

LOICZ – East Asia BASINS Workshop (APN 2000-20)

Project Leader:

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**LOICZ East Asia BASINS Workshop on:
East Asian River Catchment/Coastal Zone Interaction and Human Dimensions
(Impacts of land-based activities on coastal seas of East Asia)**

Hong Kong, Baptist University, China, 26-28 February 2001

Supported by IGBP/LOICZ, the Asia Pacific Network for Global Change (APN) and the
Global Change System for Analysis, Research and Training (START)

Introduction - the LOICZ BASINS Background

The discussion on global change issues in coastal zones and integrated coastal management focuses increasingly on the interplay between river catchments and the coastal sea. Coastal zone processes and health are reviewed much more as a systemic, i.e. receiving, part of the whole water continuum. This reflects in an increasing number of targeted programs and key actions such as the new European 5th Framework Program, as well as UNESCO, UNEP and GEF based/supported initiatives. The International Geosphere Biosphere Program (IGBP) responds through concentrating considerable effort on the human dimension of global change issues taking the whole water cascade as a scale. Parts of these issues are addressed in the “water group” initiative of IGBP, to which LOICZ since 1998 continues to contribute on various levels like the Sediment/Run Off Group (J. Syvitski) and the BASINS core project (Wim Salomons, H. Kremer).

The BASINS Strategy

In principle the LOICZ BASINS core project is working inter alia to develop a global evaluation of the importance of coastal seas as receiving bodies of land based changes of horizontal material fluxes such as carbon, nitrogen and phosphorus as well as water and sediments. The scale used for transport pathways, including groundwater, is the river catchments (or whole islands, if appropriate). Beyond giving an overview on coastal zone functioning as sink or source for nutrients and carbon, priority attention is paid to the relative importance of these materials and their biogeochemical cycles as indicators. In other words, to what extent do they represent environmental functioning and sustainability of goods and services provision under the dynamic natural and anthropogenic driven changing forcing functions? Assessment and modelling therefore aim to focus on residual transports of materials (C, N, P, sediments, etc.) as key indicators.

This is usually summarized as the human dimension of coastal change. Therefore changing fluxes impacting the state of the environment and their feedback on the socio-economic system functioning are to be reviewed against the conceptual question of critical loads reaching the coastal zone that may be forcing systems to flip.

A challenging feature in these kind of BASINS workshops and synthesizing efforts is to focus on catchment based drivers, pressures and state changes (fluxes and material cycles) and to derive from those figures the critical loads based on:

- a) Political regulations,
- b) Environmental monitoring including historical information; and
- c) Stakeholder perception and requirements for coastal use (land and sea based).

Specific Workshop Objectives

- 1) Provide a state of the art report of river catchment – coastal sea interactions and set up a first qualitative or semi-quantitative system to categorise key pressures and state change settings providing an indexed data entry for upscaling purposes on regional scale (see 2).
- 2) Upscale the information to broader regional and finally global synthesis along the index system provided by identifying and clustering areas of similar change features using typology tools and the Drivers, Pressures, State, Impact, Response framework, DPSIR, for standardised site classification. Provide the data and information base for an interregional/global LOICZ BASINS core project meeting of principal investigators, in the second half of 2001 aimed to combine the available regional information to an overall first global LOICZ BASINS synthesis.
- 3) Identify from the regional state of the art assessment and analysis a set of focussed pilot areas, for which to develop proposals for specific case studies integrating natural and socio-economic sciences aimed to elaborate on the “human dimensions” of global change along the whole water continuum.
- 4) Establish a regional East Asia BASINS network to continue the science and synthesis and to strengthen existing and seek new value added links to other projects and organisations such as UNEP, GIWA, IOC-UNESCO (GOOS and ICAM), START and IHDP. This will be facilitated through the LOICZ platform.

Focus of workshop

To achieve the objectives outlined the workshop aims to work along the framework of the DPSIR scheme and focus on *assessment, analysis, categorisation and indexing* of:

- **Catchment-based activities (land use and land use change)** with consequences for the coastal zone (**DRIVERS**);
- **Coastal zone activities (DRIVERS)** and processes leading to degradation and coastal change in interaction with the catchment based factors;
- **PRESSURES** on key ecosystem and social system functioning; (indicating human pressures on the environment e.g. energy, industry, agriculture, fisheries) affecting

the **STATE** and hence **changing** the **STATE** of the coastal environment due to natural and mainly anthropogenic forcing;

- **IMPACTS**, which is effects on systems and how they are expressed, i.e. habitats, biodiversity, socio-economic functioning and resource and services availability and use; plus
- **RESPONSE** reflecting action taken (coastal management) to either protect against change such as increased nutrient or contaminant input, secondary sea level rise by means of reduced sediment loads etc, ameliorate adverse effects and ensure sustainable use of system's resources.

Products and Expectations

- The success of the Hong Kong workshop in February 2001 will lead the way to the provision of the information necessary for the LOICZ *regional synthesis*, the backbone of which will be a LOICZ R&S series volume along the workshop focus;
- Drafting a *follow-up proposal* aimed at integrated cross-disciplinary, i.e. combining natural and social science, pilot studies complementing those under parallel development within other regional BASINS efforts; and
- Information flow into an inter-regional/global BASINS core project meeting with the regional principal investigators involved, planned for the second half of 2001 - with intent to finally combine the available regional information to an overall first *global LOICZ BASINS synthesis* and provide a draft outline for the respective LOICZ Synthesis Book Chapter.

In summary the East Asia BASINS network established through the workshop will take responsibility for finalizing the regional synthesis and providing the umbrella for the set of interdisciplinary proposals coming out. Together with LOICZ and cooperating agencies the network will pursue efforts to generate appropriate funding for future work.

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