

LOICZ NEWSLETTER

LOICZ - STATUS AND HISTORY

LOICZ became a Core Project of the IGBP when its Science Plan (IGBP Report No. 25) was accepted at the meeting of the IGBP Scientific Committee in 1992. At the same time a proposal to host a Core Project Office (CPO), was submitted from The Netherlands. On acceptance of that offer, a CPO was established at the Netherlands Institute for Sea Research (NIOZ), and the subsequent success of the LOICZ Project owes much to the far-sighted and generous support of The Netherlands government through its Ministries of Science, Transportation, and Agriculture.

Under the direction of Dr. John C. Pernetta, Project Manager and Director from November 1993 to May 1996, the LOICZ Implementation Plan (IGBP Report No. 33) was developed and approved in 1994. Concurrently and subsequently, major strides have been made toward developing the organisational structure, contacts, etc., that have led to the implementation of LOICZ research initiatives, some of which are described elsewhere in this newsletter.

Future editions will provide additional information on LOICZ research activities, workshops, etc. LOICZ did not spring into being without the dedicated effort of many people. Beginning in 1989 Professor Patrick Holligan (see other story, this page) and others too numerous to acknowledge here, have worked hard to make LOICZ a success. With this edition go our thanks.



This is the first newsletter of the Land Ocean Interactions in the Coastal Zone (LOICZ) Core Project of the IGBP. It will be produced quarterly to provide news and information regarding LOICZ activities.

FOR MORE INFORMATION, PLEASE CONTACT:

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LOICZ WHY?

For me the most important reason for undertaking the LOICZ Project as part of a study of the earth system is that it draws attention to the significance of material being transported and transformed 'horizontally' between the land and the oceans, whereas the other IGBP projects are concerned mainly with equivalent 'vertical' processes involving the atmosphere. ...[S]tudies of nutrient fluxes in the coastal zone [have demonstrated that] changes driven directly or indirectly by humans almost always make the land-sea interface and contiguous riparian zones less retentive so that, under the driving force of the hydrological cycle, the rate of loss of matter to the oceans (and secondarily to the atmosphere) is being increased significantly. The same principle applies to water itself, suspended sediment and organic carbon. Over time-scales of centuries the effects on the coastal zone and adjacent land areas will be additive and severe, especially as the return of such materials back to the terrestrial biosphere tends to be a much slower process. In order to get to grips with this problem LOICZ must give priority to the study of change being driven by human activities directly (as opposed to the climate system) and to initiation of new work in tropical regions where the coastal zone is most highly populated. From such a perspective the need to link relevant research from the natural and socio-economic sciences is mandatory."

Patrick M. Holligan
Chairman, LOICZ-SSC, 1993-95

COASTAL FACTS.....

The coastal domain (sea level plus and minus 200 m):

- is 18% of the Earth's surface;
- accounts for about 1/4 of global primary productivity;
- is where ca. 60% of the human population lives;
- contains 2/3 of the world's cities with >1.6 million people;
- supplies ca. 90% of the world fish catch.

The present-day coastal ocean accounts for:

- 8% of the ocean surface;
- <0.5% of ocean volume;
- ca. 14% of ocean production;
- up to 50% of global oceanic denitrification;
- 80% of global organic matter burial;
- 90% of global sedimentary mineralisation;
- 75-90% of the global sink of suspended river load;
- >50% of global carbonate deposition.

.....AND CONSEQUENCES

Envision the world coastal zone as a ribbon that is heterogeneous in composition, some 600,000 km long, with a width varying irregularly between hundreds of meters and a thousand km, wrapped in a convoluted fashion around the Earth through its varied climatic, biotic, and geologic environments. It does not lend itself to compartmentalised description or modelling as do ocean, atmosphere and terrestrial biome - yet its importance demands inclusion in any useful Earth system model.

LOICZ addresses this challenge by identifying processes and components that characterise not just individual coastal systems, but classes of coastal systems. Once coastal typologies are constructed to address both natural features and anthropogenic effects, the data required to characterise "type specimen" environments can be identified, assembled - and ultimately synthesised into a functional model of coastal zone dynamics at regional and global scales.

