LAND-OCEAN INTERACTIONS IN THE COASTAL ZONE (LOICZ)

Core Project of
International Geosphere-Biosphere Program (IGBP)
and
International Human Dimensions Program on Global Environmental Change (IHDP)

18. SCIENTIFIC STEERING COMMITTEE MEETING

29 May – 1 June 2007
Simon Fraser University
Vancouver, B.C., Canada

Briefing Material
Final Version of 5 June, 2007
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# Overview Time Schedule

**18th LOICZ SSC Meeting, 29 May – 1 June 2007, Simon Fraser University at Harbour Centre, Vancouver**

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<tr>
<th>Time / Location</th>
<th>Tuesday 29 May SSC: Reporting</th>
<th>Wednesday 30 May Mini-Symposium</th>
<th>Thursday 31 May SSC: Scientific Planning</th>
<th>Friday 1 June SSC: Administrative Planning</th>
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<td>Progress Report (Scientific Themes, Priority Topics, Cross-Cutting Activities)</td>
<td>Lunch Break (Segal Centre, #1410)</td>
<td>Report SSC Working Groups</td>
<td>LOICZ Organization SSC Membership</td>
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<td><strong>Reception</strong></td>
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Agenda 18th LOICZ SSC Meeting

Day 1 - Tuesday 29th of May

08:30 OPENING
  - Words of Welcome (J. Pacyna)
  - Farewell of old IPO Members (J. Pacyna)
    (M. Paul, M. Le Tissier, H. Whyte)
  - Introduction of new SSC/IPO Members (J. Pacyna)
    (R. Ramachandran, J. Weichselgartner, B. Goldberg)

09:00 CONSIDERATION OF RECORDS FROM PRIOR MEETING
  - Report Chair (J. Pacyna)
  - Review of Actions Points 2006 (J. Pacyna)

10:30 – 11:00 Coffee Break

11:00 – 12:30 PROGRESS REPORT (* Apologies, not present at SSC Meeting)
  - Scientific Themes (W. Dennison, A. Forbes, J.D. Restrepo*, J. Parslow, E. Roth*)
  - Priority Topics (L. Mee*, D. Swaney, S. Olsen)
  - Cross-Cutting Activities (A. Newton, B. Buddemeier*)
  - Discussion on Priority Topic Outcome Contribution to Implementation of the SPIS along LOICZ Themes (all)

12:30 – 14:00 Lunch Break

14:00 – 16:00 PROGRESS REPORT continued
  - LOICZ Regional Nodes (N. Wikramanayake, B. Goh)
  - LOICZ IPO (H. Kremer)

16:00 – 16:30 Coffee Break

16:30 – 18:00 LOICZ ORGANIZATION (J. Pacyna)

18:00 End of Day 1

20:00 LOICZ Dinner, hosted by NILU (Fish House Restaurant)

Background Documents (to be reviewed prior to the meeting):
- Chair’s Note (page 12)
- Report Scientific Themes (page 16-21)
- Report Priority Topics (page 22-26)
- Report Cross-Cutting Activities (page 27/28)
- Report Regional Nodes (page 29-31)
- Report IPO (page 32-52)
- Comments (page 53-64)
- IPO Review Action Points (page 65-69)
Day 2 - Wednesday 30th of May

Mini-Symposium

Applying the Best Available Science to Policy, Decision Making and to Changes in Societal Behavior

08:30 – 08:45 Welcome and Introduction

08:45 – 09:00 Short presentation on LOICZ (J. Pacyna)

09:00 – 12:15 Case study presentations followed by discussion

- Restoring Coquitlam River Sockeye: can we resolve competing interests? (Craig Orr, Watershed Watch Salmon Society, Coquitlam)
- Moving toward higher order outcomes: sharing knowledge, resources and accountability (Kelly Vodden, Department of Geography, Memorial University, St. John’s)
- Linking sustainable livelihoods to coastal policy in Aceh Province, Indonesia (Jacqueline Alder, Fisheries Centre, University of British Columbia, Vancouver)
- MPAs in Thailand: research and application (Philip Dearden, University of Victoria and Marine Protected Areas Working Group of the OMRN, Victoria).

12:15 – 13:00 Lunch Break (Segal Centre, Room #1410)

13:00 – 13:15 Short presentation on ENCORA (F. Colijn)

13:15 – 16:30 Case study presentations followed by discussion

- Managing contaminants: the difficulty with time series and assessing risks (Robie Macdonald, Institute of Ocean Sciences, Fisheries and Oceans Canada, Victoria)
- The science and politics of the B.C. shellfishery (Leah Bendell-Young, Biosciences, Simon Fraser University, Burnaby)
- Harbour seals as sentinels of coastal health (Lizzy Mos, Hemmera Environmental, Victoria)
- Research that influences policy makers: a case study of cruise ship tourism on BC’s north coast (Peter W. Williams, School of Resource and Environmental Management, Simon Fraser University, Burnaby).

Background Documents

- Agenda (page 70-74)
- Participants (page 75)
Day 3 - Thursday 31st of May

08:30  SCIENTIFIC PLANNING
- Plenary Introduction (J. Pacyna)
- Short presentation on Modeling (J. Parslow)
- Short presentation on IGBP Congress 2008 (J. Morais)
- Working Groups on Priority Topics (Rooms #2200, #2520, #2540)

10:30 – 11:00  Coffee Break

11:00 – 12:30  SCIENTIFIC PLANNING continued
- Report from the Working Groups

12:30 – 14:00  Lunch Break

14:00 – 16:30  SCIENTIFIC PLANNING continued
- Cross Cutting Activities
- General Activities
- Symposia
- Cooperation and Collaboration

16:30  End of Day 3

17:30  LOICZ Dinner (Vancouver Aquarium)

19:30  Public Lecture “Who Speaks for the Oceans and What are They Doing About it?”

20:30  Reception

Background Documents (to be reviewed prior to the meeting):
- IGBP Congress Proposals (page 76-79)
- Yantai Seminar Expose (page 80)

Decisions (required at the meeting):
- Role, Needs, and Future Directions of LOICZ Modeling and LOICZ Typology
- Strategic and Programmatic Implementation of Topics
- Contributions to Symposia, OSM (e.g., IGBP 2008 Congress in Cape Town)
- Cooperation with Core Projects, Regional Nodes etc.
# Day 4 - Friday 1st of June

## 08:30  ADMINISTRATIVE PLANNING
- Action Plan 2007/08
- Fundraising Strategy

## 10:30 – 11:00  Coffee Break

## 11:00 – 12:30  ADMINISTRATIVE PLANNING continued
- LOICZ Organization and SSC Membership

## 12:30 – 14:00  Lunch Break

## 14:00 – 16:00  ADMINISTRATIVE PLANNING continued
- Dissemination and Outreach Strategy
- Publication Strategy

## 16:00 – 16:30  Coffee Break

## 16:30 – 18:00  VISION FOR THE FUTURE
- Decisions
- Outlook
- Concluding Remarks

## 18:00  Closing of SSC Meeting

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### Background Documents (to be reviewed prior to the meeting):
- LOICZ Organization (page 81-84)
- LOICZ Formalities (page 85-88)
- ToR Policy Advisory Board (page 89-91)
- ToR Regional Node East Asia (page 92-94)
- Marie Curie Initial Training Networks (page 95-97)

### Decisions (required at the meeting):
- Strategic Action Plan 2007/08
- Priority List / Implementation Strategy
- Fundraising Strategy
- Publication, Dissemination, and Outreach Strategy
- LOICZ Organization and Membership
- External Requests for Collaboration or LOICZ Services
1.3 Logistical Information

Dear SSC Member and Guest:
We are glad to welcome you to the 18th LOICZ Scientific Steering Committee Meeting 2007 in Vancouver. You may find below some practical information.

