenance. This project addresses these pertinent issues by reviewing experiences across a wide range of projects, testing robustness against broad scenarios of future land change, and illustrating solutions and their limitations through three in-depth case studies in China, Indonesia and Thailand.

(Top) Clear-cut agricultural area in the Kahayan Watershed in Central Kalimantan, Indonesia. (Above) Irrigation at Mae Hae Fields, Thailand.

The project has been endorsed by the Scientific Steering Committee (SSC) of the Global Land Project (GLP).

1.19 ARCP2008-19NMY-Zou

Project Title: Temperature Sensitivity of Soil CO_2 Efflux as Altered by Rubber Tree Plantations in Southeast Asia

Project Leader
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APN Funding: US$40,000 (For 1 Year)
(Year 2 expected funding is US$30,000)

Project Summary

The temperature sensitivity (Q_{10}) of soil respiration is inadequate to describe soil carbon dynamics in response to global climate change. Biological reactions are controlled by both substrate availability and temperature. Global carbon models assume that temporal variations of substrate availability have negligible influence on temperature sensitivity. In China and the Southeast Asia, rapid economic growth has promoted high demands on the use of rubber, an essential natural material for a variety of industries such as the automobile sector. This rapid rise for rubber consumption is resulting in expansion of rubber tree plantations in the region. Large area of natural forest has been converted to rubber tree plantations, and this conversion can lead to severe ecological consequences such as altered carbon cycling. We designed the present study to test the hypothesis that tropical rubber tree plantations can alter the temperature sensitivity (Q_{10}) value of soil CO_2 efflux through changing patterns of annual plant litter production (more pronounced litter fall seasonality in rubber plantations than in natural forest). Results from this study may aid the development of smart land-use policies that guide and regulate land-use planning to promote sustainable economic growth in the region.

A training workshop on Temperature Sensitivity of Soil CO2 Efflux as Altered by Rubber Tree Plantations in Southeast Asia was held last 18-24 January 2009 in Xishuangbanna Tropical Botanical Garden.

1.20 ARCP2008-20NMY-Iqbal

Project Title: Assessment of Food and Water Security in South-Asia under Changing Climate Scenario Using Crop Simulation and Water Management Models, and Identification of Appropriate Strategies to Meet Future Demands

Project Leader
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APN Funding: US$40,000 (For 1 Year)
(Year 2 expected funding is US$30,000)

Participants at the Project Start-Up Workshop in Kathmandu Nepal on 10-12 August 2008.

Project Summary
South Asia is one of the most densely populated regions and host to one-fifth of the world's population. Population is increasing at a rapid rate calling for an increase in food production. The economies of South Asian countries are primarily agrarian and hence prone to vagaries of weather and changing climate. They also share common problems. Bangladesh, Nepal and Sri Lanka have rain-fed systems whereas Pakistan and India have predominantly irrigated systems. The productive resources of land and water in these countries are limited due to urbanisation, industrialisation, land degradation, global warming, etc. Climate change is the single factor, which is likely to exert direct and indirect impacts on water resources, the main driver of food production, and on food production itself. Concerns have been expressed as to whether there will be enough food for the growing population during the 21st century. For a nation to be food-secure, not only must its most productive regions continue to be productive, but also its potentially food-insecure areas should be made food-secure. This project aims to assess the food security situation of the region, under water availability scenarios, at different time slabs, and to identify appropriate adaptation strategies to manage the needed food.

Section Two:
Projects funded under the CAPaBLE Programme

Left: Statistical downscaling called CLIK (Climate Information Tool Kit) in CBA2008-03NSY-Ashok (see Project Brief on page 29). Right: Workshop Poster in CBA2008-09NSY-Peñalba (see Project Brief on page 35).

