

# asian disaster management

a newsletter of and for the community of disaster risk management practitioners and development workers

# news

July-September 2005



**CLIMATE RISK  
MANAGEMENT**

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## Editor's corner

Dear Readers,

This issue of the newsletter centers around Climate Risk Management (CRM). Weather and climate related risks are humanitarian, environmental and development issues today, affecting the economy and livelihoods of large populations. With better understanding of weather and climate, a more integrated CRM is being developed. The ADPC emphasis is on end-to-end system that establishes top-down and bottom-up roles and relationships. CRM, which is of great relevance to Asia is making progressive inroads from a more conceptual view to practical and useful approach at the grass root level. Major breakthroughs have been institutional development for generating, translating, and communicating climate information to end-users in the region and the ability to provide localized forecast information to meet specific needs. However, challenges like capacity building of intermediary institutions to make use of probabilistic forecast information for decision making remain. There is also a need for meteorological agencies to implement the latest advancement in prediction techniques and to generate more user-friendly data.

We take this opportunity to thank Ms. Ambika Varma who has been associated with the ADPC Newsletter since 2000, for her dedication to quality and commitment. Ambika is on her way to pursue higher studies. We wish her all the best in her future endeavours.

We thank the CRM team in ADPC under the able leadership of Mr. A.R. Subbiah and all other contributors to this issue of the Newsletter.

Earl Kessler  
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## ADPC welcomes the AIT President

Professor Said Irandoust, the new President of Asian Institute of Technology, Bangkok visited the ADPC office in July. He was briefed on ADPC activities and the various collaborations between the two organizations since ADPC's inception in 1986. A promising future is envisaged with partnerships in a number of areas and participation in common activities like training and project development.

*The AIT President with Dr. Suvit Yodmani, Executive Director of ADPC, Dr. Pennung Warnitchai, AIT and Mr. A.R. Subbiah, ADPC.*



## Sri Lanka's Deputy Speaker of Parliament's visit >

H.E. Mr. Gitanjana Gunawardena, Sri Lanka's Deputy Speaker of Parliament visited the ADPC office in August to get a broader overview of disaster management initiatives in the Region and an insight into the proposed Regional Early Warning Center. Accompanied in the picture with Dr. Suvit Yodmani, Executive Director of ADPC, is H.E. Mr. J.D.A. Wijewardena, Ambassador of Democratic Republic of Sri Lanka and other senior officials of ADPC.



About 80% of natural hazards in Asia are climate-related. Advances in the understanding of the climate system and increased ability in monitoring and forecasting weather events in the last decade have enhanced early warning systems, contributing immensely to the reduction of fatalities due to cyclones and floods, despite the increase of these events in recent years. In spite of these gains, the number of people who die from hydrometeorological hazards is still considerable and is a major cause for concern.

Climate-related shocks also severely impact household economies, particularly those which are constantly exposed to recurrent hazards, such as the successive passage of typhoons, or the incidence of drought and flood in the same year. In the Philippines, the 1997-98 El Niño, followed by a strong La Niña, resulted to rice production loss in 1998 that is more than 3 times the 1990-1997 accumulated losses (ADPC, 2000). The impact on poverty incidence, depth and severity was 47-57%, much more than the 10-17% attributed to the 1997 financial crisis (World Bank, 2000). Impacts last much longer in households with limited coping capacities, further increasing their vulnerabilities. Climate change compounds the risks, altering the frequency, severity and complexity of climate-related hazards.

The Climate Risk Management (CRM) program at ADPC aims at strengthening community resilience to climate risks by enhancing institutional capacities to manage risks at all time scales. The program began in 1998 through the Extreme Climate Events program, developed in response to the severe impacts of the 1997-98 El Niño in Indonesia, the Philippines, and Vietnam, with support from USAID's Office of Foreign Disaster Assistance (USAID/OFDA). The program has since expanded to Bangladesh and India. The challenge is the development of downscaled, need-based, understandable, and usable climate information products and tools for local application to mitigate the impacts of climate-related hazards and enhance community resilience. CRM takes advantage of recent advances in climate prediction, coupled with pro-active disaster management approaches where risks are addressed before a situation develops into a crisis, in meeting this challenge.

The first two years of the program documented time series extreme climate events forecasts and their impacts, institutional responses and policy frameworks. This resulted to an enhanced understanding of the El Niño and La Niña phenomena and their impacts in the countries, identification of areas that are consistently affected by El Niño- and La Niña-induced variability, and increased linkages among government agencies and partners at the national level.

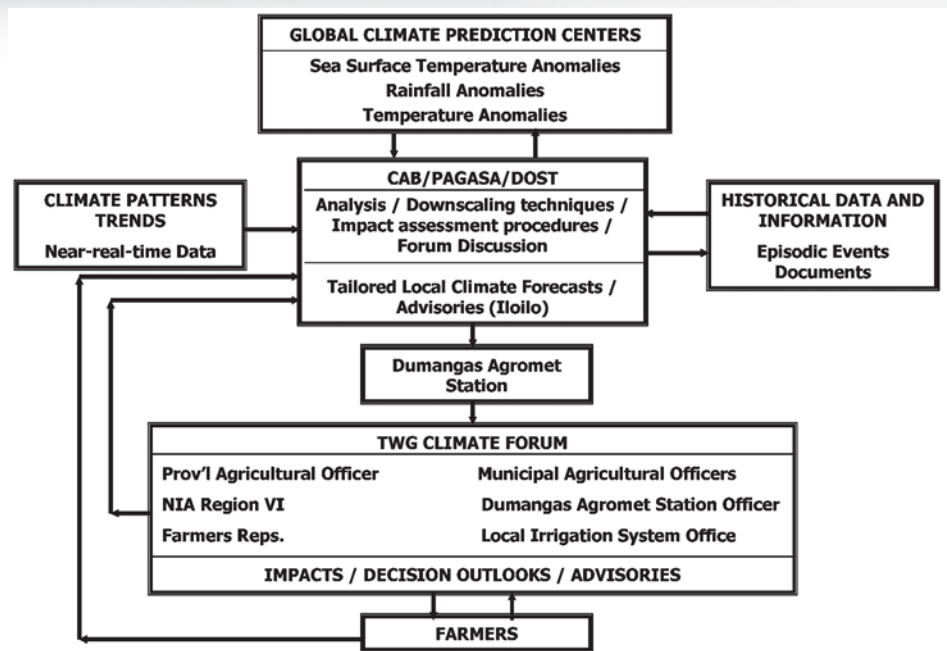
The following years focused on the generation of tailor-made climate information products and tools, translation of climate information into potential impacts, preparation of response options, and communication for local application in provinces, where understanding of climate impacts and forecast skills are good. Feedback about the delivery and usefulness of the information completes this end-to-end climate information generation and application system. The climate forecast application (CFA) program in Indonesia and the Philippines is supported by USAID/OFDA until 2008; and in Vietnam by US National Oceanic and Atmospheric Administration (US NOAA). The program is soon to start in India, with support from the Government of India. The program in Bangladesh, initially under USAID support, is now taken forward by the Government of Bangladesh. Several initiatives, supported by the UN Food and Agriculture Organization (FAO), are also underway in Bangladesh, particularly on local adaptation to climate change and the integration of disaster risk concerns in the agriculture sector.