At A Glance

Venue Information
Simon Fraser University (SFU) at Harbour Centre, Vancouver Campus
515 West Hastings Street, Vancouver, British Columbia, BC V6B 5K3
Tel.: +1-604-291-5010 (Administrative Offices)
URL: http://www.harbour.sfu.ca

Hotel Information
Delta Vancouver Suites
550 West Hastings Street, Vancouver, British Columbia, V6B 1L6
Tel.: +1-604-689-8188, Fax: +1-604-605-8881
URL: http://www.deltahotels.com

Internet Access
The Hotel Delta Vancouver Suites feature telephones with dual line speakerphone, with data port and voicemail, and high-speed Internet access.
Meals / Restaurants
Breakfast: 07:00 to 10:00 at Delta Vancouver Suites
Coffee breaks: tea, coffee, water, juice, and biscuit at the meeting venue
Lunch: individual basis (please, choose your own restaurant, see selection below)
Dinner: you are invited to join our Norwegian Council Dinner (29 May) and LOICZ Dinner (31 May)

The following restaurants are located within walking distance from Harbour Centre:
Streamworks (http://www.steamworks.com/gastown_index.htm), West Coast cuisine
375 Water Street, Tel.: +1-604-689-2739

Water Street Café (http://www.waterstreetcafe.ca), Italian and Pacific Northwest cuisine
300 Water Street, Tel.: +1-604-689-2832

Brioche (http://www.brioche.ca), Italian cuisine
401 West Cordova Street, Tel.: +1-604-682-4037

The Irish Heather (http://www.irishheather.com), Gastropub food
217 Carrall Street, Tel.: +1-604-688-9779

Al Porto Ristorante (http://www.alporto.ca), Italian cuisine
321 Water Street, Tel.: +1-604-683-8376

Kitanoya Guu Oto Otokame (http://www.guu-izakaya.com/gastown.html), Japanese cuisine
105-375 Water Street, Tel.: +1-604-685-8682

Currency Information
It is best to exchange your money at financial institutions such as banks, trust companies and currency exchanges. Currency exchange offices can be found at most airports and at some provincial travel information centers. Other businesses such as hotels and stores will exchange your currency but the rate is not generally as good as at a financial institution.
The rate at the present date is US$ 1.00 = 1.16 CAD or Euro 1.00 = 1.54 CAD
Please, check current rates at: http://www.bankofcanada.ca

Airport Information
Vancouver Airport Authority
3211 Grant McConachie Way
Richmond, B.C. V7B 1Y7
Tel.: +1-604-207-7077 (General Inquiries Line)
URL: http://www.yvr.ca
Car rental facilities are conveniently located just steps from the terminal on the ground floor of the parkade and several companies operating their vehicle pickup and return services directly from these facilities.

Canada Notes
Canada is the second-largest country in the world (after Russia); approximately 90% of the population is concentrated within 160 km of the US border; coastline: 202,080 km.
1.4 List of Participants

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2. Background Documents

2.1 Day 1: Reporting

2.1.1 Chair’s Note

LOICZ SSC Chair’s Note

Jozef M. Pacyna

1. Purpose of the Note

Main purpose of this note is to present the LOICZ SSC Chair views in order to

- Contribute to the explanation of mechanisms of LOICZ operations
- Improve understanding of the LOICZ Strategy Plan, and
- Improve communication between LOICZ SSC and LOICZ IPO.

This note is meant to serve as a document for further discussion at the 18th LOICZ SSC Meeting in order to clarify any questions related to LOICZ operational procedures and improve internal links between SSC and IPO. I apologize for some commonalities in the text of this document and issues that can be regarded by the reader as obvious but still brought into this document.

2. LOICZ Operational Mechanisms

LOICZ has started its second part of life as a core project of IGBP and IHDP with a very ambitious and scientifically challenging Science Plan and Implementation Strategy (SPIS). With its primary objective “to provide the knowledge, understanding and prediction needed to allow coastal communities to assess, anticipate and respond to the interaction of global and local pressures which determine coastal change” LOICZ has become one of the most important research initiatives aiming at the integration of information on coastal zone changes in various locations around the globe and then synthesis of this information to obtain the global picture of the coastal zone in change.

LOICZ is not a regular research project with funding and strictly defined consortium of partners. LOICZ is a collaborative effort of several hundred coastal zone scientists and managers that carry out their tasks within various projects, assessments, consultancy, and specialty meeting. LOICZ provides a platform or umbrella under which the results of hard work of those scientists can be integrated in order to better describe and explain the change of coastal zone structure, functioning, and services that we witness today. Thus, LOICZ should be regarded as a promoter of interdisciplinary coastal zone research around the globe on one side and the beneficiary of the results of this research on the other side. LOICZ’ life is dependent of the projects that produce results for further integration and these projects carry our LOICZ logo. There is a routine/procedure described by the IPO on which various projects get such a LOICZ logo (see ToR available on the LOICZ web site), meaning that they are a part of LOICZ project portfolio. These projects are called Affiliated Projects (APs).

Integration of information for their further synthesis is being carried out in LOICZ within five Scientific Themes (STs) defined and described within the LOICZ-SPIS. This is the way by which LOICZ wants to provide leadership and guidance to meet the goal of developing a research framework for interdisciplinary analysis of existing information and for generation of new research as well as for other goals described on page 2 of the SPIS. Coordinators of the Scientific Themes are responsible for organization and coordination of this integration process through, among other tasks

- Contacts with relevant (i.e., relevant to their ST) APs and IPO with respect to the transfer of the project results to the LOICZ database
- Fostering the transfer of relevant information from relevant APs into the Priority Topics (PTs) (Communication to PT Leaders and channelling of findings into the synthesis process)
• Organization and/or participation in sessions/meetings on the issues relevant to their ST objectives with the purpose of data collection and their storage in the LOICZ database, and
• Cooperation with other IGBP and IHDP projects, as well as with projects within the International Program of Biodiversity Science (DIVERSITAS), the World Climate Research Programme (WCRP), the Joint Projects of the Earth System Science Partnership (ESSP), the Integrated Regional Studies (MAIRS), and Regional Activities and Capacity Building (e.g., START).

Integration of information along the five STs is a continuous process taking place during the whole period of LOICZ with the synthesis of the integrated data along Scientific Theme goals from the SPIS as a final product.

Four major types of Integrating Activities (IAs) have been developed to assist the integration of information within and between the LOICZ STs, including:

• Data Policy and Management
• Cross-Cutting Activities and Joint Tasks
• Dissemination and Capacity Building, and
• Acquisition of Data and Information.

Leaders of the Integrating Activities (IAs) are expected to work closely with the ST Coordinators and the IPO in order to make the collection, storage and integration of data as efficient as possible. They are also taking part in dissemination and promotion of data and findings available within LOICZ.

In order to improve the process of synthesis of information on a given subject, it was decided within LOICZ in 2005 that Priority Topics (PTs) should be identified. This idea arrived after the first LOICZ synthesis was completed and it was concluding the transition process towards the next phase of LOICZ. Instead of performing the synthesis process at the very end of the LOICZ lifetime it was postulated that a set of PTs can be identified for data collection and synthesis within a shorter period of time, i.e., 2-3 years. In this way, the synthesis of information and therefore the delivery of knowledge products will start earlier in the LOICZ lifetime, which may result in more data to be used for synthesis and more scientists involved in this process. It is also meant to keep LOICZ flexible in its scientific priorities and with a well focused niche that is subject to regular review by the scientific peers. Therefore, it should be stressed that no replacement has been made for LOICZ Scientific Themes by introducing Priority Topics. In contrary, the collection and synthesis of data within PTs should help LOICZ in focusing and developing the final synthesis of LOICZ within STs.

The Priority Topic Leaders are expected to work closely with Scientific Theme Coordinators and Integrating Activity Leaders. This is to support and to assure the relevance of a given PT for the given LOICZ STs work and for efficient and complete synthesis of the LOICZ knowledge at the end of its second lifetime.

Initially, the PTs were defined in a question type style, including:

1. What are the socio-ecological implications of changing patterns of land and sea use?
2. What are the effects of changes to the flows of freshwater and materials to estuaries and shelf seas?, and
3. What actions are suggested by the comparative analysis of initiatives to modulate and direct human activities in coastal ecosystems?

While these questions are the key working questions for the analysis of material collected within the current PTs, their titles were modified at the 17th SSC Meeting and are as follows:

1. Linking Social and Ecological Systems in the Coastal Zone
2. Assessing and Predicting Impact of Environmental Change on Coastal Ecosystems
3. Linking Governance and Science in Coastal Regions

The above described LOICZ operation mechanisms are presented in Figure 1.
3. LOICZ Strategy Plan

LOICZ has grown substantially during its life and the project reached a very high level of recognition within the science community studying Earth System changes and it has generated expectations from managers developing policies for reducing the impacts of these changes. This is a result of very hard work of LOICZ scientists and coordinators in the past on one side and the increasing needs for improvement of knowledge on effects of global change on the coastal ecosystems on the other side. The content of the LOICZ-SPIS illustrates in the best way how wide and interdisciplinary the challenge is that LOICZ is meeting at present.