2.1 CBA2008-01CMY-Boer

Project Title: Increasing Adaptive Capacity of Farmers to Extreme Climate Events and Climate Variability through Enhancement of Policy-Science-Community Networking

Project Leader

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APN Funding: US$95,000 (For 3 Years)

Project Summary

The Indonesian CAPaBLE team consists of scientists from four national agencies, namely Bogor Agriculture University (IPB), National Agency for Meteorology and Geophysics (BMG HQ), Agency for Agriculture and Research Development (AARD) and the Directorate of Plant Protection-Ministry of Agriculture (Dit-PP-MoA). About 10 local scientists from five regions, namely Bandung, West Java; Makasar, South Sulawesi; Kupang, East Nusa Tenggara; Medan, North Sumatra; and Malang-East Java, were recruited. The project has evaluated Climate Field School (CFS) Modules required for assisting extension workers in capacitating farmers in managing climate risk. The Directorate of Plant Protection plans to use all modules developed by the APN CAPaBLE team in developing National CFS Modules. Identification and analysis of barriers for implementing the CFS programme has been done partly in a meeting with extension workers during a Training of Trainers workshop held by the Directorate of Plant Protection. Further analysis will be conducted through questionnaires and discussion with local agriculture staff and extension workers in April 2009. To enhance the understanding of local authorities on the importance of verification in climate forecast skills, the Indonesian APN CAPaBLE team presented their work in national and/or regional meetings or workshops. Some of the work has been submitted to the Indonesian Journal of Agriculture Meteorology for publication.


Timor Express – SABTU, 30 AGUSTUS 2008
EKONOMI BISNIS 15
B2KP Antisipasi Rawan Pangan

Project Leaderof the Indonesian APN CAPaBLE project interacts with a number of local government staff in Climate Forecast Workshop at Kupang, East Nusa Tenggara (NTT) last August 2008.

2.2 CBA2008-02CMY-Mathur

Project Title: Communicating Economic Implications of Climate Change Impacts and Adaptation Measures to Policy-Makers for Informed Decision-Making

Project Leader
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APN Funding: US$15,000 (For 1 Year)
(Year 2 expected funding is US$ 15,000)

Project Summary

This project seeks to demonstrate to local policy-makers ways to estimate climate change damage costs (both 'how much' and 'on whom') and deciding on the kind of investments to be made for different adaptation measures. This information has not been estimated at a district and sub-district level in India. Decision-makers are therefore in no position to make informed decisions on incorporating adaptation measures in resource management planning and minimise any negative climate change impacts. Once their interest and capacity is built on this aspect through this and other complementary projects, climate change adaptation will be mainstreamed in the developmental planning process. Besides policy-makers, the project will also build the capacity of development practitioners and scientists in Development Alternatives (DA), the prime NGO involved in designing and implementing the natural, resource-based sustainable livelihood projects in the Bundelkhand region. It is building the capacity of DA personnel to research field-related aspects of global climate change and incorporate relevant features while designing their interventions. This will lead to, among other things, improved decision-making processes, greater alignment with existing Government programmes, field-level inputs to processes such as the IPCC, and the enrichment of work of other bodies in the region, such as UNEP, via their Environmental Outlook publication. At the time of writing, and following a meeting in India with a member of the APN, the project has been granted an extension for completing Year 1 activities until July 2009.

2.3 CBA2008-03NSY-Ashok

Project Title: Training Course on Regional Downscaling for Asia-Pacific Region using APEC Climate Center Global Seasonal Climate Prediction

Project Leader

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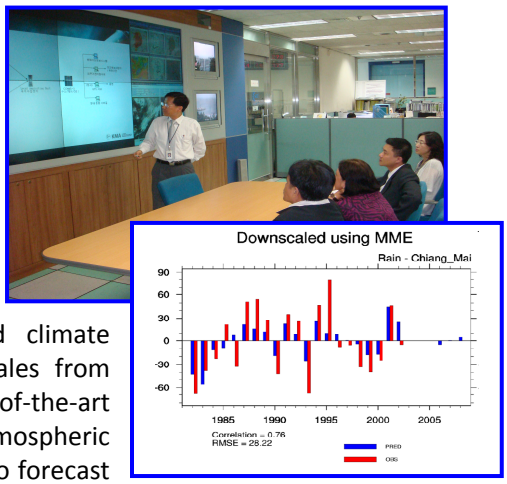
APN Funding: US$40,000 (For 1 Year)



Participants at the lectures on Regional Downscaling for Asia-Pacific Region using APEC Climate Center Global Seasonal Climate Prediction in Seoul, Korea.