Multi-disciplinary institutional mechanisms were set-up at national, sub-national, and community levels for the generation, translation, communication, and application of climate forecast information at various time scales (Figure 1). Participation of national meteorological and hydrological services, intermediary user agencies, local government units, and end users in implementing the program ensures integration of the system into their policy making and practice and makes the program sustainable. Sites for local application were identified; climate-related problems assessed; landscape of institutions involved in local decision-making (e.g. delaying planting to avoid flood) surveyed; and the need for, type and timing of delivery of climate information products and tools were established. Capacities of national meteorological agencies

Theme



to generate localized climate information products are currently being enhanced in collaboration with the International Research Institute for Climate Prediction, and intermediary agencies, such as agriculture and water resources departments, are being trained in the interpretation of the information, translation into potential impacts, and communication of responses to end users.



*Figure 1. Institutional mechanism and information flow for the generation, translation, communication and application of climate forecast information, Philippines*

The program has developed methods in communicating probabilistic climate forecast information in addition to intermediary translation. The User Metric is a tool developed to aid the interpretation of probabilistic forecasts and assess the cost/ benefit of a particular strategy that a user may undertake if an event were to occur, thereby assisting the user in making optimal decision. The metric incorporates impact information with probabilistic forecasts to provide user friendly graphical data for risk analysis (as explained in Box 1).

**Box 1: The User Metric: An Aggregated Risk Analysis Tool for End Users**

Sub-seasonal rainfall forecast probabilities suggest that rainfall will increase dramatically, with 50% chances of having moderate rain, 30% heavy rain, 15% light rain, and 5% no rain. An aggregate risk analysis yields the following results:

- Harvesting now would give 80% of the potential crop yield (noting that the crop is not yet fully mature)
- Harvesting 50% of the crop area now, and the other 50% later (i.e. putting half of the crop area at risk), would give 60% crop yield if the rains do come
- Wait for 2 weeks for the crop to mature and get 45% crop yield if the rains do come, and 100% crop yield if the rains don't come.

The farmer, thus, can make an optimal decision, with the knowledge of the risk involved in each option.

Continuous engagement of providers of climate information and users through climate field schools facilitated by intermediary translators, such as the agriculture extension, proved to be an effective way to communicate climate information and enhanced end users' knowledge of climate issues, at the same time enhanced climate information providers' understanding of the perceptions

and needs of end users and incorporate end user experience and wisdom. In Indonesia, the climate field schools provide a venue for dialogue not only for farmers, but also for local journalists who are instrumental in communicating climate-related information to a much wider audience.

Application experience during the 2002-2003 and 2004-2005 El Niño demonstrated the economic benefit of climate forecast information. Anticipating much reduced rainfall during the second cropping (October-January), farmers in Iloilo province (Philippines) changed crop from rice to corn, watermelon, or cash crops. What could have been a loss in investment had they planted rice, was turned into production gain valued at US\$6 million in 2003 and over US\$20 million in 2005.

Local governments, seeing the usefulness of climate information in reducing communities' risks to climate variability, have integrated climate forecast application as a priority activity of their development plans. In Dumangas, Iloilo, a municipal ordinance provides municipal funds to support climate forecast application on a continuous basis, and the municipal government has contributed to the effort of providing localized climate information with the establishment of a local agrometeorological station, in partnership with PAGASA, the national meteorological and hydrological service. In Indramayu, West Java (Indonesia), the district has owned and drives the CFA program, and BMG has provided counterpart funding to support the program in Indramayu. These are indications of the program's success in these countries.

Efforts are now underway to replicate the program in other locations within the country. Government of Indonesia has replicated the climate field school in other locations. PAGASA, in partnership with the provincial and municipal agricultural offices in Iloilo province and the Municipality of Dumangas, is holding a climate application workshop for municipal agricultural officers in the province on 25 October 2005. FAO has also expressed interest to support a similar program in other locations in the Philippines, with provision of market information in addition to climate information, supported by appropriate financial instruments, to address climate, market and financial risks faced by subsistence farming households.

*Lolita Bildan, Project Manager, Climate Risk Management, ADPC (lolita@adpc.net)*

### *Application of Climate & Flood Forecasts for Disaster Preparedness and Mitigation in the Agriculture Sector in Bangladesh*

The impacts of climate variability and related hazards in Bangladesh agriculture are often very devastating. Locally usable climate and flood forecasts at various time scales would be of great value to farmers, extension officers and planners. Enhancing early warning systems through the application of climate and flood forecast information is required to Strengthen Disaster Preparedness (SSDP) in Agriculture sector.

With support from the Food and Agricultural Organization (FAO) of the United Nations, ADPC carried out a capacity building activity entitled "Enhancing early warning systems through the application of climate and flood forecast information for disaster preparedness and mitigation in the agriculture sector in Bangladesh" for the Department of Agricultural Extension (DAE) officers at flood prone Gaibandha and drought prone Dinajpur districts. A training curriculum was designed. Ways and means to interpret, translate and apply probabilistic forecast information was discussed. A need based training manual was prepared, pre-tested and evaluated. Sample forecast application tools like agro-advisories, hazard calendars, climate and flood forecast plan matrix for agriculture and allied sectors were developed.



*Participants from the block level training at Birampur, Bangladesh*



*Implementation of Climate Field School at Indramayu*

## *Climate Field School for farmers*

Climate forecast technology has undergone substantial improvement during the last 15 years. One of the effective ways to cope with extreme climate events is to tailor cropping management to the forecast. However, the level of farmers' awareness about seasonal climate forecast and using it in tailoring their crop management strategies is still low. From Indonesian experience, it is found that the use of farmer field school approach in increasing understanding and capacity

of farmers to adopt and to use new technology is effective. Therefore, climate field schools (CFS) were introduced in Indonesia. The program was introduced in Indramayu by Bogor Agricultural University in collaboration with the Directorate of Plant Protection, Department of Agriculture, and the Indonesia National Agency for Meteorology and Geophysics (BMG) and ADPC.

In CFS, farmers were introduced to basic knowledge of climate forecast and its usage in designing crop management strategy. Materials for the field schools were mostly developed from farmers' experiences. This is intended to familiarize the participants to the process of learning by practice. Thus, CFS is a continuous process with discussions, sharing and analyzing experiences, making conclusion, and taking action (implementing) and then acquire renewed experiences from the actions taken (Figure 1). All the processes are facilitated by field facilitators, such as extension workers and farmer leaders.

The development of modules require good understanding on climate information application, and good knowledge of the agriculture system and climate-related problems in the site. This will enable module developers to provide example of simulations in the modules that are relevant to the site condition or farmers' problems. Thus, development of the modules may require intensive discussions between module developers, field facilitators 1 and local authorities.

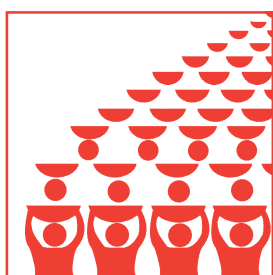
A series of modules should be developed in such way that the final objective of the CFS could be achieved. The final objectives of the CFS is to form farmer groups that have strong motivation to develop their own agribusiness activities where climate information is used as inputs for making plans, strategies and taking decisions.



*Figure 1. Process of Climate Field School (Adopted from Departemen Pertanian, 1998)*

Based on the evaluation, it was acknowledged that the CFS was effective in improving farmers understanding on climate information applications. Most of the participants agreed that their knowledge on climate has increased. Among criteria being assessed, about 70% of the participants considered that their knowledge and understanding on weather/climate, the ability to use climate forecast information to support their farming activities, and their awareness on the importance of working in a group have increased significantly.

