

**Training Workshop for Capacity Building and Networking in
the Area of Biogeochemical Budgeting and Socio-Economic
Modelling including Human Dimension Aspects in the
Coastal Systems of South Asia (APN 2000-07)**

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Training Workshop for Capacity Building and Networking in the Area of Biogeochemical Budgeting and Socio-Economic Modelling including Human Dimension Aspects in the Coastal Systems of South Asia (APN 2000-07)

APN Funding

US \$21,500

Participating countries

Australia, Bangladesh, India, Maldives, Mauritius, Nepal, the Netherlands, Pakistan, the Philippines, Sri Lanka, the UK, USA

Introduction/Background

The above workshop was organized by the Sri Lanka National Committee of the International Geosphere-Biosphere Programme, as a follow-up activity to the scoping Workshop on Estuarine Modelling and Coastal Zone Management held by the Committee in April 1999 in Colombo, with support from START and LOICZ.

The 1999 workshop identified the need for capacity building in the area of BGC budgeting and for undertaking case studies on a few estuarine systems in the region. It was also realized that socio-economic and human dimension aspects in relation to coastal zones have received low priority among researchers in the region. The workshop therefore proposed that a second workshop for coastal zone scientists in the region be organised, with a view to build their capacity to undertake the above studies.

The formulation of the training programme and the identification of the key resource persons were kindly undertaken by LOICZ. The identification of resource persons from the region and of the selection of the trainees was undertaken by SASCOM of START.

Outline of activities conducted

The workshop programme included tutorial lectures, papers on regional issues, discussion of case studies, hands-on-training on BGC computer models and formulation of a project proposal for submission to APN seeking funding of follow-up activities. These are described in detail below.

Tutorial Lectures

The following tutorial lectures were delivered by resource persons:

- 1) LOICZ Biogeochemical Modelling Guidelines - Chris Crossland.
- 2) LOICZ Biogeochemical Budgeting Procedures and Examples - Vilma Dupra.
- 3) LOICZ Computer Assisted Budget Analysis for Research, Education and Training (CABARET) - Laura T. David.
- 4) LOICZ Tool: Quantifying Ground Water Flow - Laura T. David.
- 5) Application of Community Type Hydrodynamic Models in the Study of Sediment Transport - Charitha Pattiaratchi.

- 6) Consideration for Geochemical and Sediment Modelling: Important Controls and Alternative Methods - Steven L. Goodbred.
- 7) Integrating Natural and Socio-Economic Sciences for Coastal Zone Management - Stephen Crooks.

Papers on Regional Issues

- 1) Coastal Zone Pressures and Estuaries – S. N. de Sousa.
- 2) Approaches to Regional Coastal Zone Problems - Mahesh D. Zingde.
- 3) Management of Lagoons with Reference to Sri Lanka - Samantha Hettiarachchi.
- 4) Coastal Zone Pressures and Engineering Interventions in Coastline Protection – M. Mannion.

Case Study Presentations

- 1) River Discharge - Laura T. David.
 - Case I : Lingayen Gulf, Philippines
 - Case II: South China Sea
 - Case III: Laguna de Terminos, Mexico
- 2) Sediment Transport in Negombo Lagoon, Sri Lanka - Saman Samarawickrama.
- 3) Studies in Periyar Estuary, Kerale, India - Hema Naik.
- 4) Sediment Transport Studies in North Australia - Charitha Pattiaratchi.

Country Presentations

- 1) Adapting to Impacts of Climate Change in the Coastal Areas of Bangladesh-A.U. Ahmed (Bangladesh).
- 2) Some Dynamic Aspects of Modern and Ancient Meghna Delta of South-Eastern Bangladesh Coast in terms of Land Accretion and Erosion – A.S.M.M. Kamal (Bangladesh).
- 3) Modelling Pollution Transportation to the Coastal Zone through Ground Water Systems using GIS – S. Shahid (Pakistan).
- 4) Modelling Ocean ward Sediment Flux of the South and Southeast Asian Rivers – K. P. Sharma (Nepal).
- 5) Population Fluctuation of Eleven Species of Aquatic Avifauna in and around Tissa Wewa Reservoir – W.A.H.P. Guruge (Sri Lanka).
- 6) A Model for Tidal Response of a Choked Lagoon on the West Coast of Sri Lanka – J.K. Rajapaksha (Sri Lanka).
- 7) Chemical Speciation Study of Lead (Pb) and Cadmium (Cd) with Bicarbonate, Hydroxide in Artificial Seawater and Dissolved Organic Matter in Seawater by applying DPASV – M. Nabi, A.H. Khan and A. Hussan (Bangladesh).
- 8) Current Work on Nutrient Analysis in Estuaries and Sea of Port Louise Region and Flic-En-Flac – V. Ramasahye (Mauritius).
- 9) Socio-Economic Modelling of Coastal Zone Tourism – S. Nath (Mauritius).

Hands-on-Training

The Trainees were provided with 10 computers to develop BGC budgets corresponding to their own sites. The resource persons supplied the necessary software and personally instructed the trainees on how to carry out the exercises. These exercises were done in several stages:

- Step 1: Development of Salt Budget
- Step 2: Development of Salt-Water Budget
- Step 3: Development of Salt-Water-Nitrate Budget
- Step 4: Development of Phosphate Budget

All the trainees did not possess the necessary input data required to develop these budgets. Hence, for the purpose of practicing, hypothetical values for various parameters were made of use. The intention was for the trainees to collect the necessary data on their return and develop more authentic budgets. Each trainee was given diskettes containing the software.

Outcomes/Products

Capacity Building

The Workshop provided adequate opportunities for the trainees to build their capacity in the development of biogeochemical budgeting, using both LOICZ models and Community Models available on the Web. The necessary software and computers were made available and most trainees did develop provisional budgets corresponding to sites in their home countries. LOICZ may incorporate some of these in one of their publications.

The Socio-Economic Modelling aspect however, took only a secondary position. The reason being that, for this area, was that there were only a few trainees, and also only one resource person present. These trainees were given lectures highlighting various aspects of social impacts and methodologies for undertaking socio-economic studies, but there was no opportunity for them to develop any models as such. The S.E Group however, discussed the data needs and impacts in separate sessions.

Networking

The trainees came from the leading research institutions on Oceanography and Marine Sciences, and the university departments studying Coastal Science and Engineering, in the region. After having stayed more than five days together and discussed matters of mutual interest during this period, these trainees are now in a position to continue their dialogue and rapport in the future as well. With the proposed project, opportunities will be available to exchange visits among them, consolidating the network. Also, the opportunity provided by the workshop to get to know the resource persons was helpful, as they assured them of their continued availability for any advice or consultation.

Proposal for a follow-up project

The main product of the workshop was the proposal developed for a regional project to undertake follow-up activities with the participation of seven countries, including Australia and USA. The project was titled “An assessment of nutrients, sediments and carbon fluxes to the coastal zone in South Asia and their relationship to human activities.” The participating countries are: Australia, Bangladesh, India, Nepal, Pakistan, Sri Lanka and USA. The proposal has already been submitted to the APN Secretariat seeking funds for a two-year period.

Future directions/Follow-up work

It is envisaged that during the next two years, it would be possible to focus on the synthesis of data and develop the socio-economic modelling capability, which was not adequately addressed in the workshop. Each group is expected to gather data that are already available with various agencies in order to develop the budgets using the methodologies taught at the workshop. They will also identify gaps in the current knowledge and the facilities that are required to obtain data in such areas. The groups will endeavour to integrate the proposed activities with existing programmes initiated with national resources, wherever possible.

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