Project Summary

Current Global Circulation Models (GCMs) have become the main tool of climate studies and climate prediction/projection on a wide range of timescales from months to decades and hundreds of year. State-of-the-art models successfully reproduce large scale atmospheric processes; however, the models are not adequate to forecast local climate conditions. To provide accurate information for regional applications, climate prediction products from GCMs have to be "downscaled". Most National Meteorological and Hydrological Services (NMHSs), particularly those of developing countries, do not have the expertise to do this. The training course was comprised of lectures on climate variability, its prediction and downscaling to local levels, and the relevance of climate prediction to climate change. The course provided comprehensive computer laboratory sessions involving exposure to the latest interactive climate information tools that were being developed by APCC. It also involved sharing of experience, identifying the important challenges in climate prediction and finding solutions. The training resulted in enhancement of capacity of participants from NMHSs from the Philippines, Thailand, Russia and Viet Nam in downscaling from global seasonal predictions based on existing APCC Multi-Model Ensemble (MME). For the NMHS' use, APCC provides access to its forecasts in digital data format via the internet. On the other hand, the Climate Information Tool Kit (CLIK) is being provided for the APN participants for experimental use in climate data processing and analysis to further enhance their capacity in downscaling climate scenarios. It is expected that they will continue to use this in their national climate prediction institutions.

2.4 CBA2008-04NSY-Nakashizuka

Project Title: Training in Science-Policy Interfacing to Promote the Application of Scientific Knowledge on Adaptation of Forests and Forest Management to Climate Change

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Participants of the training workshop held at the Swedish University of Agricultural Sciences, Umea, Sweden (SLU) from 22 to 24 August 2008.

APN Funding: US$35,000 (For 1 Year)

Project Summary

This project is a short-term training measure in science-policy interfacing to promote the application of scientific knowledge on adaptation of forests and forest management to climate change. More specifically, the training is aimed at strengthening the capacity of forest scientists in developing countries in the region on how to plan, conduct and organise research activities so that results can more quickly and easily be transformed into usable information for problem-solving and policy-making. Two scientific events were conducted: a three-day training workshop followed by a one-week scientific conference. The training workshop was held at the Swedish University of Agricultural Sciences, Umea, Sweden (SLU) from 22-24 August 2008. This was followed by the "International Conference on Adaptation of Forests and Forest Management to Changing Climate with Emphasis on Forest Health" jointly organised at the same venue by SLU, IUFRO and FAO. The workshop focussed on science-policy interfacing in the context of global climate change. Experts from the Swedish Forest Research Institute, the GCOE Program for Ecosystem Management Adapting to Global Change of Tohoku University (Japan), the Institute of Statistics and Mathematics (Japan), BSMR Agriculture University (Bangladesh), the Swedish University of Agricultural Sciences, and the Tropical Agriculture Research and Higher Education Centre (Costa Rica) contributed to the workshop by sharing their experience and research results. Four workshop sessions were organised: lecturing on international and national policy frameworks; introduction to best practices of science-policy interactions; group discussions on the evaluation of forest research projects, and wrap-up discussions with a panel of experts from international organizations and local university. Twenty-two scientists from 16 developing countries participated in the workshop and conference. Eight scientists from the Asia-Pacific region were sponsored through this CAPaBLE Project.