*Dr. Rizaldi Boer, Department of Geophysics and Meteorology, Bogor Agricultural University, Indonesia*



## Climate Forecast Applications and Water Resources Management

The Angat dam, a multi-purpose reservoir located at about 60 kilometers northeast of Metro Manila in the Philippines, was built in 1967 for a variety of purposes. It supplies about 97% of water requirement for Metro Manila, irrigates about 30,000 hectares of farmlands in the provinces of Bulacan and Pampanga, and generates a maximum power of 246 megawatts.

Several problems related to physical, economic and environmental conditions arose since the Angat dam was constructed. The changes are now putting stress on the use and management of the dam. The increase in demand on municipal water for Metro Manila has more than doubled as a direct result of the increase in population and urbanization. This situation is amplified by the occurrence of extreme climate events. The dam water inflow level is very vulnerable to variability in climate (Figure). The low inflow observed in the dam during the 1997-1998 El Niño resulted in a reduction of 34% in water inflow and about 30% of the population of Metro Manila with no access to water. In addition, there was no water allocation during two subsequent cropping seasons.

ADPC in collaboration with the International Research Institute (IRI) for Climate Prediction is implementing a project on Climate Forecast Applications for Angat dam for the management of

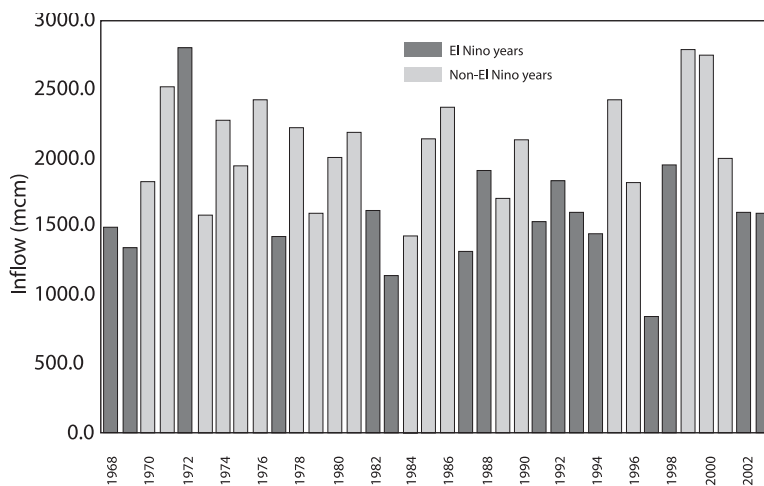


Figure: Inflow 1968-2003

water resources during extreme events. The Philippine government agencies included in the program are Philippines Atmospheric Geophysical and Astronomical Services Administration (PAGASA) Metropolitan Waterworks and Sewerage System (MWSS), the National Power Corporation (NPC), the National Irrigation Administration (NIA) and the National Water Resources Board (NWRB). The technical assistance and training on downscaling of global and regional forecasts for the study area is provided by IRI.

The inflow prediction model developed in IRI could be used to develop forecasts and would be updated every month from October to February, which are crucial months for water management.

The inflow model has been calibrated using past data and will soon be utilized by the NWRB as an objective tool in its monthly inflow simulation. Once validated, the model will be adapted in generating forecasts of monthly inflow and will come up with different scenarios as guides in the allocation of water resource of Angat dam for various users.

The recent workshop on Climate Risk Management held in Thailand from 18-22 July 2005 brought together forecasts providers and the various stakeholders. In the case of Angat, the users of information and representatives from the NWRB and MWSS were able to convey in specific terms their needs to PAGASA.

*Susan R. Espinueva, Senior Weather Specialist, PAGASA, Department of Science and Technology and Coordinator, Climate Forecast Application Program, Angat dam project.*



*This section highlights the initiatives, developments and events in the quarter July-Sept 2005 from ADPC's teams, the Office of the Executive Director (OED), Disaster Management Systems (DMS), Information Knowledge Management (IKM), Urban Disaster Risk Management (UDRM), Community-based Disaster Risk Management (CBDRM) and the Training Resource Group.*

**India joins ADPC as a founding member**

India joins ADPC as a founding member. In an official signing ceremony held at ADPC on 7 July 2005, H.E. Mr. Vivek Katju, Ambassador of India to Thailand signed the new ADPC Charter. Earlier this year the Thai Royal Government granted ADPC the Inter-governmental status when eight countries in the region endorsed their support and cooperation by signing the New ADPC Charter.

**MoU Signed between ADPC & UNDP**

On 29 July 2005, UNDP and ADPC signed a memorandum of understanding to support the Royal Thai Government (RTG) in addressing its immediate plans to implement an end-to-end early warning system for tsunamis and other natural hazard, and the enhancement of institutional capacities for disaster risk management and community preparedness in Cambodia, Lao PDR, Myanmar, Vietnam and Thailand.

**MoU Between ADPC & NDWC**

On 6 September 2005, ADPC and the National Disaster Warning Center (NDWC), Thailand signed a memorandum of understanding on early warning arrangement, preparedness and mitigation on natural hazards for Thailand and to establish cooperative linkages.

**ADPC's Public Awareness Programme Initiatives**

ADPC in cooperation with the Department of Disaster Prevention and Mitigation (DDPM), Thailand, initiated and produced public awareness programmes on **tsunami, earthquake, flood, and landslide**. The first, 20-part two-minute-spot series on **tsunami and earthquake** was on air in Thailand's television Channels 11 and 9, since February 2005.

The second ADPC-DDPM's (Thailand) TV spot series on **flood and landslide** was aired twice a week in the news update of Thailand's Channel 3. The program in Thai also included english subtitles to reach out to the tourists. The programme informed the public about the causes and effects, prevention and mitigation measures of natural disasters. This public awareness programme was scheduled from July to September 2005.

The DDPM has reproduced the TV spots into other study and public awareness materials such as VCDs, posters, and booklets to keep people at the community level informed.

**Regional Analysis of Socio-Economic Impacts of the Indian Ocean Tsunami**

ADPC's Disaster Management Systems (DMS) team organized a meeting to present the "Regional Analysis of Socio-Economic Impacts of the Indian Ocean Tsunami" on 19-20 September 2005, Bangkok. This meeting was organized with funding from World Bank's Hazard Management Unit and the ProVention Consortium, under a study that ADPC had undertaken for analyzing socio-economic impacts of the Indian Ocean Tsunami in the five affected countries in Asia, namely India, Indonesia, Maldives, Sri Lanka and Thailand. Mr. J. Roberto Jovel, former Director, UN Economic Commission for Latin America and the Caribbean (UN-ECLAC) was ADPC's consultant on this study. The meeting was attended by officials from the Reconstruction Authority, Finance Ministry, Central Bank, National Disaster Management Office and the Planning Department from each of the five countries attended, in addition to representatives from Civil Society Organizations. Based on the comparative analyses of Tsunami impact presented by ADPC, possible collective actions by the countries for vulnerability and risk management and reduction were discussed.