LOICZ RESEARCH STRATEGY

LOICZ has identified a number of high priority areas for research that relate to global climate change, expressed as the four LOICZ research foci:

- 1) Effects of Changes in External Forcing or Boundary Conditions on Coastal Fluxes;
- 2) Coastal Biogeomorphology and Global Change;
- 3) Carbon Fluxes and Trace Gas Emissions;
- 4) Economic and Social Impacts of Global Change in Coastal Systems.

Six framework activities unite and support the research foci:

- 1) Scientific Networking;
- 2) Development of a Coastal Typology;
- 3) Data System Plan;
- 4) Measurement Standards, Protocols and Methods;
- 5) Modelling in LOICZ;
- 6) Determination of the Rates, Causes and Impacts of Sea Level Change.

LOICZ RESEARCH NODES

Much of the LOICZ research is being carried out by a distributed network of coastal zone researchers. To facilitate the promotion and co-ordination of LOICZ global research initiatives, LOICZ Research Nodes are being identified as centres of excellence in particular fields of LOICZ research interest. At present there are three established nodes:

RIVER DISCHARGE NODE -

The goal of this node is to compile available data on river freshwater discharge and suspended sediment load. Contact:

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 College of William and Mary
 Gloucester Point, VA
 23062, United States
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 Fax: 1-804-642 7009

DELTAIC RESEARCH NODE -

This node is establishing a global network of "deltaic specialists" under the umbrella of the LOICZ Core Project. It will take the lead in providing guidance and assistance to the wider LOICZ network in developing data-related protocols and methodologies for the study of deltaic hydrodynamics, river hydraulics and coastal morphodynamics.

Contact for the Deltaic Research Node is:

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 (LIM/UPC)

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 Coastal Resources
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BIOGEOCHEMICAL

MODELLING NODE -

This node provides a focus for the aggregation of biogeochemical budget model outputs. The goal of this node is to compile regional carbon-nitrogen-phosphorus data and budget models for numerous coastal areas of the world that can be used to produce global syntheses of fluxes in the coastal zone. Additional details on the data and methodologies used by this node can be found in LOICZ Reports & Studies No. 5. The two contacts for the Biogeochemical Modelling Node are:

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LOICZ CORE RESEARCH SITES

Four Core Research Sites in Southeast Asia constitute the initial thrust of LOICZ integrative efforts. These sites in 1) Indonesia, 2) Malaysia, 3) the Philippines and 4) Vietnam, are supported jointly by the Netherlands Foundation for the Advancement of Tropical Research (WOTRO) and the South East Asian Centre for START (SARCS).

The projects, with locations shown on the map and descriptions below, all address SARCS Immediate Objective 2: to integrate natural - social science assessment of changes in coastal zones. All involve the modelling and synthesis of both biogeochemical and socio-economic data that will be useful not only in characterising the coastal zone processes in the region, but also as test cases for the necessary conceptual and operational development for scaling up to global analysis.

Project titles and contacts are:

1) *Integrated Coastal Zone Management in Banten Bay*

Dr. A. Nontji

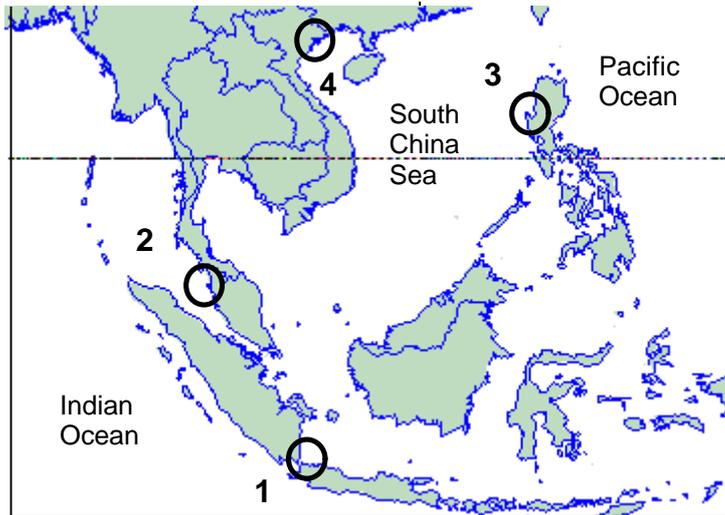
Research & Development Centre of Oceanology, (LIPI)
 Jl Pasir Putih 1, Ancol Timur
 P O Box 580 DAK
 Jakarta, 11001, Indonesia
 Fax: 62-21-681 948