But LOICZ means scientists who are behind this major progress in science that brought LOICZ to this highly respected position among other projects of IGBP, IHDP, WCRP, DIVERSITAS and other ESSP activities. However, in recent time many of the LOICZ scientists became overloaded with research tasks and administrative duties either as part of their day to day business outside LOICZ or in relation to LOICZ and we all face to make the compromise on how much time we can still devote for scientific
steering of LOICZ. Both, developing the science of the global coastal zone in change and steering LOICZ, one of the major projects in this development require the involvement of distinguished scientists, as we have them in the current SSC. What is asked from the LOICZ SSC is both, knowledge and time from its members.

A draft of a LOICZ Strategy Plan has been prepared to support the implementation of the LOICZ-SPIS with regard to the improvement of LOICZ operational mechanisms. The draft is presented as a separate document meant for discussion at the meeting of the LOICZ SSC in Vancouver.

4. Communication between SSC and IPO

Communication between the Scientific Steering Committee (SSC) of LOICZ and the LOICZ International Project Office (IPO) is one of the key issues ensuring effective implementation of the LOICZ-SPIS. The LOICZ SSC and IPO are composed of excellent scientists working with a common goal of having LOICZ even more scientifically sound and more important for policy making. As a chair of the LOICZ SSC and thus a member of the IGBP-SC and IHDP-SC I am of the opinion that the LOICZ IPO is one of the most efficient and professional IPOs that are established within the IGBP and IHDP programs. However, communication between LOICZ SSC and IPO has not always been at the level expected from these highly accomplished groups of people. Thus, there is room for improvement in communication between SSC and IPO, which may result in further improvement in the implementation of LOICZ-SPIS and the avoidance of unnecessary irritation seen occasionally in both groups.

One of the main issues of the communication improvement is the clarity and transparency of tasks to be carried out by the SSC and IPO and the roles that they play within the project. An example of some confusion between these two groups is a matter of LOICZ-SPIS Scientific Themes and Priority Topics. My impression was that until very recently there was still some misunderstanding among the SSC members that Priority Topics were brought to exchange the LOICZ Scientific Themes, and of course there is no reason for such exchange. The issue of a need for Priority Topics and introducing them could have been made in a clearer way right at the beginning of this process after the LOICZ Open Science Meeting in the Netherlands in 2005.

SSC duties come as additional tasks for the LOICZ SSC members. They are already very busy before these duties call and it is difficult for them to find time for consideration of another request or mail for example from the IPO. However, LOICZ has established a group of LOICZ SSC Corresponding Members with its mandate and Terms of Reference (ToR). This group, in parallel to the LOICZ SSC has a very important role to play in collecting of information from other projects for the LOICZ integration and synthesis, organizing LOICZ meetings and sessions, representing LOICZ at other meetings and conferences, and participating occasionally at the LOICZ SSC meetings upon invitation.

It can be proposed that current leaders of STs, PTs, and IAs team up with young scientists from their working groups/departments/institutes in order to have their support in fulfilling their LOICZ SSC duties, including timely communication within LOICZ project structure, particularly with the IPO. These young co-leaders will then become members of LOICZ SSC Corresponding Group.

The LOICZ IPO has also experienced some turbulence in its communication with the LOICZ SSC members and drops in effectiveness of carrying out LOICZ day to day business caused partly by the final stage of movement to GKSS, adaptation to new rules and procedures at the new host, and partly by the change of personnel. At present, the situation at the IPO has improved and will hopefully be normalized soon. Differences in procedures, however, that effect the interaction with SSC members in carrying out for example workshops etc will remain compared with the old location in the Netherlands. One should also add that the role of the IPO should be properly understood. This subject is further outlined within the LOICZ Strategy Plan. One issue, however, can be mention here. The IPO, with its excellent scientists is often expected to be a partner in various research consortia applying for research funds. The IPO is to assist in preparing project proposals by such consortia but IPO may not be regarded as a regular partner in the consortium unless very specific proposals are defined. Also the IPO has no stand alone legal status.

The SSC and IPO members are invited to present their suggestions on how to improve the communication between these two LOICZ bodies. It is encouraged here that these suggestions are presented to the LOICZ SSC Chair even prior to the Vancouver meeting, so the discussion on this subject at the meeting can better structured.
2.1.2 Report Scientific Themes

Coordinator's Report on Scientific Theme I:
Vulnerability of Coastal Systems and Hazards to Society

William C. Dennison

In summarizing ST I activities, there are a couple central components, namely developing science communication capacity and integrated ecosystem assessment, and a suite of other activities which will be included.

Developing Science Communication Capacity

LOICZ has sponsored two science communication courses; one associated with the Erasmus Mundus program (Rio Formosa, Portugal) and one associated with START (Bangkok, Thailand). Both courses were attended by a wide geographical student body (from 31 countries in N. America, S. America, Africa, Asia, Australia, and Europe). These LOICZ sponsored courses were augmented with two LOICZ sponsored workshops associated with other meetings; one in Egmond, Holland associated with the LOICZ General Science Meeting and one in Gdansk, Poland associated with a European Littoral conference. Additional courses were offered in Gainesville, Florida (sponsored by Florida Sea Grant), Brisbane, Australia (sponsored by International Watercentre), Annapolis, Maryland (sponsored by Integration and Application Network).

The web-based symbol library (www.ian.umces.edu) has been accruing more users, with currently 30,000+ registered users from 219 countries. Funding from the Packard Foundation is supporting the effort to grow the number and diversity of symbols in the overall effort to develop a global symbol language. The conceptual diagrams created by the symbol library have begun to appear in more scientific publications, conference posters and powerpoints, and public communication products.

The book “Communicating Science Effectively: A Practical Handbook to Integrating Visual Elements”, which includes a LOICZ logo on the back cover and title page, was published in 06/06. Sales of the ($US 50; 40 Euro) book have been brisk according to the publisher; International Water Association. A short description follows: This is a practical handbook on how to communicate science effectively. The first part is an introduction to the principles of science communication – what effective science communication is, why it is important, and how to do it. The principles in these chapters include how effective science communication can change societal paradigms and make one a better scientist. General principles relating to all science communication products include providing synthesis, visualisation, and context, assembling self-contained visual elements such as photos, maps, conceptual diagrams and data, formatting content to define and simplify terms, and eliminating jargon and acronyms. Formatting of these visual elements is also discussed. This book will be a valuable resource for scientists, working in government, research, management agencies, and education. Although environmental scientists are the primary audience, the principles and techniques discussed are applicable to scientists from all fields.

Integrated Ecosystem Assessment

A major effort to update a national assessment of US estuaries was undertaken as part of the National Estuarine Eutrophication Assessment. This approach included LOICZ style conceptual diagrams and typology. A report is being finalized and will be released later this year. Key findings from this report are the following:

1. The majority of estuaries assessed were highly influenced by human-related activities.
2. The majority of estuaries had overall eutrophic conditions that were moderate or worse.
3. The most commonly occurring eutrophic symptom was increased extent and frequency of elevated chlorophyll a levels.
4. Overall eutrophic condition and symptom expression were geographically variable.
5. Comparison of estuaries assessed in the early 1990s with 2004 indicates similar levels of eutrophication.
6. Improvement in eutrophic condition can only be achieved by management, research and monitoring programs working together.

A regional effort for developing an environmental report card in Chesapeake Bay, USA was undertaken. This report card, modeled after the Moreton Bay, Australia report cards, was released in 05/07. Chesapeake Bay report card scores were comprised of 6 indicators; 3 water quality indicators (clarity, dissolved oxygen, chlorophyll) and 3 biotic indicators (aquatic grasses, benthic index of biotic integrity, phytoplankton index of biotic integrity). A key aspect was that the report card was geographically explicit, promoting civic pride and regional comparisons. The report card was accompanied by various supporting materials; methods newsletter, web site, technical supporting document, media release. The report card had a significant impact due to highly visible media coverage (print, radio, television). The conversation was directed on the causes of poor report card grades, which was viewed as constructive. The report card also has provided guidance to a new state government effort (BayStat) which will encompass both state of environment indicators and management response indicators.