## *ADPC integrates risk management with cultural conservation & sustainable development*

The Museum Emergency Program (MEP) recently completed the first component of the Teamwork for Integrated Emergency Management training program. The MEP is an innovative initiative that brings together entities engaged in the conservation of cultural properties including The Getty Conservation Institute, the International Council of Museums (ICOM) and the International Center for the Study and Preservation and Restoration of Cultural Property (ICCROM) and the Asian Disaster Preparedness Center (ADPC), jointly engaged in the advocacy of disaster mitigation to introduce the concept of integrated emergency management of cultural heritage.

The MEP brought together representatives from nine different countries representing twelve different museums to work in partnership over eight months period to bring disaster risk planning and integrated emergency management to their respective institutions. Special appreciations was expressed to Khun Somchai Na Nakhonphanom, Director of the National Museum of Bangkok for offering his museum as a working laboratory for hands on assessments and training. ADPC Deputy Director, Earl Kessler served as MEP Lecturer.

In his opening remarks, Dr. Suvit Yodmani highlighted the importance of mainstreaming disaster risk management into sustainable development as multi-sector and multi-hazard and added that ADPC was pleased to be part of the efforts to promote the evolving relationship between culture, sustainable development, the built environment and disaster mitigation and investment. The comprehensive approach to create more resilient environment knits together up-to-date information, capacity building and training, tools, investment and management to make our environment safer and better prepared. It was made clear that a museum was definitely a socio-cultural environment. Floods affecting the historic site of Ayutthaya at the time of the MEP only served to reinforce the need to address historic site protection. Other historic urban areas are also vulnerable and to avoid the loss of yet another Bhuj, India or Bam, Iran, it is necessary to prepare emergency management plans.

The workshop was held from the 15-26 August 2005 in Bangkok.

## *Regional Capacity Enhancement for Landslide Impact Mitigation*

ADPC in collaboration with Norwegian Geotechnical Institute (NGI) implemented the program for Regional Capacity Enhancement for Landslide Impact Mitigation (RECLAIM) with the aim to promote a dialogue between decision makers and professionals about the theoretical and practical aspects and issues related to landslide hazard mitigation. The program was funded by the Royal Norwegian Ministry of Foreign Affairs with Bhutan, India, Indonesia, Nepal, Thailand and Sri



*Opening speech by Chief Guest  
Hon. Ferial Ashraff*

Lanka as the focus countries. As part of the program, an International seminar on Landslide Hazard Management was organized on the 6 June in Colombo by ADPC and NGI in collaboration with the National Building Research Organization (NBRO), Sri Lanka with participants from partner organizations from the six focus countries. The seminar was graced by Hon. Ferial Ashraff, Minister of Housing and Construction Industry, Eastern Province education and Irrigation Department, Hon. Prof. Tissa Vitharana, Minister of Science and Technology, His Excellency Hans Brattskr, Ambassador of Norway in Sri Lanka, His Excellency Jerm Tivayanind, Ambassador of Thailand in Sri Lanka and Mr. S Arumainathan and Director General, NBRO.

In her opening speech, the chief guest Hon. Ferial Ashraff, Minister of Housing and Construction Industry, Eastern Province education and Irrigation Department appealed to all the erudite professionals, participating either as resource persons or participants in the International Seminar and Workshop on Landslide Risk Mitigation, to assist in the search for solution for the management of the landslide hazards and risks in Sri Lanka and all the other affected countries in the world.

The technical sessions covered three themes, landslide risk and assessment of risk, risk mitigation (early warning, preparedness and structural mitigation measures) and challenges for landslide risk management.

### ***Earthquake Vulnerability Reduction for Cities for Asia-Pacific Region***

The 5th regional training course on Tsunami and Earthquake Vulnerability Reduction for Cities (EVRC-5) was held in Phuket, Thailand from 19-23 September 2005. The course was organized under the Urban Disaster Risk Management Team (UDRM) of ADPC with participants from the Asia-Pacific region.

The course built on past and enduring endeavors such as Earthquakes and Megacities Initiative (EMI), UN, IDNDR, ISDR initiative for Risk Assessment Tools for Diagnosis of Urban Areas against Seismic Disasters (RADIUS) and Global Earthquake Safety Initiative (GESI) launched by UNCRD and Geo-Hazard International. In addition, it was enriched by the demonstration projects implemented in Nepal (Kathmandu Valley earthquake Risk Management Programme (KVERMP) and Indonesia Urban Disaster Mitigation Programme (IUDMP) undertaken by NSET-Nepal and ITB-Indonesia, respectively) under Asian Urban Disaster Mitigation program (AUDMP) implemented by ADPC with funding assistance from USAID/OFDA.

The EVRC-5 was designed to provide greater practical understanding of the causes and effects of earthquakes and tsunami and ways to mitigate such impacts in order to reduce damage and loss of lives from these destructive events.

### ***Training workshop on Damage & Loss estimation for Risk Management***

ADPC in collaboration with the Netherlands Development Organization organized the training workshop on "Damage and Loss Estimation for Risk Management" from 26 – 30 September at Bangkok, Thailand.

The training workshop with participants from six countries, Bangladesh, India, Indonesia, Maldives, Sri Lanka and Thailand intended to assist government officials and disaster management practitioners to acquaint themselves with the methodology for damage and loss assessment developed by the Economic Commission for Latin America and the Caribbean of the United Nations (UN-ECLAC), and its application for disaster risk management.

*The ADPC program, Partnerships for Disaster Reduction-Southeast Asia (PDRSEA) promotes community based approaches to disaster risk management in South East Asia, since 2001. Currently, the third phase of the program is under implementation. The program is funded by the European Commission Humanitarian Aid Office (ECHO) under the DIPECHO Fourth Action Plan for South East Asia. The third phase of the program is being implemented jointly by the ADPC and UNESCAP to institutionalize CBDRM in the government policy, planning and implementation in Cambodia, East Timor, Indonesia, Lao PDR, and Vietnam.*

### ***National Strategic Planning for CBDRM***

In order to facilitate the development of national strategies for institutionalizing CBDRM in the government policy, planning and implementation, National Strategic Action Planning workshops were organized in the focus countries during July-August 2005. The Workshops were preceded by the National Consultation Workshops on CBDRM. The national consultation workshops developed a framework for institutionalizing the community-based disaster risk management (CBDRM) in the government policy-making and planning. This included review of existing CBDRM practices, identification of key stakeholders, their roles, and defining the vision, mission, goals and strategies of CBDRM. The strategic planning workshops formulated a five-year strategic collaborative action plan for each country on the basis of inputs from the national consultation workshops. The strategic plans intended to strengthen the role of NDMOs in promoting CBDRM and enhance the participation of other line ministries and local government.

### *Database on Disaster Risk Management Training*

PDRSEA3 developed online National and Regional Databases on Disaster Risk Management. These databases contain country-specific information on community based disaster risk management. The topics included best practices, tools, experts & specialists, CBDRM project inventories, mitigation activities, trainings, disaster management institutions, early warning systems, CBDRM experiences, hazard profiles. A two-day regional training workshop on the management of the database was organized by PDRSEA, ADPC for the database focal persons from NCDM Cambodia; Bakornas Indonesia, IIDP Indonesia, DDMFSC Vietnam, NDMO Lao PDR was held on July 7-8, 2005, in Bangkok. The opening ceremony was graced by Mr Marc Gordon, DIPECHO SEA Technical Assistant; and Dr Le Huu Ti, Economic Affairs Officer of UNESCAP and Dr Suvit Yodmani, Executive Director of ADPC.