2) *Carbon and Nutrient Fluxes and Socio-Economic Studies of the Merbok Mangrove Ecosystem*

Professor ONG Jin-Eong

Centre for Marine & Coastal Studies
 Universiti Sains Malaysia
 Penang, 11800, Malaysia
 Fax: 60-4-657 2960

3) *Economic Evaluation and Biophysical Modelling of the Marine Environment of Bolinao in Support of Management for Sustainable Use*



SARCS/WOTRO/LOICZ Core Research Sites

Dr Liana Talaue-McManus

The Marine Science Institute
 Univ. of the Philippines - Diliman
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 Diliman, Quezon City, 1101
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4) *Economic Evaluation Studies of Mangrove Conservation and Rehabilitation in Nam Ha Province*

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SOCIO-ECONOMIC AND NATURAL SCIENCES INTEGRATION

SARCS, WOTRO and LOICZ have jointly sponsored a number of workshops over the past two years to bring together researchers from the region, together with key resource persons, to develop guidelines for use in the regional study of coastal zones. Thus far two LOICZ publications have been developed, one on coastal zone resource assessment and the second on the methods for biogeochemical modelling.

These two documents are useful by themselves as guides in

the collection of relevant data, modelling, and the analysis of the data. The widespread application of these guidelines will provide the LOICZ Core Project with the necessary information base to eventually carry out the global modelling activities described in the LOICZ Implementation Plan.

The present challenge for SARCS/WOTRO/LOICZ is the integration of these methodologies into a framework for carrying out integrated modelling of coastal systems incorporating both socio-economic and natural science aspects of global change.

The next step towards this integrated modelling is a workshop to be held in Hanoi, Vietnam, October 26-30th 1996. This workshop will bring together the researchers from the core research sites with LOICZ Scientific Steering Committee (SSC) members and resource persons to work together in developing the necessary conceptual framework. This will be carried out through a review of progress to-date in the core research projects and by building on and applying the existing LOICZ guidelines.

Although the development and final publication of an integration guidelines document will not be completed until sometime in 1997, the upcoming workshop will permit the Principal Investigators to refine their on-going data collection and model development and, in doing so, to provide essential testing and validation of the draft conceptual framework.

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*"Far better an approximate answer to
the right question which is often
vague, than an exact answer to the
wrong question which can always
be made precise."*

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LOICZ PUBLICATIONS

Coastal seas: a net source or sink
of atmospheric carbon dioxide?
LOICZ Reports & Studies No. 1.

River Discharge to the Sea:
A Global River Index (GLORI).
LOICZ Reports & Studies No. 2.

LOICZ Typology: Preliminary
version for discussion.
LOICZ Reports & Studies No. 3.

Coastal Zone Resources
Assessment Guidelines.
LOICZ Reports & Studies No. 4.

LOICZ Biogeochemical
Modelling Guidelines.
LOICZ Reports & Studies No. 5.

LOICZ Data and Information
System Plan. LOICZ Reports &
Studies No. 6.

CPO Credits

The LOICZ community expresses
its gratitude to Dr. John C. Per-
netta, the first LOICZ Project
Director, who recently accepted a
position with the UNEP GEF
programme in Nairobi after serving
LOICZ for nearly three years. The
project owes much to his vision,
energy, and organisational skills.

The search for a new Project Exec-
utive Officer is in its final stages,
and the next Newsletter will feature
a profile of the successful candi-
date.

Thanks also go to Ms. Sheila
Lunter, CPO Administrator '94-'96,
now with the IGBP Secretariat, for
her great efforts to initiate and
maintain the CPO in its formative
years.