Other environmental report card efforts that are being explored include a Great Barrier Reef report card (in collaboration with the Great Barrier Reef Marine Park Authority; 09/07) and Ocean Report Cards for North Pacific and North Atlantic Oceans (in collaboration with Sea Education Association).

Coastal Lagoons

Coastal lagoons are types of estuaries that are ubiquitous globally and highly vulnerable to impacts, particularly eutrophication. A LOICZ sponsored workshop to develop a conceptual basis for research, monitoring and management priorities is being planned by B. Dennison and A. Newton. Workshop outcomes will include a peer review paper, a suite of communication products including conceptual diagrams, maps, and newsletter which can be delivered on the web.

Additional Activities

The International Union for Concerned Scientists produces “red list”; lists of threatened and endangered species. Currently, the IUCN is developing lists for marine species, in particular, an effort is underway to assess seagrasses, mangroves, macroalgae and corals. The opportunity to gather relevant experts together can often capitalize on existing workshops/conferences. LOICZ could be a gathering place and/or providing expertise for contributing and reviewing “red lists”.

A five part series published in the LA Times on “Altered Oceans” which focused on coastal issues was recently awarded a Pulitzer Prize for journalism. A web site (www.latimes.com/oceans) with photos and videos is available for viewing, worthy of linking to the LOICZ web site.

Conceptual diagrams were created for incorporation in the LOICZ workshop report “The role of the coastal ocean in the disturbed and undisturbed nutrient and carbon cycles”. In addition, LOICZ conceptual diagrams from the Coastal Fluxes in the Coastal Zone book (LOICZ I synthesis) are being published in the special issue of Estuarine Coast and Shelf Science journal.

A web-based image and video library (www.ian.umces.edu) was launched last year which currently includes 1165 images/videos. In less than one year, 100,000+ views of the web version/thumbnail version and 3310 downloads of the print versions of these images has occurred. This library would be greatly enriched by contributions of LOICZ members, creating a shared global library that would enrich various science communication products.

A global seagrass trajectories initiative, sponsored by the US based National Center for Ecological Analysis and Synthesis in Santa Barbara, CA, has a group of seagrass experts assembling a global seagrass database with 5000+ entries for assessing seagrass trends over time. The analysis revealed a strong increase in the number of journal publications of a variety of coastal ecosystems (corals>salt marshes>>mangroves~seagrasses). Analysis of the number of media reports revealed that journal articles do not proportionately lead to media reports. Corals and mangroves have obtained “coastal charisma”, but salt marshes and seagrasses are lagging. An effort has been initiated to make up the “charisma gap” in seagrasses which involves producing a suite of science communication products. LOICZ could enhance this and similar efforts to help create “charisma” of coastal ecosystems.

An Annapolis Synthesis Center (www.ian.umces.edu) has been created to focus on developing scientific syntheses and effectively communicate these findings. Funding from the Packard Foundation is being sought to support activities at the Center. LOICZ workshops could utilize this enhanced capacity in science integration and science communication.
Coordinator’s Report on Scientific Theme II:
Implications of Global Change for Coastal Ecosystems and Sustainable Development

Anthony Forbes

Having re-considered the nature, goals and possible implementation strategies of this Theme as outlined in the Science Plan and Implementation Strategy (SPIS) there appears to be an option between attempting to initiate progress within the Theme on a global scale via development of relevant contacts within the plethora of global programmes, or to concentrate on national and regional developments which fall within the LOICZ sphere of interest. This represents a choice between a top-down and bottom-up approach. On this basis the progress on the top-down choice to date has been minimal largely because it is not simple from a co-ordination point of view to carry out this function from the southern tip of Africa. On the other hand, particularly on a national and to some extent a regional scale, there is substantial interaction between coastal researchers and government bodies such as the South African Water Research Commission and the South African Department of Water Affairs and Forestry aimed at providing a scientific basis for management of increasingly scarce water resources as well as wetlands, which in my case refers particularly to estuaries. These interactions would certainly qualify as case studies under the cross-disciplinary project-based strategies listed on P21 of the SPIS.

A major national focus has been on the determination of freshwater requirements for estuaries both in terms of the methods and the implementation of the results. Although not related directly to the above two other major developments have been proposed, both of which have highly significant implications for the local estuarine and coastal environments. The first is the construction of a new international airport which will be situated between two estuaries north of Durban and which is further anticipated to develop as a trade port with extensive infrastructure surrounding the airport. Major expansions are also planned for the Port of Durban to allow for increased container handling facilities. Durban is the major container handling port on the east coast of Africa. Despite its use as a harbour the bay still provides extensive, sheltered intertidal sandbanks which are unique on the east coast of South Africa. I was part of a team convened by MER cc which performed a detailed synthesis and analysis of the ecological status and biological significance of the system as well as the possible biological trajectory of change. The team also carried out a survey of the goods and services provided by the Bay and attempted a first assessment of the value and significance of these goods and services. As part of this overall project an extensive literature survey of estuarine habitat rehabilitation was also carried out. What is significant in both contexts is that these proposals have effectively driven substantial research, data collection and synthesis, re-assessment of the use of biological data in terms of their significance in different contexts and the interactions of i.e. town planners, developers, engineers, government bodies and concerned members of the public. The above is not a full list of MER activities. It would be possible to put together a presentation which would add more detail to the above.

Significant further interactions between coastal scientists and managers from South Africa, Mozambique, Tanzania, Kenya and the western Indian Ocean islands will be facilitated at the Fifth Western Indian Ocean Marine Science Association (WIOOMSA) Scientific Symposium. Advances in Marine Science in Eastern Africa: “Science, Policy and Management: Pressures and Responses in the Western Indian Ocean Region” scheduled for 22-26 October this year in Durban which I will be attending.

In conclusion I am in a position to maintain a watching brief on coastal developments in the southwestern Indian Ocean and to some degree in the eastern African region, where I could possibly represent LOICZ interests and report back to the SSC but global interactions are really not practical. I would be interested to hear something of the experiences of other theme co-ordinators.
Coordinator’s Report on Scientific Theme III:
Human Influences on River Basin-Coastal Zone Interactions
Not received.

Coordinator’s Report on Scientific Theme IV:
Biogeochemical Cycles in Coastal and Shelf Waters
John Parslow

Preamble (from an Australian perspective)

The last year has seen an intensification of public awareness of climate change. The movie *An Inconvenient Truth*, the Stern Report, and the three IPCC WG reports, have put Climate Change front and centre in the public debate. This has led to a renewed focus on the need for mitigation, but also an awareness that we need to deal with impacts and adaptation, given that a considerable amount of climate change has already occurred, and more is built-in at current CO2 levels.

In Australia, climate is literally and figuratively a hot topic. The last decade has been unusually warm, but more importantly unusually dry throughout much of the south and east of the continent. Water reservoirs for most of Australia’s major cities have fallen to levels which are unprecedented in recent decades, triggering strict water restrictions. There have been warnings of zero allocations for irrigation in Australia’s agricultural heartland, the Murray-Darling Basin. It’s become evident that runoff in Australian catchments is acutely sensitive to reductions in precipitation and increases in temperature. It’s unclear to what extent this decreased rainfall and runoff can be attributed to natural variability, or to climate change. Should the drying trend continue, it can be expected to result in major changes in the delivery of freshwater, sediments and nutrients to estuaries and embayments, with significant ecological, social and economic impacts in coastal systems.

Excess nutrient and sediment loads into estuaries and coastal seas remain a problem in Australia, as elsewhere. Reductions in runoff may reduce average diffuse catchment loads. However, any benefit may be offset by the increased impact of point source loads resulting from reduced runoff and flushing rates.

There is increasing evidence for poleward extensions in the range of marine organisms on Australia’s continental shelves. The implications for biogeochemical cycles, ecosystem function and biodiversity are as yet unclear. Ecosystems do not migrate intact, and those organisms which migrate rapidly can effectively behave as invasive species, disrupting target ecosystems. There is of course increasing concern about the threat posed by bleaching and acidification to Australia’s major coral reef systems on both east and west coasts.

As in many other countries, the dominant demographic trends in Australia are population ageing and migration to the coast. Coastal urban development is occurring at a rapid pace, and at least part of it is occurring in areas which are vulnerable to inundation and erosion from sea level rise and increased storm frequency.