### *Media for Supporting Communities in Disaster Risk Management*



A one-day orientation meeting at the national level was organized in the project countries in September 2005 to orient the media (print, radio and TV) about Community Based Disaster Risk Management. Case studies highlighting community based disaster risk management were presented. The workshop stressed on the role of the media for effectively supporting communities in disaster risk management by raising people's awareness about disaster risks, vulnerabilities, issuing early warning, and the actions that people could undertake to reduce risks and vulnerabilities. The workshops facilitated the identification of strategies for the involvement of media in disaster risk communication and promoting community action for disaster risk management.

### *Regional Course on Community Based Disaster Risk Management (CBDRM-13)*

The (CBDRM-13) was conducted in Bangkok, Thailand from 4-15 July 2005. Thirty-three participants from 17 countries in South, East and Southeast Asia, Central Asia, including Australia and the US attended the two-week course. The course aimed to build participants' capacity in designing, piloting and conducting community-based disaster risk management courses in their own countries and implementing the programs and projects in disaster-prone rural and urban areas. The ADPC conducts the CBDRM course annually for organizations that are either supporting or implementing community-based disaster mitigation or disaster response programs in their respective countries.

### *First National Course on Disaster Management & Community Based Disaster Risk Management*

The course was conducted from 15-20 August 2005 in Banda Aceh, Indonesia. The course was attended by 28 officials from various organizations based in Banda Aceh and Jakarta, Indonesia. The course was designed to introduce disaster management and community based disaster risk management concepts and to improve their operational capability. The course syllabus was comprised of six modules namely, Disaster Risk Context, Disaster Risk Management Process, Prevention/Mitigation, Preparedness Planning, Emergency Response, and Recovery and Reconstruction. Participants were introduced to the concepts and strategies for hazard, vulnerability and capacity assessment. The participants then worked out post disaster information needs and problems and solutions in this regard through a workshop titled "damage assessment and needs analysis". Various methodologies were used during the course, including workshops, plenary discussions, lectures, presentation by SATKOLAK, presentations, and small group discussions.

### *National level courses on Emergency Response Management, Flood and Drought Risk Management & Community Based Disaster Management in Herat Afghanistan*

These courses were conducted in Herat Afghanistan from 07-24<sup>th</sup> August 2005. Courses were attended by 78 officials from various organizations based in Herat and other neighboring provinces. These courses are part of the Training and Capacity Building project (TCBP) funded by United Nations Assistance Mission for Afghanistan (UNAMA) with ADPC partner's InWent

Germany. Under this project some 575 government and non government officials were trained during 2005. Before Herat, the course has also been organized and conducted in Kabul and Kunduz Provinces of Afghanistan.

### *The Asian Conference on Disaster Reduction*

The Asian Conference on Disaster Reduction (ACDR) held from 27-29 September 2005 in Beijing, China was in response to the meeting of the Association of South-East Asian Nations in the aftermath of Earthquake and Tsunami, held in Jakarta, Indonesia in January 2005. In order to fulfill the commitment made in the Indonesia Summit by H.E. Mr. Wen Jiabao, Prime Minister of People's Republic of China, and the Chinese Government hosted the conference with China National Committee for Disaster Deduction, Ministry of Civil Affairs, Ministry of Foreign Affairs, Beijing Municipal Government with UNDP, UN/ISDR, UNESCAP and ADPC as co-organizers. Participation included ministers and high-level government officials in charge of disaster prevention and reduction, disaster management as well as experts from Asian countries, representatives from UN agencies, international organizations and regional organizations.

The aim of the Conference was to push forward the implementation of the Hyogo Framework for Action 2005-2015 adopted by the World Conference on Disaster Reduction, and promote Regional Cooperation to cope with disasters in Asia. The conference stressed on building a regional action plan for disaster reduction for Asia, and also to provide forum for sharing views, information, experiences and for discussing the strategies and priority activities for fostering and facilitating networking and collaboration at the regional level. The Conference covered three major segments, intergovernmental, thematic and public exhibition. The **Intergovernmental session** included participants from the Asian countries and relevant international organizations covering High level round tables stressing on integrating disaster risk management into national development planning, capacity building on disaster reduction at the community level, rehabilitation and reconstruction from the Tsunami in Indian Ocean and the development of the regional cooperation mechanism on disaster reduction. The High-level round table 3 on *Community based disaster management* was co-chaired by ADPC. The **Thematic session** covered five action priorities in disaster reduction adopted in *Hyogo Framework for Action 2005-2015*.

*A detailed outcome from the ACDR will be covered in our Oct-Dec 2005 issue.*

### *End-to-end Early Warning System and Preparedness for Tsunamis and other Natural Hazards in Southern Thailand, 2005*

The project supports the implementation of an end-to-end early warning system for tsunamis in Thailand, in response to the Government's needs in the execution of its disaster mitigation responsibilities and initiatives to address tsunami threats in the six tsunami-affected provinces in Southern Thailand. There are two principal outputs:

- a) Supporting the development of the national end-to-end multi-hazard early warning system by establishing two sea level gauge stations
- b) Enhancement of institutional disaster management capabilities and community preparedness, specifically:
  - Training of national and local government officials of the Department of Disaster Prevention and Mitigation in crisis management, damage analysis and risk assessment
  - Training for trainers on search and rescue
  - Implementation of community-based disaster risk management program at community level

### *Emergency Telecommunication Network Planning and Design, 2005*

The project, in collaboration with the International Telecommunication Union (ITU), aims to prepare a general telecommunication plan for an early warning system for Bangladesh, Maldives and Sri Lanka. The project entails the following activities:

- a) Review of Government policy and plans related to the establishment of a tsunami early warning system
- b) Assessment of various stakeholders currently involved in establishing an early warning system for the country, resources available, and progress made so far.
- c) Assessment of existing tsunami early warning systems in the country
- d) Preparation of a detailed overview of possible telecommunication systems most suitable for the country.
- e) A general telecommunication plan for an early warning system for the country.

### *Assessment of Early Warning Systems in Sri Lanka, 2005*

The project assess the effectiveness of early warning systems in Sri Lanka with recommendations. Specifically, it examined the existing capacities of government departments and agencies involved in: forecasting, issuance and communication of warning; mobilizing at-risk communities to respond; emergency management; public education and awareness; and mitigation, including the media, non-government organizations, and the general public. The project is carried out in collaboration with the Government of Sri Lanka, with the support from UNDP.