2.5 CBA2008-05NMY-Ailikun

Project Title: Capacity Building for Drought Monitoring and Studying in Monsoon Asia under the Framework of the Asian Water Cycle Initiative (AWCI)

Project Leader

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APN Funding: US$40,000 (For 1 Year)
(Year 2 expected funding is US$40,000)

Project Summary

Drought is a “creeping” hazard which develops slowly and has a prolonged existence. Drought produces a complex web of impacts, which spans many sectors of the economy, especially agriculture, energy production, transportation, tourism and recreation, forest and wild land fires, urban water supply, environment and human health. In recent decades, along with climate warming and economic development, some of the regions in Asia are facing serious problems of water security and sustainability. There is an urgent need to create greater development of a drought monitoring and assessment system. The release of satellite products provides a great opportunity for scientists to improve their techniques and knowledge in drought studies. Greater concern is also being expressed in drought issues, which is related to water - one of the nine “Societal Benefit Areas” under the 10-year GEOSS implementation plan - from the public and decision-makers as well. The present project aims to: 1) share and improve drought monitoring capabilities in various Asian countries such as Japan, China, Pakistan, Mongolia, Thailand, Nepal and Philippines; 2) set up a drought monitoring and research network in related Asian countries; and 3) help develop early warning systems of drought hazard in related countries.

2.6 CBA2008-06NSY-Fuchs/Lewis

Project Title: Cities At Risk: Developing Adaptive Capacity for Climate Change in Asia's Coastal Mega Cities

Project Leaders

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APN Funding: US$56,500 (For 1 Year)

Project Summary

Asia is undergoing unprecedented urban growth that will add substantially to the population residing in its coastal regions. Much of this rapid population and economic growth is occurring in large coastal cities at high risk from sea level rise and climate change. Asia's densely populated deltas and other low-lying coastal urban areas are among those described in the Intergovernmental Panel on Climate Change Fourth Assessment Report (IPCC AR4) as "key societal hotspots of coastal vulnerability" with many millions of people potentially affected. The potential for loss in the region has been amply demonstrated in the recent past by loss of life and property from flooding, particularly when high tides were combined with storm surges and high river flows. The risks posed by climate change to Asia's coastal population will persist, despite any greenhouse gas stabilization, in that future sea level rise and climate change are unavoidable given existing high atmospheric CO2 levels and projected growth in population and infrastructure.

The Cities at Risk workshop, held 26-28 February 2009 in Bangkok, Thailand, brought together scientists, urban planners and officials, and representatives of disaster management and development agencies to review scientific findings and projections regarding climate-related risks (e.g., sea level rise, extreme climate events, intensification of storms and storm surges) for Asia's coastal mega-cities. Participants examined potential vulnerabilities and current coping mechanisms that better integrate science information, planning, development, and disaster management. The workshop also considered means for improving networking and communication between urban planners/officials and the scientific community in order to enhance urban resilience and adaptive capacities.

2.7 CBA2008-07NSY-Schmidt

Project Title: Social Challenges of Global Change: The 7th International Science Congress on the Human Dimensions of Global Change (IHDP Open Meeting April 2009)

Project Leader

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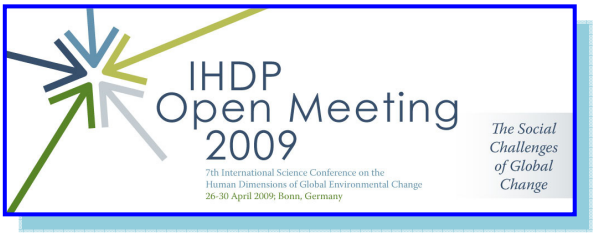

APN Funding: US$25,000 (For 1 Year)

Project Summary

The IHDP "Open Meetings" have established themselves as the major activity within the Human Dimensions of Global Environmental Change community to stimulate the exchange of information on research on a transnational and regional basis. In the past, as they are set to do again in 2009, they have been excellent vehicles to integrate researchers into to the community who have not been involved before. The Open Meetings are unique venues for meeting scholars from a wide range of disciplines who are working in areas of common substantive interest. The 7th Open Meeting aims to:

- strengthen the human dimensions research community; to foster regional collaboration;
- foster scientific exchange among researchers from developed and developing countries, with opportunities for transnational networks to facilitate problem-oriented, cross-disciplinary research relevant to global change;
- promote interdisciplinary approaches to Human Dimension research questions;
- build capacity through a mix of senior and junior scholars;
- link with social science communities in order to capture and include current issues within mainstream social sciences (including humanities and economics);
- link human dimensions research community in a more realistic and targeted way with policy makers;
- make the achievements of human dimensions research more visible, and increasing relevance to policy-makers; and
- look at the Open Meeting as being a component of a larger process to strengthen the human dimensions perspective on global change.