A common lesson emerging from all of these phenomena is that planners and managers are confronted with increased levels of uncertainty and risk. “Comforting” assumptions of stationarity, and assessments of future risk based on past statistics, are under challenge, and in some cases already clearly untenable. At the same time, communities and institutions have grown to expect and demand reduced risk and greater assurance and certainty. Our social, economic and environmental systems are arguably evolving so as to be less resilient, not more resilient.
This requirement for climate change adaptation in the face of other social, economic and environmental trends is likely to impose unprecedented demands on the scientific community. Scientists will be expected to reduce uncertainty, and provide both predictions and solutions. More realistically, scientists may be able to put some bounds around the uncertainty, and provide envelopes of predictions, and an array of options with tradeoffs. This will require a substantial increase in the sophistication of the science, and an equal increase in the sophistication of the interaction between scientists, decision-makers and society.

The coastal zone will continue to be the “hotspot” in Global Change, and LOICZ, with its emphasis on integrating across the biophysical sciences and human dimensions, should be well-placed to help the international science community to meet the challenges of climate change adaptation.

**Theme IV Activities**

Planning for the upcoming joint IMBER/LOICZ Continental Margins Open Science Conference, to be held 17-21 September in Shanghai, is well-advanced. Planning for the Conference has been led by Nancy Rabalais from LOICZ and Jack Middelburg from IMBER. The Conference will address biogeochemical cycles and ecosystem dynamics on continental shelves, and include the following sessions:

1. Ocean-Shelf biogeochemical Exchanges
2. Continental Shelf Biogeochemistry and Couplings with Benthic Systems
3. Continental Shelf Carbon in a High CO$_2$ World
4. Continental Shelf Ecosystems from High to Low Latitudes
5. Integrated Observations and Modeling: Visions and Reality
6. Eutrophication and Oligotrophication in Coastal Systems
7. Low Oxygen on Continental Shelves
8. Sustainable Use of Continental Shelf Resources


Following the 2006 SSC meeting, a period of intense activity by the IPO and a number of SSC members led to the production of a formal report to UNEP: The Role of the Coastal Ocean in the Disturbed and Undisturbed Nutrient and Carbon Cycles – A Management Perspective. This report draws on the outcomes of a LOICZ workshop held in Brisbane in early 2006, to provide conclusions for managers from the LOICZ I Budgeting and Typology Projects.

LOICZ budgets continue to provide an important coastal scientific and management tool. See e.g., the article by John Zeldis in INPRINT 2007-01. Dennis Swaney has been coordinating an international review of the LOICZ budget methodology on behalf of LOICZ, which is expected to lead to recommendations for improvements. Dennis has also organised a session on nutrient budgets for the Estuarine Research Federation meeting in Rhode Island this November.

LOICZ co-sponsored a workshop in Paris, January 14-17, 2007, on “Integrated Budgeting of Nitrogen Fluxes in Regional Watersheds: Linking Atmospheric, Terrestrial, Aquatic and Coastal Interactions.” Dennis Swaney helped to bring a LOICZ budgeting perspective to the workshop.

Helmuth Thomas co-convened a session on Biogeochemistry of Coastal Seas and Continental Shelves at EGU, in Vienna, 15-20 April, 2007.

LOICZ continues to support SCOR Working Group 128 on Natural and Human-Induced Hypoxia and Consequences for Coastal Areas. Nancy Rabalais is a member of the WG.

The LOICZ database shows a substantial number of affiliated projects dealing with aspects of biogeochemical cycles in coastal and shelf waters. The database also shows an increasing tendency for trans-disciplinary studies which address social as well as biophysical aspects of coastal – catchment – climate interactions.
Coordinator’s Report on Scientific Theme V:
Towards Coastal System Sustainability by Managing Land-Ocean Interactions

Not received.
2.1.3 Report Priority Topics

Leader's Report on Priority Topic 1:
Linking Social and Ecological Systems in the Coastal Zone

Not received.

Leader's Report on Priority Topic 2:
Assessing and predicting impact of environmental change on coastal ecosystems

Dennis P. Swaney

Priority Topic 2 addresses the question of the effects of environmental change on coastal ecosystems. Interpreted broadly, the topic spans all LOICZ themes and a wide range of scales. Operationally, we have to date been concerned primarily with the coupling of watersheds to the coast and in particular with the effects of material fluxes on coastal ecosystem processes. In the past, this has involved development of tools and resources in support of workshops and other activities, including the budget methodology and websites, and the LOICZ global environmental database and typological tools. The future promises further development along these lines, including expansion of a range of modeling tools appropriate for various management purposes within coastal ecosystems and in their watersheds. Below, I outline my impressions of our current status and planned activities for the short term.

Coastal Nutrient Budgets

- The LOICZ biogeochemical budget website has moved from the Department of Systems Ecology of Stockholm University due to institutional changes in Stockholm. The new web address is: http://nest.su.se/mnode. The website is being physically housed at the Stockholm Resilience Center (http://www.stockholmsresilience.su.se) and is supported by the Baltic Nest Institute (http://nest.su.se). A mirror site to be housed at GKSS is currently in the planning stages.

- While no formal nutrient budget workshops have occurred recently, budgets following LOICZ guidelines continue to be submitted for review and publication on the website. John Zeldis recently described the application of the approach for estuarine management in New Zealand (LOICZ INPRINT 2007-1), including the impacts of green mussel farming on the quality of the Firth of Thames, and is submitting two additional budgets for publication on the website.

- Informal reviews of the LOICZ budget methodology were solicited and received in 2006. The reviews have been compiled and are currently being edited by D. Swaney and G. Giordani. Applications and methods for developing LOICZ-style budgets in contexts beyond estimation of impacts of the coastal zone on the global carbon cycle (the original primary aim of the LOICZ budget approach) will be the subject of a special session of the 11/07 meeting of the Estuarine Research Federation in Providence, RI. Plans for a mini-workshop to occur in conjunction with the ERF meeting are currently underway.

LOICZ typology/environmental datasets

- LOICZ continues to have the support of B. Buddemeier and the Kansas Geological Survey behind the global LOICZ environmental database. However, based on discussions in a small typology/dataset workshop in Geesthacht in 11/06, it seemed prudent to take advantage of the information technology infrastructure of GKSS to establish a mirror site for the database and associated typological software, DISCO, which continues to be supported by B. Maxwell. Toward this end, LOICZ has hired a new postdoc as well as an intern to support ongoing development of the database and its applications (H. Kremer has more detail on ongoing activities based on communications with B. Buddemeier).
Bridging activities with partner groups

- Paris meeting. Watershed Nutrient Accounting – January 14-17, 2007. This workshop, co-sponsored by LOICZ and the European Science Foundation’s Nitrogen in Europe (NINE) program, brought together European and American scientists to collaborate on a uniform approach to nutrient accounting and estimation of nutrient fluxes from watersheds to the coast. The meeting brought together representatives of several groups which are actively developing watershed models and nutrient accounting methods (e.g., Global NEWS, NANI, ReNuMA, CSIM). Some outcomes of the meeting were summarized in LOICZ INPRINT 2007-1. Working groups from the meeting are currently writing papers on several aspects of nutrient flux questions to appear in a special issue of a journal in 2008 (Biogeochemistry?). The general approach complements previous LOICZ work on coastal nutrient budgets, and may provide a framework for linking coastal ecosystem budgets to watershed budgets.

- Joint LOICZ/GWSP scoping meeting. Deltas at Risk. Durham, NH, May 21-22, 2007. This collaboration between LOICZ and GWSP aims to produce two significant “deliverables”: a global watershed/delta georeferenced dataset, and a corresponding global classification (typology) of these systems. B. Buddemeier will represent LOICZ at this small scoping meeting (as will J. Syvitsky) due to his expertise with the LOICZ datasets and their ongoing development. A larger follow-up meeting will occur in the fall of 2007.

- SCOPE Biofuels. SCOPE is currently developing an initiative on environmental effects of biofuels and their production under the leadership of B. Howarth at Cornell University. LOICZ is positioned to examine the effects of biofuel production on coastal ecosystems, primarily through the effects of production on material transport (sediment and nutrients). Changes in material fluxes and their effects can be assessed using tools being developed by LOICZ and its partners. A special session on this issue at the 05/08 IGBP symposium in Capetown, sponsored by LOICZ, is currently in the planning stages.