The major project activities were:

- a) Review of existing documents on early warning and preparedness mechanisms, for a preliminary evaluation of existing systems.
- b) Interviews and focus group discussions with key informants to assess roles in the end-to-end system; capacities in observing, detecting and monitoring hazards; capacities in providing and communicating warning; responses to warning messages, state of public education and awareness, including preparedness and mitigation programs.
- c) Site visits for observation, prediction and communication facilities to assess technical robustness of the warning system
- d) Assessment of gaps in capacities, and recommendations

### *Recommendations*

The report gave hazard-specific (weather, climate, earthquake, tsunami, drought, flood, and landslide) recommendations for the improvement of observation and monitoring systems, and the enhancement of prediction capabilities and warning delivery. In general, the commitment and dedication of scientists at Sri Lanka's prediction institutions to generate actionable forecasts need to be complemented by the following actions:

- a) Strengthening of capacities for observation, detection, prediction, and assessing risks
- b) Institutional arrangement for translation of scientific and technical knowledge into easily understandable and actionable language by end users
- c) Dedicated emergency communications network, which links the institutions involved in prediction and warning and the dissemination channels
- d) Ensure redundancy in communications system
- e) Utilizing institutions for warning dissemination appropriate to the lead time available:
  - Hazards with lead times less than 30 minutes, such as floods in upper basin communities, a community-based warning system may be used, where upstream communities warn downstream communities by hand phones and community radios
  - Hazards with lead times less than 72 hours, such as tsunamis and riverine floods, the existing IG Command emergency communication system may be used
  - Hazards with lead times of 72 hours or more, the existing relevant competent agencies, such as the Department of Meteorology for tropical cyclones and drought, would continue to be used
- f) Other non-formal dissemination channels may be used, such as mosques, temples, and churches, which can also be used as shelters and advocates for preparedness
- g) Building and sustaining local community-based volunteer groups for providing early warning messages
- h) A comprehensive public awareness program that covers all hazards, with a wide range of targets
- i) Pure and applied research

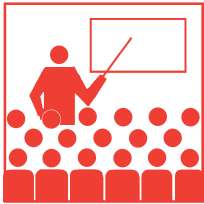
### *Workshop on Climate Risk Management in Southeast Asia*

ADPC through its Climate Risk Management team is implementing the Climate Forecast Applications for Disaster Mitigation (CFA) program since 2003. In collaboration with the International Research Institute for Climate Prediction (IRI) USA and with support from USAID's Office of Foreign Disaster Assistance (USAID/OFDA), the US National Oceanic and Atmospheric Administration (US NOAA), it aims to develop locally-appropriate climate information tools and capacities to apply in real-time in Indonesia and the Philippines to mitigate the impacts of hydro meteorological hazards. The program follows a two-level approach: 1) carrying out targeted demonstration projects to explore and refine methods, and 2) identifying and stimulating national capacities to scale up the application of the methods.

As part of this effort, IRI and ADPC jointly organized a workshop on “Climate Risk Management in Southeast Asia” from July 18 through July 21, 2005 in Thailand. The workshop brought together 46 climate scientists, socio-economic researchers, and national and local level policy makers and stakeholders from Indonesia and the Philippines with observers from Vietnam. The workshop participants were divided into two parallel discussion tracks – risk management and climate science. Participants explored possible options for improving climate risk management at specific demonstration sites, and identified needs for further socio-economic research.

The workshop opened with keynote speeches by Dr. Suvit Yodmani (Executive Director, ADPC) Mr. A. R. Subbiah (Team Leader, Climate Risk Management, ADPC), and Dr. Shiv Someshwar (Director, Asia Regional Program, IRI). The workshop brought to the fore the challenges in integrating climate forecasts into policies and decision-making processes, emphasizing the critical role of the local and national partners in project activities. Speakers from five project demonstration sites namely Indramayu, Nusa Tenggara Timur and Bali (Indonesia), and Iloilo and Angat (Philippines) presented the diverse climate-related problems at their respective site.

The workshop concluded with a dialogue between climate researchers, stakeholders and policymakers in the Philippines and Indonesia. Action plans were also drafted to highlight concrete guidelines for continued implementation. Observers from Vietnam expressing their full appreciation pledged to initiate CFA in their country. Importantly, the workshop helped lay the groundwork for an integrated program of climate



**ADPC Training Announcements**

- **Regional Training Course on Flood Disaster Risk Management, 24 October-4 November**
- **Multi-hazard Risk Assessment Proposal for a distance education course and CASITA Development workshop in Hanoi, 14-25 November**
- **Regional course on Disaster Management, 7-25 November**
- **International Training Course on Disasters and Development, Bangkok, November**
- **National Training Workshop on Nutrition of Children and Mothers in Disasters, Tehran, November**

*For more information, please visit <http://www.adpc.net>*

**ADPC's Information Resources**

**The ADPC Library:** ADPC maintains a specialized library on disaster management. The library database has over 7,000 entries, supplemented by a unique collection of gray and unpublished literature from ADPC's own programs, projects and from several years of regional and international networking. It also has over 500 videos besides other audio-visual materials. Visit the ADPC website for an online database.

**Asian Disaster Management News:** The quarterly newsletter is designed to serve as a communication channel for the disaster risk management practitioners and development workers in the Asian and Pacific regions. To subscribe or to contribute, please contact [roopa@adpc.net](mailto:roopa@adpc.net).

**Monthly e-Updates:** The updates showcases projects, workshops and training activities of ADPC. To join the mailing list, please send a blank email to [adpc-announce-subscribe@yahoogroups.com](mailto:adpc-announce-subscribe@yahoogroups.com).

**Disaster Mitigation in Asia:** Disaster Mitigation in Asia is a monthly, electronic newsletter from the Urban Disaster Risk Management team of ADPC. The newsletter shares updates on disaster mitigation in Asia that includes latest information sources and analytical accounts of new approaches, methodologies, models, resources and tools for disaster risk reduction. To subscribe, please send a blank e-mail to [adpc-announce-subscribe@yahoogroups.com](mailto:adpc-announce-subscribe@yahoogroups.com).

**ECHOES e-magazine:** Echoes is a monthly issue from the Partnerships for Disaster Reduction-Southeast Asia team of ADPC. It provides a platform for networking, camaraderie-building and information sharing among disaster professionals in Southeast Asia. To subscribe, please contact: [vicky@adpc.net](mailto:vicky@adpc.net).

**ADPC Website:** <http://www.adpc.net>



## Livelihood Adaptations to Climate Change

Human activities are changing the Earth's climate, and this is having an impact on all eco-systems collectively. The expected changes in environment would alter regional agricultural production systems with substantial consequences on food production. Global climate change puts agriculture at great risk, especially in smallholder systems and associated societies, which forms greater portion of South and South East Asia.

Experiences have shown the importance to assess the local coping strategies to climate variability and climate change. Strong interests now prevail, particularly in understanding linkages between climate risks and community-based local

adaptation strategies. Initiation of risk perception and adaptation assessment framework for climate change can eventually be used to deliver a well-recognized risk management practice for effective delivery of policy options. Linking the human and biophysical systems and the consequences of climate change is essential to inform public policy. Such type of integration with the public is one of the mandates of several Global Change programmes.

Food and Agriculture Organization of United Nations (FAO) has initiated a programme on "Improved Adaptive Capacity to Climate Change for Sustainable Livelihoods in the Agriculture Sector" in Bangladesh with ADPC as a major implementing partner. The work focuses on four upazillas in Chapai Nowabgonj (Gomastapur and Nachole) and Noagoan (Porsha and Sapahar) districts of North West Bangladesh. The objectives of the contribution are to develop methodology to better understand:

- how the anticipated climate change would affect the livelihoods in agricultural sector
- how results of climate change impact modeling can be translated into agricultural response options and livelihood adaptation practices
- how these options can be locally tested and implemented in a participatory way with farmers
- how the improved adaptation practices and long-lead climate forecasting can help to improve adaptive capacity of livelihoods in agriculture sector

The methodology involves assessment of past climate impacts through historical climate data analysis. The local perceptions of climate hazards was being documented through Participatory Rural Appraisal(PRA) methodology. The climate analogues derived from historical climate data and climate change model outputs is used for developing climate change scenarios for the pilot sites. The climate change scenarios would be translated into agricultural sector impacts at the pilot study locations based on the existing management practices. Understanding the climate change impacts, local capacities, coping strategies and developing technically viable good agricultural practice menu are the expected outcomes. The initiative would facilitate mainstreaming of climate change adaptation into national development goals.