2.8 CBA2008-08NSY-Andonowati

Project Title: Integrating Indonesian Capacity for Coastal Zone Management

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APN Funding: US$35,000 (For 1 Year)

Project Summary
High waves that invaded the shoreline at the south coast of Java, and many days in which sea transportation in the Java seas was forbidden because of high waves, occurred in 2007. Being very exceptional up to now, these examples illustrate the bad weather conditions that are likely to become customary as an effect of global change and its impacts on coastal areas. The main objective of this project is to identify (and make publicly available) and integrate existing capacities in areas of Integrated Coastal Zone Management (CZM) in order to better cope with the growing impacts of global change. Currently, the capacities of human resources, existing knowledge, and infrastructures are scattered over several institutions with limited links between scientists and with little contact with policy-makers. The effects of global change with more extreme weather situations will have serious consequences for the coastal area; and a more integrated capacity will be better equipped to cope with the foreseeable problems. An inventory of specific capacities in various areas of CZM will become available through an open database website and links with policy-makers will be stimulated by involving them in the project execution.

Project Kick-off Meeting held in Bandung, Indonesia.

2.9 CBA2008-09NSY-Peñalba

Project Title: Enhancing Climate Change Adaptation Capacity of Local Government Units and Scientists in the Philippines

Project Leader

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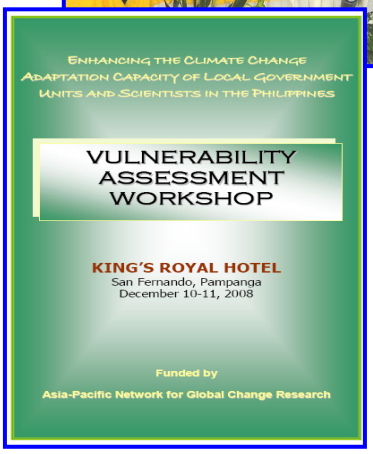
APN Funding: US$28,000 (For 1 Year)

Project Summary

This project was conceptualised in recognition of the important role that local government units (LGUs) play in disaster risk management including responding to the impacts of climate change and the potential of university-community alliance in science-based planning, policy-making and capacity building. The UPLB forged memoranda of agreement with the state college/university (SCU) and LGUs in the study sites. The parties, through the leadership of UPLB, agreed to participate in the Climate Change Awareness Raising Seminar and work together in the conduct of vulnerability assessment, preparation of the Indicative Climate Change Adaptation Plan (ICCAP), integration of ICCAP to the municipal development plan, implementation of identified climate change adaptation and response strategies, and dissemination of projects results to various sectors of the community including the academe. The ICCAP preparation, dissemination and publication of project results are among the project's forthcoming activities. The study covers four provinces and five high-risk municipalities in terms of climate change, namely: 1) Ilagan, Isabela; 2) Guagua, Pampanga; 3) Kawit, Cavite; 4) Rosario, Cavite; and 5) San Juan, Batangas.



(Above) Resource persons at the Climate Change Awareness Raising Seminar-Workshop in UPLB. (Left) Workshop program.

2.10 CBA2008-10NSY-Dye

Project Title: Regional Participation in the U.S.-Japan Workshop on Monsoon Asia Tropical Forest Carbon Dynamics and Sustainability

Project Leader

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APN Funding: US$12,000 (For 1 Year)

Participants at the pre-workshop field trip to the forest CO_2 flux tower site at the Sakaraet Experimental Research Station near Khao Yai National Park in Thailand.