- LOICZ/IMBER Continental margins meeting Shanghai, Sept. 17-21, 2007. This joint meeting, organized by N. Rabalais (LOICZ) and J. Middelburg (IMBER) is of general interest to the LOICZ community, and promises to provide some guidance to the question of model development under LOICZ.

Capacity Building Activities

- Interns. LOICZ interns remain excellent “resources” for testing teaching materials, datasets and methodologies, as well as serving as junior-level researchers which can inform the LOICZ research and extension program. In 2006, J. Su, an intern working with A. Newton and D. Swaney, developed a nutrient budget for the Ria Formosa, Portugal. Using his background in physical oceanography, he plans to continue to collaborate with us on developing improved methods of oceanic exchange with coastal waters. Another intern, C. Sebald, will be working on issues related to GIS and global environmental datasets; in particular, how to use these resources to provide and organize data relevant to coastal management.

- Working with other priority topic areas. Budget analyses and coastal typology exercises both provided frameworks for capacity building workshops in LOICZ I. Under LOICZ II, we look for more guidance from the management/governance communities to shape our activities. Toward this end, one outcome of the Typology/Dataset workshop held in Geesthacht in 11/06, was a document aimed at the PT 3 working group organized in December by S. Olsen, which asked the following questions of the “coastal governance gurus”:

1. How will the various potential users of LOICZ budgets, models, environmental datasets, and typology tools learn of them and interact with them?
2. What are their needs? Specifically, what are the contents and scales of specific datasets or information bases they would like to see? Who are the real users of this information? What is the nature of support requested of specialists, and the best mode of delivery?
3. What types of issues and problems are they likely to work on?
4. What are the priorities for attention to the needs, issues, or problems?

While the workshop was unable to provide detailed answers to these questions, the participants did consider the possibility of using LOICZ tools exciting; workshops seem to be a likely approach for introducing users to these tools. More work needs to be done on “stand alone” distance-learning options, perhaps using websites modeled on those previously developed by LOICZ but with more content aimed at the target audiences and problems.
Leader’s Report on Priority Topic 3:
Linking Governance and Science in Coastal Regions
Stephen B. Olsen

Summary
A working group has been assembled and has met twice to detail the process and the research methods by which it will address Priority Topic 3:

*How can comparative analysis inform the improvement of the governance of human activities in changing coastal ecosystems?*

The product of the first meeting was a Concept Paper that links this topic to the LOICZ Science Plan and sets forth the objectives and anticipated products of a five year effort. The second meeting reviewed and amplified a draft of the research methods to be applied in selected world regions. With funding from LOICZ, the Inter American Institute of Climate Change (IAI) and IHDP arrangements have been made for the compilation of a portfolio of governance baselines in Latin America. This involves a small planning meeting followed by a Training of Trainers that will be held in December 2007. The partner institution coordinating this application of the methods in Latin America is EcoCostas, a regional network of coastal management practitioners. An initial analysis of governance baselines in the Latin American region is planned for 2008. If the necessary funding is secured, it is also anticipated that a second regional assessment will be underway in 2008.

Meetings of the Working Group
The first meeting was held at the Alton Jones Conference Center in Rhode Island, USA. A Concept Paper was developed that sets forth the approach to be taken in an analysis of past and current governance practices at selected sites representative of a wide diversity of ecosystem types. The objectives of the analysis are as follows:

1. To develop methods for comparative analysis with which to document and analyze the processes and outcomes of the governance of human activities in coastal ecosystems.
2. To work with practitioners, policy makers and stakeholders in selected world regions to apply and refine the analytical methods and compile portfolios of baselines that will be the basis for comparative analysis.
3. To pose and test hypotheses that probe the interactions of markets, government and civil society in coastal governance systems in diverse settings and the practices that enable progress towards desired outcomes.
4. To suggest how the contributions of the sciences can be more effectively incorporated into each step in governance processes that address coastal ecosystem change.

Governance is defined as the formal and informal arrangements, institutions, and mores that structure and influence:

- How resources or an environment are utilized,
- How problems and opportunities are evaluated and analyzed,
- What behavior is deemed acceptable or forbidden, and
- What rules and sanctions are applied to affect how natural resources are distributed and used.

As suggested in Fig. 1, there are three mechanisms by which the processes of governance are expressed: the marketplace, the government, and the institutions and arrangements of civil society. These mechanisms interact with one another through complex and dynamic interrelationships that will examined by this LOICZ research program.
The focus of the analysis will be the transition from issue analysis and planning to the successful implementation of a plan of action. This is where the relevance of the science, the effectiveness of its communication and the generation of political combine to create a context for the changes in human behavior. In addressing such questions we propose to build upon methods that clarify and probe the processes and the outcomes of coastal ecosystem governance. We will also work to further develop the LOICZ typology so as to link bio-physical features of a locale with the features of its governance.

A Methods Guide is being prepared that details the process by which “governance baselines” will be prepared that document and analyze the evolution of governance in selected coastal ecosystems by:

1. Tracing the trajectory of ecosystem change in reference to a timeline that identifies changes in the condition and use of the goods and services generated by a coastal ecosystem;
2. Identifying “generations” of governance, or the sequence of fragmented cycles that have not successfully made the transition from planning to effective implementation.
3. Identifying societal and environmental outcomes and commenting on their implications as progress towards or away from more sustainable forms of coastal ecosystem use. This includes an analysis the market, political and civil society drivers.

Since the context within which governance occurs plays a central role in determining both processes and outcomes a feature of the analysis will be to develop a typology of coastal governance contexts. Ideally, this will provide a governance dimension to the typology developed during LOICZ I. If the necessary funding is secured, the process will be as follows:

a) Identify key datasets for indicators of the three governance mechanisms (markets, government and civil society) with global coverage
b) Develop statistical or other modeling protocols for weighting these variables in developing a governance based typology
c) Visualize the typology through interactive maps
d) Apply the typology to generating hypotheses at several scales of governance.

The program draws from the analysis of fluxes of materials between watersheds and marine environments that was successfully undertaken during LOICZ I. The research, as in the fluxes program, is organized into three phases. The first, to be completed in early 2008, calls the drafting of a Methods Guide, the publication of an initial journal article describing and illustrating the analytical methods and the hypothesis that are being tested. The second phase will be devoted to applying the methods to selected cases in several world regions. The third phase will be directed at a region-by-region synthesis of findings and a global assessment of the status of coastal ecosystem governance. This will reflect on how the traditions of governance and the condition of coastal ecosystems in different regions affect trajectories of change. The dynamics of such global drivers as climate change and trade
will be examined. An effort will be made to add new dimensions to the LOICZ typology to help understand how the condition of coastal ecosystems and governance capacity interact at regional and global scales.

The anticipated outputs of this LOICZ program are as follows:

**Phase 1**

1. A publication published in an academic journal that sets forth the analytical approach and hypotheses on what contributes to success in coastal ecosystem management initiatives.

**Phase 2**

1. A network of capable practitioners, scientists and policy makers within selected regions, engaged in a sustained dialogue on strategies for achieving successful implementation.
2. Materials on each case study made available through a web-based Knowledge Management system.
3. Portfolios of case studies for each region.

**Phase 3**

1. A volume that synthesizes the hypotheses, findings, and conclusions on a global scale.
3. Interactive web-based maps, data products, and databases designed for use by practitioners and analysts.

These activities and products can position LOICZ as a global leader in the analysis of the human dimensions of coastal ecosystem change.

**Governance Baselines for Latin America**

An early version of the governance baselining methods are being applied to a sample of coastal ecosystems in Latin America. This effort is being undertaken by EcoCostas, a regional network of practitioners of coastal governance with funding from the Costa Rica-based AVINA Foundation. A proposal to build upon this initiative with the joint sponsorship of LOICZ, IAI and IHDP has been negotiated. The most advanced baselines will be reviewed at a small meeting to be held in July or August of this year and used as the basis for a training-of-trainers workshop that will draw together a larger group representing a diversity of ecosystem types and approaches to ecosystem governance. This workshop will be held in 12/07. Planning is underway for a second work in 2008 that would bring together those who have applied the methods and developed governance baselines to jointly examine and compare the results.