### Micro finance as a potential tool to reduce disaster risks

An information kit on "Micro finance as a potential tool to reduce the impact of natural hazards on population" has been developed by ISDR. **For more information please visit:** [www.unisdr.org/eng/public\\_aware/world\\_camp/2005/2005-international-day-DR.htm](http://www.unisdr.org/eng/public_aware/world_camp/2005/2005-international-day-DR.htm)



Source: ADPC



Source: ADPC

## *Towards a Knowledge-Action Climate Information System Localized Climate Information*

Past experiences with weather and climate related risk management provide evidence that scientific activities that are intended to support practical decision making are much more effective and useful when they incorporate the needs and points of view of those who would potentially use scientific results with the guidance of relevant specialized scientists.

Two alternatives might be considered as possible strategies to bring scientific output and users' needs closer. The first relies on developing quantitative models sensitive to climate variation and employing these models as tools to identify climatic parameters to which certain sectors or groups are highly vulnerable. This information on sensitivity or vulnerability would become extremely important input for climate scientists in order to decide which climate parameters to consider. The second type of strategies rely on direct interaction between the producers and users of climate forecast information, in which users discuss and identify information they would find useful and the producers discuss the information they are able to provide.

For developing countries like Indonesia, participatory strategies are likely to be most useful for designing effective climate information systems. These strategies typically involve recipients, their representatives, or their proxies in identifying the needed climatic information and designing the information delivery system. Participatory strategies are suitable in the case of Indonesia, since the accuracy and importance of climate forecast information is not yet highlighted to the potential users and because climate scientists do not yet fully understand which attributes of forecast information would make it most useful to the recipients. This approach is used in the climate information system recently developed by the Indonesian National Agency for Meteorology and Geophysics (BMG).

The new project includes the development of mesoscale ensemble forecast models. The mesoscale ensemble forecast system will consist of various dynamical and statistical models.

Ten regencies were selected as pilot sites during the first year (2004); and was increased to 30 regencies for the second year (2005). These regencies, mostly less than 100 x 100 square km, were selected on the basis of their degree of sensitivity and vulnerability to the climate variability, data availability, and kinds of sectorial applications existing in the regions. In this way forecast methods can be tested and validated appropriately with various sectorial applications. Timing, lead time and updating are also among the main features for consideration.

In the newly developed climate information system, BMG has to address various aspects concerning the credibility of the information. This is, of course, very much related to the perceived technical quality of information.

A forecast forum consisting of a number of scientists from various research institutions and universities meet periodically to discuss several aspects related to the validity and accuracy of the climate information provided to the pilot sites. Beside accuracy, spatial and temporal resolution of the forecast are also important to consider when dealing with the credibility of the climate information.

The production of climate information in the newly implemented system in Indonesia is basically a high resolution climate forecasting based on dynamical and statistical downscaling in combination with some 'classical' and advanced statistical techniques. The spatial resolution of present day AOGCMs is still relatively coarse, in the order of 300 km, and regional climate is often affected by forcing and circulations that occur at smaller scales. This is the case in most regions in Indonesia. As a result, AOGCMs cannot explicitly capture the fine scale structure that characterizes climatic variables in many regions of Indonesia that is needed for sectorial applications and impact assessment studies.

A range of statistical models, from regressions to neural network, wavelet analysis and analogues, have been developed for regions where sufficiently good datasets are available for model calibration. In a particular type of statistical downscaling methods, called statistical-dynamical downscaling, use is made of atmospheric mesoscale models to develop the statistical models.





One of the primary advantages of these combined techniques is that they are PC-based and computationally inexpensive, and thus can be easily applied. Another advantage is that they can be used to provide local information in the form of probability density function, which can be very useful in many climate impact applications, including those related with risk management.

*Dr. Mezak A. Ratag, Director of Research and Development, Indonesian National Agency for Meteorology and Geophysics (BMG)*

### *Generation of Localized Climate Forecast Information to Match End-User Needs*

The Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) intensified its research efforts and studies to develop scientific prediction methods for the Philippines. The new service grew and branched out to more specific applications to serve climate sensitive sectors, like agriculture which is the backbone of the Philippine economy. With more and more units of society finding useful applications of climate information to their needs, more climate studies and undertakings are still needed to be pursued.

PAGASA, ADPC, International Research Institute for Climate Prediction (IRI), and the Municipality of Dumangas, in cooperation with the Provincial Government of Iloilo are implementing a project that guides localized climate forecast information to end-users. The agrometeorological station established as part of the project receives information from PAGASA Central Office via the internet and disseminates these through the communication network of the municipal and provincial government. Managing the information flow and feedback mechanism was a Technical Working Group (TWG) from the Provincial Agricultural Office, Regional Irrigation Agency, PAGASA office, and officials from Local Government Units. The TWG generally acts as the information translator from a very technically worded text to farmer's level language and vice versa.

Climate model outputs and downscaling is considered an important part of a climate prediction system which basically explains the smaller scale climate character, in conjunction with the perceived seasonal behavior described mathematically by model. Downscaled climate forecasts are more useful as viewed by decision makers and climate users since they illustrate in a more detailed fashion how a specific place of interest will then be affected, making it possible among others to assess and quantify the associated impacts.

The initial success of the climate project at Iloilo could be attributed to a number of factors. Among these are:

- 1) The untiring efforts of the Municipal Mayor and the support of the people of the town of Dumangas in putting-up a climate information center to serve the need for institutionalized weather and climate services in their province that made a big difference.
- 2) The formation of a technical working group, which pass on the climate information from technical levels down to tailored and downscaled information and experimentally applied to the project area for different user applications.
- 3) The subsequent growth of opportunities to explore and develop cooperation among producers and users of climate information.
- 4) The active participation of the Provincial government and the Provincial Agriculturist.

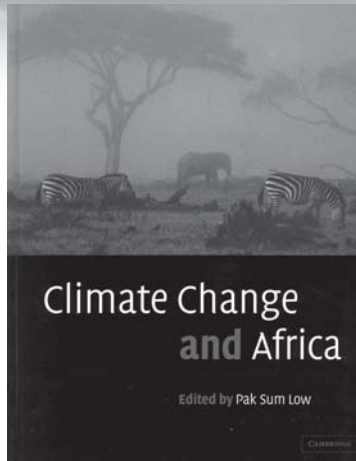
*Mr. Anthony Joseph R. Lucero, Senior Weather Specialist, Climate Information, Monitoring and Prediction Center, Climatology and Agrometeorology Branch, PAGASA*  
*Mr. Nathaniel A. Cruz, Weather Services Chief, Weather Branch, PAGASA*



**Climate Change and Africa**

*Edited by Pak Sum Low*

*Published by Cambridge University Press 2005*



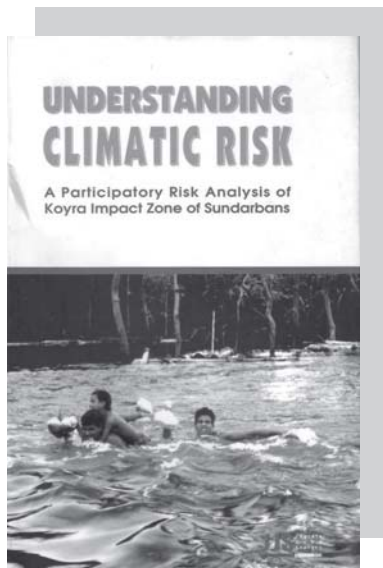
At the beginning of the twenty-first century, there is no environmental issue of such truly global magnitude as the issue of climate change. The poorer, developing countries are the least equipped to adapt to the potential effects of climate change, although most of them have played an insignificant role in causing it. African countries are amongst the poorest of the developing countries. This book presents the issues of most relevance to Africa, such as past and present climate, desertification, biomass burning and its implications for atmospheric chemistry and climate, energy generation, sea-level rise, ENSO-induced drought and flood, disaster risk reduction, the UNFCCC and Kyoto Protocol (especially the Clean Development Mechanism), capacity-building, and sustainable development. It provides a comprehensive and up-to-date review of these and many other issues, with chapters by leading experts from a range of disciplines.