Project Summary

The project provided travel grants to researchers in Southeast Asian countries (Thailand, Indonesia, Malaysia) that enabled their participation in the "USA-Japan Workshop on Monsoon Asia Tropical Forest Carbon Dynamics and Sustainability" held in Khon Kaen, Thailand from 8-11 January 2009. A total of fifty-seven (57) researchers and graduate students attended the Workshop, including 45 participants from Thailand, Indonesia, the United States, Japan, and Korea, and twelve (12) local observers (predominately graduate students) from Khon Kaen University. The project played a critical role in enhancing communication among the Southeast Asian, Japanese and American participants on the Workshop theme of carbon dynamics in tropical forests and its relation to local human activities. Such enhanced communication was realized through presentations and group discussions in multiple plenary and break-out sessions, and through informal discussions during coffee breaks and meals. The APN-sponsored participants were actively engaged throughout the Workshop and their involvement was integral to the Workshop's overall success. The Workshop concluded with a consensus on recommended research priorities and plans to develop and propose one or more new, bilateral or multilateral collaborations that will engage the community of Southeast Asian researchers and students represented at the Workshop on a set of priority issues. These issues will address both natural and anthropogenic dimensions of tropical forest carbon dynamics in the Monsoon Asia Region. A Workshop report will be prepared and submitted for publication in one or more international scientific newsletters in February 2009 to apprise the broader research community of the Workshop and the specific recommendations and plans that emerged from it.

2.11 CBA2008-11NSY-Bai/Rechkemmer

Project Title: 6th Biennial International Human Dimensions Workshop (IHDW) on Global Change Research

Project Leader

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APN Funding: US$40,000

Participants at the 6th International Human Dimensions Workshop (IHDW) in New Delhi, India.

Project Summary

The IHDW, now in its sixth round, has become a very well recognised international event. Seventy-two scholars chosen out of over 140 applicants were invited to participate in the International Human Dimensions Workshop (IHDW) in New Delhi from 11-16 October 2008. Aimed at training the future generations of human dimensions researchers, the IHDW is a capacity development activity that takes place very two years and is planned and carried out by the IHDP. The training workshops offered a unique opportunity for the promotion of young and mid-career scientists from all regions of the world, particularly those from developing countries and emerging economies. The seminars were well attended with participants from 32 different countries taking part in five training seminars covering topics that have been identified as some of the most prominent research areas in the human dimensions of global environmental change: Urban Health, Sustainability through Systems Innovation, Sustainable Adaptation to Climate Change, Ecosystems Services, and Adaptive Water Management. During the workshops, participants were able to learn from well-known researchers and interact intensively with the other participants. The success of the workshop is undeniable. Through discussions, group-work, case studies, collective meetings, presentations, and interaction, the participants went home prepared to engage in global change research as individuals, as well as to spread their knowledge in order to support and grow the scientific communities in their home countries.

2.12 CBA2008-12NMY-Ishida

Project Title: The Global Earth Observation System of Systems Asian Water Cycle Initiative Observation Convergence and Data Integration (GEOSS/AWCI/OCDI) for Water Cycle Research and Water Resources Management under Climate Change in Asia

Project Leader
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APN Funding: US$75,000 (For 2 Years)

Project Summary

The present project follows up on the data focus of the IIWaDATA project (ARCP2007-02CMY) and is contributing to the development of a sustainable scheme for water cycle data collecting, sharing, exchanging, and management at the regional level in Asia in cooperation with national governments, institutes and research communities and also international organisations. Through a series of meetings, the IIWaDATA project established a mutual consensus among the participating countries and international organizations that defines data sharing and exchanging policy and responsibilities for data processing, management and archiving. This strong cooperative framework has evolved into a large regional initiative recognized by the Group on Earth Observations (GEO) as a GEOSS activity. The first year of the project has been successful in transferring from the planning to the implementation stages. Since early 2008, meta-data collection, data archiving and data quality checks have been in progress for the 18 demonstration river basins. Training modules development and integration for the demonstration projects are currently being implemented. Applications of newly developed distributed hydrological models to the four demonstration river basins have shown significant advantage of such modeling techniques for water resource management and disaster risk reduction. These GEOSS/AWCI/OCDI project activities are significantly contributing to the AWCI demonstration projects and Capacity Building implementation, which are detailed further on the AWCI website http://monsoon.t.u-tokyo.ac.jp/AWCI/.