**Future Plans and Funding**

Building on the initial experience in Latin America, funding must be sought for application of governance baselines to other world regions. Funding is also required for the analysis of factors that influence the practice of adaptive forms of governance that successfully bridge issue analysis and planning to implementation of a plan of action. Such funding must include the support of a full time professional to help coordinate the effort and provide technical support to the partner institutions in each region as well as to individual researchers.
2.1.4 Report Cross-Cutting Activities

Coordinator's Report on Cross Cutting Activities

Alice Newton

Key Activities

Joint Master in Water and Coastal Management: this is now in its third year. 29 studentships were awarded to non-European students. A further 30 European students are participating. LOICZ scholars this year include Maria Snoussi and Juan Restrepo\(^1\). Both have lectured/carried out research at Universities of Plymouth\(^2\) and University of Cadiz. Also Alice Newton will receive a scholarship to lecture/carry out research at Universidad de Eafit. Alumni of the course have been very successful in finding employment, including one at Unesco headquarters, and research positions, including one at GKSS.

Internships: last year there 3 internships paid for by the Erasmus Mundus programme. The first intern was co-supervised by Dennis and Alice. He worked at GKSS and developed a LOICZ nutrient budget for the Ria Formosa lagoon. The second was co-supervised by Bob and Alice. He was hosted by Ramesh and worked on the typology of the Indian coast. The third was hosted by Ramesh and co-supervised by Alice and a lecturer of Wageningen University. He worked on Curriculum Development in ICZM for India.

Joint module development: the first “joint module” on Eutrophication is ready in DRAFT form. It includes 10 hours of lectures with material from Laurence, Nancy, Bill, Alice and other “non-LOICZ” contributors. Hopefully Nancy will have time to look at it and make some suggestions in Vancouver. Alice is still incorporating new material from Laurence.

ASSETS, Eutrophication assessment: this was proposed as a “new” LOICZ “tool”. It builds on the NEEA work but now includes estuaries in Europe and China. Furthermore it links well with other LOICZ tools such as the nutrient budgets, the typology and the conceptual diagrams. Reported on in a newsletter article by S. Bricker and J.G. Ferreira.

Special Issue of ECSS: this is now complete and has been submitted to the chief editor to go to press. Thanks to all the LOICZ community for helping and special thanks to John Icely for acting as co-editor.

Developments

SPICOSA: capacity building has been allocated a substantial budget in this new project. This will enable the development of new modules e.g., one by Kerry Turner on Ecological and Environmental Economics of the coastal zone.

ASIA Link: this capacity building project is coordinated by Wageningen University. It includes Chennai University (Ramesh) and University of Algarve (Alice) as “LOICZ” partners. New modules on the socio-economics of the coastal zone are being developed and tested in NL, Portugal, India and Vietnam. This has also offered the opportunity for internships (see above)

7FP: Capacity building is “a la mode” in this new EU programme and we participated in several EU project proposals. Again the basis is the Master modules and building on that portfolio. However, there are several new proposals for Life Long Learning opportunities with professionals in coastal management, especially in collaboration with EUCC\(^3\).

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\(^1\) Juan Restrepo’s University
\(^2\) Laurence’s University
\(^3\) European Coastal Union
Links

**Erasmus Mundus**: continues to give opportunities for scholarships, studentships and internships, as well as a large number of tested modules, for postgraduate level.

**UNESCO- Wise coastal practices** is now linked to the Erasmus Mundus Water and Coastal Management.

**6FP- SPICOSA** is a new EU project on linking Science-Policy in the coastal zone. This is a huge project (8 million Euros+) and would be great in the LOICZ project portfolio. Both Laurence and Alice are in the SSC of the project. The project coordinators could be “invited” to register SPICOSA as a LOICZ project. The benefits of this should be made clear in the invitation.

Collaboration

**Commission on Groundwater-Seawater Interactions**: Contact established.

**EEA**: Contact established at Gdansk and Seville workshops.

Future Directions

**Marie Curie Network**: agreement has been reached on a proposal for a Marie Curie Network on Global Change. The network will include U. Algarve (Alice), U. Aarhus (K. Richardson IGBP), U. Plymouth (Laurence), U. of Bergen (Bjerknes Centre for Climate Research) and probably IHDP (Falk Schmidt), U.Cadiz (Carbon Sequestration)

Other

**GDANSK-Littoral conference**: Littoral is the major European conference for coastal zone managers and researchers. There was a LOICZ booth and a LOICZ workshop. The idea of the workshop was to introduce the LOICZ tool-box to the coastal zone mangers and researchers. The following LOICZ tools were presented: typology (Bob), nutrient budgets (Gianmarco for Dennis), conceptual diagrams (Jane for Bill) and ASSETS (Alice for Joao). The workshop was well attended and the booth stimulated considerable interest, especially for the EEA⁴. Full report in Newsletter.

**EEA workshop**: this was held in Seville in October. It was a major outcome of the Gdansk workshop. EEA are interested in working with LOICZ to use the EEA database in conjunction with LOICZ tools especially nutrient budgets and typology but also ASSETS and the conceptual diagrams.

⁴ European Environment Agency
2.1.5 Report Regional Nodes

Coordinator’s Report on the South Asian Regional Node

Nalin Wikramanayake

Background

The South Asian Node is hosted by the National Science Foundation, Sri Lanka (NSFSL). The formal memorandum of understanding – for a period of three years – was signed in December, 2004.

Regional Governance

The operation of the Regional Node is currently under a committee of Sri Lankan scientists. The formation of a Regional Committee for the Regional Node was approved at the last SSC and also approved by the NSFSL last year. A draft Terms of Reference for this committee (which will be a virtual committee) has been prepared.

Nodal Activities

There was very little progress on nodal activities in 2006/07. The primary, if not sole, responsibility for this lies with the coordinator. Responsibilities – such as editing the newsletter, project management, database development etc - have been redistributed within the Sri Lankan committee and the NSF staff.

APN project on Science-Policy Interactions in CZM

The project proposal was approved in April, 2006 – with funding of US$130,000 over three years out of US$ 195,000 requested. However, contract negotiations did not begin until November, 2006. Project initiation was further delayed due to delays on reporting on the preceding workshop. This delay is again solely the responsibility of the coordinator. However, the project has been re-approved in April, 2007 and is expected to commence later this year.

As this project was very closely related to Topic 1 – Integration of Natural and Social Sciences – the plan was to follow on from the planned thematic workshop to be organized by LOICZ.

The application for supplementary funding under the Call for Proposals of the Advancing Capacity to Support Climate Change Adaptation (ACCCA) program. The proposal reached the final stage but was not one of the 3 projects from Asia selected. Supplementary funding for this workshop was been promised from the CZM Centre of the South Asian Association for Regional Cooperation (SAARC) in the form of hosting the kickoff workshop up to US$15,000. Additional funding for case study site activities is also expected from national funding bodies.

Links to other Regional Organizations and Programmes

The Regional Node was represented at the Scoping Workshop on South Asia Rapid Assessment Project’s (SARAP) Results for Designing Future Research Agenda and Capacity Building Requirements, which was held in Darjeeling, India, in October, 2006. The workshop discussed the South Asian activities under MAIRS. Changes in coastal zones is one of four priority areas under MAIRS and the proposed APN funded project on Science-Policy Interactions in CZM was accepted as a priority regional MAIRS activity by the South Asian Committee (SASCOM) of START.

The recently established SAARC CZM Centre is a partner in the proposed regional project and has offered to host the kickoff workshop scheduled for later this year.
Discussions on cooperation in research and capacity building have also been held with the South Asian Network for Developmental and Environmental Economics (SANDEE) and the United Nations University system.

Upcoming Activities
Kickoff workshop for APN funded project planned for late September, 2007. However this depends on whether funds are made available in time from APN/START. Some of the case study teams have already begun collecting background information using local resources.

Work on regular nodal activities – newsletter, website and database – is expected to recommence under redistributed responsibilities.

Opportunities: Mangroves for the Future (MFF)
MFF is an initiative developed by IUCN. The objective was to channel the remaining funds pledged for some post-tsunami activities towards improving coastal zone management in the affected countries. The current status is that the initiative has been approved by the UN and other donors. Implementation will be handled by the UNDP and IUCN through a steering committee based in Bangkok. Funds are to be channeled through governments but there may be opportunities for regional groups to obtain support for their activities.

Implementation and Future of Regional Node
Many issues regarding financial procedures, lines of authority etc that affect the functioning of the Regional Node within the National Science Foundation, Sri Lanka, were discussed at length and resolved during 2006.