**Understanding Climate Risk**

*Researcher: Muhammad Amanur Rahman*

*Published by Jagrata Juba Shangha with ActionAid*

*Bangladesh*



The book, Understanding Climate Risk is a study outcome using PRA tools as means of statistical analysis which contributes to preparing a Geographic Information System database focusing hazard types, vulnerability and capacity in the respective areas. This is a customized version of Disaster Crunch Model of Blaike, which is named here as 'Participatory Disaster Risk Analysis' (PDRA). The study has tried to incorporate the model for examining the existing and historical information of different local climatic disasters and to analyze the comparative risk of the study areas. It is believed that, PDRA model can be used to prepare both macro and micro level risk assessment of different geographical areas to compare the magnitude of risks in those areas.

**Col. Elma Aldea - In Memorium**

It is with sadness that ADPC family extends their deepest condolences to the family of Col. Elma Aldea.

Col. Elma Aldea, an Administrator of the Office of Civil Defense had an exemplary professional commitment to disaster management and was truly a great friend to ADPC. She was an integral supporter of ADPC's projects and programs, both in the Philippines and regionally.

ADPC will miss an advisor, an expert and a friend.



- Climate Variability and Predictability [www.clivar.org](http://www.clivar.org)
- Institute for Global Environmental Strategies (Resources for Teachers) [www.strategies.org/climate.html](http://www.strategies.org/climate.html)
- Managing Climate Variability [www.managingclimate.gov.au](http://www.managingclimate.gov.au)
- Learn: Atmospheric Science Explorers (Resources for Teachers) [www.ucar.edu/learn/index.html](http://www.ucar.edu/learn/index.html)
- Center for Research on the Changing Earth System [www.crecs.org](http://www.crecs.org)
- Cooperative Institute for Climate Application and Research [www.ideo.columbia.edu/cicar/intro/themes.cvc.html](http://www.ideo.columbia.edu/cicar/intro/themes.cvc.html)
- Intergovernmental Panel on Climate Change [www.ipcc.ch](http://www.ipcc.ch)
- United Nations Framework Convention on Climate Change [www.unfccc.int/](http://www.unfccc.int/)
- US Global Change Research Program [www.usgerp.gov](http://www.usgerp.gov)
- Global Climate Change: Research Explorer-the Exploratorium [www.exploratorium.edu](http://www.exploratorium.edu)
- Tyndall Center for Climate Change Research [www.tyndall.ac.uk](http://www.tyndall.ac.uk)
- Klima Climate Change Center [www.ccic.ateneo.net](http://www.ccic.ateneo.net)

## Natural Disasters in the Region (July-September 2005)

### Floods



- **Landslide Lake in Tibet Floods India**, June 26: Water and mud gushed down the Pareechu River into the Sutlej, the major river that flows through India's Himachal Pradesh state. Thousands were evacuated from the banks of the Sutlej, and several bridges and buildings were damaged or destroyed. No injuries were reported.
- **Floods on the Songhua River in Northern China**, July 9: Summer rains filled China's rivers, triggering floods through much of the country killing more than 560 people across China, displaced 2.5 million, and caused damage costing about 2.77 billion U.S. dollars.
- **Floods in Pakistan**, July: A combination of monsoon rains and high temperatures sent torrents of melted snow out of the mountains of northern Pakistan and India, when monsoon rain started pounding the country in early July causing floods.
- **Hanoi, Vietnam**, 14 July: Torrential rains flooded northern Vietnam, leaving five people dead and more than 4,000 homes submerged. The heavy downpour hit the northern city of Yen Bai.
- **Typhoon Haitang Floods Taiwan**, July: Typhoon Haitang swept across Taiwan between July 18 and July 20, 2005, pounding the island with rain. During the storm, flood waters inundated much of southern Taiwan, damaging bridges and destroying crops.
- **Monsoon Flooding in India**, August: Heavy monsoon rains brought floods to northeastern India. The floods marooned hundreds of villages, affecting 800,000 people in the Uttar Pradesh State.

### Storms

- **Tropical Storm Banyan**, July 2005: Tropical Storm Banyan first began forming in the northwest Pacific as a tropical depression wandering northward from the Mariana Islands towards Tokyo. It gained strength, reaching a peak strength with winds around 110 kilometers per hour (60 knots).
- **Typhoon Mawar**, August: A strong typhoon hit the northwestern Pacific. The storm was predicted to make landfall on Honshu (the main island of Japan) on August 25, with Category 4 strength winds and heavy rainfall.
- **Typhoon Sanvu**, August: Typhoon Sanvu struck China with 1-minute maximum sustained winds to the region of around 120 km/hr (74 mph). Wind gusts in the area were considerably high.
- **Typhoon Matsa**, The typhoon, a well organized mature storm with steady winds of around 150 kilometers per hour (90 miles per hour) swept over Taiwan towards China.

### Earthquakes

- Magnitude 7.2-Near the east coast of Honshu, Japan 2005 August 16 02:46:28 UTC
- Magnitude 6.2-Near the east coast of Honshu, Japan 2005 August 24 10:15:33 UTC
- Magnitude 6.2-Off the east coast of Honshu, Japan 2005 August 30 18:10:44 UTC

### Dust and Storms

- **Air Quality Emergency in Malaysia**, August: Out-of-control forest fires burning on the eastern shore of Sumatra created an air quality emergency for neighboring Malaysia as smoke shrouded parts of the country. The smoke hung thick over Malaysia's busy capital, Kuala Lumpur, where it forced businesses, schools, and transportation to close.

Sources: <http://earthobservatory.nasa.gov>, AlertNet

- Over 80% of the world's climate-related disasters from 1991-2000 occurred in Asia;
- Economic plans for most nations in the region are dependent on climate-sensitive sectors and resources (e.g., agriculture, fisheries, tourism);
- Year-to-year variability has significant consequences in the context of climate-related extreme events;
- National, regional and international assessments of the consequences of climate change identify Asia-Pacific communities as among the most vulnerable;
- A recent study by Munich Re suggests that, globally, the "projected costs of damages inflicted by climate change could top US \$300 billion per year within the next few decades;"
- Recent regional experience in applying ENSO-based climate forecasts highlight the benefits of integrating climate information into decision-making in some key sectors
- There is a growing awareness of the role of climate adaptation in poverty reduction and development planning.

*Source: World Disasters Report, International Federation of Red Cross and Red Crescent Societies*



*Theme for the next issue of the  
Asian Disaster  
Management News,  
October-December 2005:*

## **Health Emergency Initiatives in Asia-Pacific**



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