2.13 CBA2008-13NSG-Li

Project Title: Inter-Agency Collaborative Technologies in Earth Observations (EO) for Global Change Research in the Asia-Pacific Region

Project Leader

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APN Funding: US$10,000 (For 1 Year)

Project Summary

One of the most difficult problems APN scientists are facing now is the lack of Earth Observations (EO) data and data usage experience for Global Change Research (GCR). The next generation of EO data and information infrastructure is focussing on multi-agency collaboration technologies. This provides users with a new way to both utilise and organize their global change studies. The target of the proposed project is to bring the experience and knowledge from the Working Group of Information Service and Systems in the Committee of Earth Observation Satellites (CEOS/WGISS) to GCR scientists in the APN region, to discuss how to access and use the next generation EO information technology, and to find appropriate approaches to develop their global change models based on this new EO capability and support. Finally, the most important target of this proposed activity is working with other international leading organisations to ensure broad participation and align common goals in EOs. We have engaged strong support and collaboration with the United Nations Global Alliance for ICT and Development (UNGAID), ICSU's Committee on Data for Science and Technology (ICSU/CODATA), as well as GEO to support capabilities for the Global Earth Observation System of Systems (GEOSS) actions and data sharing principles. The outcomes will be enhanced capacity of GCR in utilising EO data as well as the establishment of an Asia-Pacific Global Change infrastructure for EO data (Global Change Asia-Pacific Wide Grid; GC-APWG).

Project Scoping Meeting in Bangkok, Thailand.

2.14 CRP2008-01CMY-Dixit

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

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APN Funding: US$ 180,000 (For 3 Years)

Project Summary

Floods and droughts are recurrent phenomena on the Ganga Basin, which affect food security and other means of livelihood. There is growing concern among national policy-makers in the IGP that Global Environmental Change (GEC) will seriously affect the production and equitable provision of food in the region and undermine efforts aimed at socio-economic development. Principal concerns are related to policy formulation in response to changes in the availability, quality and distribution of surface and ground waters and changes in climate variability and mean values. The improved management of water resources is a central aspect to policy goals, especially in the context of GEC. The project is addressing the question of how will GEC affect water availability and, what will the consequences of these changes be for food systems in five case study sites across the IGP. A collaborative network of five research institutes in four member countries spanning the IGP has been carrying out the project. In the Decision Support System (DSS) meeting in January–February 2008, gaps between study outcomes and decision-making processes were identified, which helped further explore and consolidate the issues before completing reports at each study site. The exercise was particularly helpful for a study carried out by ISET for IDRC/DFID in analysing the cost benefit of disaster risk reduction in the IGP region. The insights of the study also helped formulate a research project under the fellowship of AusAID, which will be conducted by key investigators of the food system research funded by APN in IGP. A DSS meeting was held in New Delhi from 3-4 February 2009 just prior to GECAF's policy briefing, which followed the DSS meeting from 5-7 February 2009. The DSS meeting in Delhi was a follow-up to the earlier DSS meeting held in Kathmandu from 30 January-1 February 2008. Food system research has continued and further insights have been generated to discuss decision support (DS). Participants from Nepal, India, Pakistan and Bangladesh as well as from GECAFS participated in the Delhi meeting.

2.15 CBA2008-02CMY-Yan

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

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APN Funding: US$180,000 (For 3 Years)

(Top) Participants at the Second Project Workshop in Vladivostok. (Above) Participatory workshop for the Mongolia Case Study.

Project Summary

The third year of the project focussed on the refinement and integration of the food and water security assessment integrated model, and the case study in Mongolia. The Food And Water Security Assessment Integrated Model (FAWSIM) was developed as a result. During 6-13 September 2008, the APN project leader and collaborators aligned with the Advancing the Capacity to Support Climate Change Adaptation (ACCCA) project in Mongolia and carried out a field survey in the area of Hujirt Sum and Sant Sum, Hustain – the national park buffer zone of Mongolia – to further assess food and water security issues in relation to climate change. The Zud assessment model was developed as a result and built into the FAWSIM system. "Herders and National Participatory Workshops" were held during November and December. The second workshop of the project was held at the World Wildlife Fund (WWF) Far East Branch and the Pacific Geographic Institute, Russian Academy of Sciences, from 12-14 October 2008. The main objectives of this workshop were to conclude the project progress of past years, plan for activities for the coming year, and pursue broader collaboration among the institutes. Fifteen scientists from China, Russia, Mongolia and New Zealand attended this workshop. The major collaborators reported their research progresses concerning food and water security assessment in the context of climate change.

2.16 CBA2008-03CMY-Jintrawet

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

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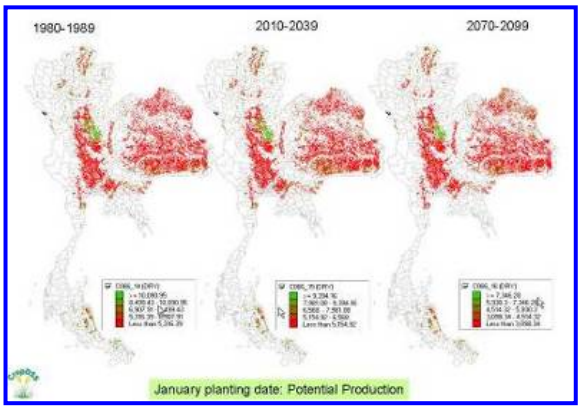
APN Funding: US$180,000 (For 3 Years)



Preliminary result of crop simulation shows reduction in future potential yield of rice production in Thailand (August planting date).

Project Summary

This three-year research project aims to enhance knowledge and research capacity of scientists in Southeast Asia (SEA) on climate change, impacts, vulnerability and adaptation. Scientists in Thailand, Viet Nam, Lao PDR and Malaysia are engaged in the research process to investigate long-term climate change and its potential impacts on crop production and water resources in the region, and the vulnerability and adaptation of the studied systems. The study on climate change is based on the projection of high-resolution future climate for the region using climate models to dynamically downscale datasets from GCM. The analysis on impacts of climate change on rice production will cover field experiments to observe rice productivity under different crop management in different seasons. Crop models will be used to estimate future yield of rice cultivation under future climate projection, with data gathered from field experiments taken into consideration in the model calibration processes. This research project also covers the study of climate change impacts on water resources by analysing change in risk profiles of specific sectors from hydrological regime change under different climate scenarios. Finally, this research project also aims to assess vulnerability and adaptation to the impacts of climate change on agriculture and water resource sectors. Major research components of this project are: 1) to generate multiple high resolution long-term regional climate change scenarios; 2) to study climate change impacts on soil fertility and rice productivity in SEA; 3) to study the impacts of climate change on hydrological regime in watershed(s) in SEA; and 4) to assess vulnerability and adaptation of watersheds and agriculture in selected sites in SEA.

UPDATED PROJECT LEADER CONTACT INFORMATION

Should the contact information of any of the Project Leaders listed in this publication have changed, please kindly fill out the form below and return it by fax or email to:

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Qualifications/Specialty	
Specific areas of interest relating to Global Environmental Change	
Name of Organisation	*Designation/Position*
Type of Organisation: ☐ Government Agencies ☐ Educational Institutions ☐ NGOs/NPOs ☐ Private Foundations ☐ Professional Societies ☐ Others	
Business Address	*Postal Code* *Country* (in CAPS)
Telephone	*Facsimile*
Email	*Website*

This form may also be downloaded from this link:
http://www.apn-gcr.org/en/downloads/blankform_apndirectory.pdf

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