However, recent decisions by the NSF regarding project financing threaten the implementation of the APN project. The resolution of these issues should be incorporated into the extension of the MOU between LOICZ and the NSFSL beyond the end of 2007.

Coordinator’s Report on the Southeast Asia Regional Node
Beverly Goh

1. Integrated Vulnerability Assessment of Coastal Areas in the Southeast Asia and East Asia Region, ARCP2007-04CMY First Workshop

Needs: Financial support for research and data gathering for individual country case studies. Some suggestions: IUCN, UNDP, World Bank, EU.

2. Integrated Vulnerability Assessment of Coastal Areas in the Southeast Asia and East Asia Region, ARCP2007-04CMY Second Workshop
Tentatively scheduled on 22/23 September 2007, Manila, Philippines. Expected participants: 27 comprising initial group + country partners/collaborators (social scientists). MAIRS representatives also invited.
Outputs:

- Preparation of policy briefs based on sensitivity analyses done for each country, and consideration of priority issues on coastal zone and resources management
- Identification, discussion and preparation of proposal(s) on vulnerability assessment research in SEA and EA Region (e.g., improvement and use of DIVA model in assessment of vulnerability due to climate change, sea level rise, and other anthropogenic drivers; research on Deltas at Risk in SEA etc) – explore possible funding from IUCN, EU, Japanese donors etc.

3. **Monsoon Asia Integrated Regional Study (MAIRS)**
   Collaborative activity with SEA START Regional Centre/SARCS at the Sept. 2007 workshop. Follow-up meeting with Frits and MAIRS key people. Objective: expansion of DIVA SEA model.

4. **LOICZ Representation at Meetings**
   - SPICE/LOICZ/ATSEF/SEACORM (SLAS) South-East Asia Coastal Governance & Management Forum: Science Meets Policy for Coastal Management & Capacity Building, Bali, 14-16 Nov. 2006
   - Southeast Asia Geography Association (SEAGA) Conference, Singapore 28-30 Nov. 2006
   - LOICZ-GWSP (Global Water System Project) Collaboration in Asia.

5. **SEA Node formalisation – Draft MOU prepared**
   Finalisation this meeting with LOICZ IPO. Use of LOICZ letterheads for funding appeals.

6. **Update on LOICZ SEA Node set up**
   Some management / administrative problems.
2.1.6 Report IPO

LOICZ IPO Report 2006/07

Hartwig Kremer

1. Scientific Steering Committee (SSC)

- Pacyna, Jozef (Chair), Norwegian Institute for Air Research, Kjeller, NOR
- Lansigan, Felino (Vice-Chair, focus IHDP), University of the Philippines Los Banos, Laguna, PHI
- Rabalais, Nancy, (Vice Chair, focus IGBP) Louisiana University Marine Consortium, Chauvin, USA
- Dennison, William (ST I Coordinator), University of Maryland, Cambridge, USA
- Forbes, Anthony (ST II Coordinator), University of Natal, Durban, RSA
- Restrepo, Juan Dario (ST III Coordinator), EAFIT University, Medellín, COL
- Parslow, John (ST IV Coordinator), CSIRO Marine & Atmospheric Research, Hobart, AUS
- Roth, Eva (ST V Coordinator), University of Southern Denmark, Esbjerg, DEN
- Newton, Alice (CCA Coordinator), University of Algarve, Faro, POR
- Mee, Laurence, (PT 1 Leader), University of Plymouth, Plymouth, ENG
- Swaney, Dennis, (PT 2 Leader), Cornell University, Ithaca, USA
- Olsen, Stephen, (PT 3 Leader), University of Rhode Island, Providence, USA
- Glaeser, Bernhard, Social Sciences Research Centre Berlin, GER
- Gilbert, Alison, Vrije Universiteit, Amsterdam, NED
- Huang, Weigen, State Oceanic Administration, Hangzhou, Zhejiang, CHN
- Koike, Isao, Tokyo University, Tokyo, JPN
- Saito, Yoshiki, Geological Survey of Japan, Tsukuba, JPN
- Ramachandran, Ramesh, Anna University, Chennai, IND (from 2007 onwards)
- Wikramanayake, Nalin, Open University of Sri Lanka, Nawala, Nugegoda, SRI (until 12/06)

2. International Project Office (IPO)

LOICZ International Project Office, GKSS Research Center, Institute for Coastal Research, Max-Planck-Str. 1, D-21502 Geesthacht, Germany; Tel.: +49-4152-87-2009; Fax: +49-4152-87-2040

Staff:

- Hartwig Kremer, Chief Executive Officer
- Juergen Weichselgartner, Senior Science Coordinator, Dep. Executive Officer (since 03/07)
- Ellen-Barbe Goldberg, Office & PR Manager, Project coordination (since 12/06)
- Christoph Sebald, Intern, GIS Engineering (started early summer 2007)
- Vera Djepa, (Bulgaria/UK), IT-GIS Post Doctoral Fellow – LOICZ Typology (summer 2007)
- TBA, Office Assistant, Administration/Organization (starting summer 2007, part time)
- Maike Paul, Project Assistant and Databases (until end of 03/07)
- Martin LeTissier, Senior Science Coordinator (until 12/06)
- Hester Whyte (Office & Manager, Administration (until 09/06)

Southeast & East Asia Regional IPO Node: Beverly Goh, c/o Natural Sciences and Science Education, National Institute of Education, Nanyang Technological University, 1 Nanyang Walk, Singapore 637616, Tel.: +65-6790-3819; Fax: +65-6896-9414; E-mail: bgoh@nie.edu.sg
3. Activities 2006/07

Scientific Co-Sponsoring (Parenthood)

2006 was the third year for LOICZ to operate under the co-parenthood of IGBP and IHDP. In general the links with IGBP and IHDP core projects have proven to be very fruitful not only since the 2005 LOICZ Inaugural Open Science Meeting (IOSM) held in Egmond aan Zee, The Netherlands. In 2006, the interdisciplinarity of coastal research was most evident in our collaboration during the ESSP Congress Sessions (Beijing 11/06) and in an active involvement in the IDGEC Synthesis Meeting in Bali (Dec. 2006). The collaboration spans a wide spectrum of Earth System Sciences including the institutional dimensions, the urbanization and human security but also the modeling community in the WCRP climate change context, the hydrological cycle research and vulnerability assessment. Increasing links are established and maintained with the observing community incl. NOAA. All of these links are likely to nourish LOICZ activities also throughout the current and following years. However, one milestone in 2007 – again collaborative in nature – is the joint IMBER/LOICZ Open Science Meeting, 17-21 September in Shanghai, China. In conclusion the interdisciplinary character of LOICZ research is well accommodated at least under the two umbrellas of the IGBP, and IHDP.

SSC Restructuring/Membership

Following the transition phase with most of its missions more or less accomplished including moving the IPO to Germany and identifying the mid-term scientific Priority Topics for LOICZ, the SSC in 2006 continued its strategy to gradually return to a reduced number of members (currently 18). The SSC is considering further steps to improve operations as a lean and effective board-like steering body. The group of Corresponding members has been helpful in promoting a greater buy-in from the global community of coastal scientists including young colleagues and in keeping the corporate memory of our senior ex SSC colleagues involved. It could be useful to review the formal association (see background document SSC_LOICZ-Organization) of this strongly contributing group and lift it to higher formal recognition.

IPO Staff and Regional Node Distribution

At the end of 2006 the IPO faced a fundamental change in the staff situation. A new Finance and Administrative Officer had to be found as well as a Senior Science Coordinator. The Project Assistant Maike Paul left the IPO end of March 07 and this fact plus the growing momentum of LOICZ and related organizational and man power demands posed some critical limitations on the IPO capacity. However, this is now being addressed by recruitment of an additional office assistant and involvement of a Postdoctoral fellow (through the DAAD) and an intern both looking at typology and GIS and data issues. The IPO has also offered the GKSS Research Center to participate in their vocational training programs. The professions covered by this are under consideration and this will likely bring additional staff (on a temporary and training basis) from 2008 onwards.

In parallel the reorganization of the IPO towards a distributed structure was continued. Regional Nodes are expected to visibly improve the regional ownership and commitment by enhanced networking, and integration of young regional scientists. Protocols for Regional Node establishment and ToR keep being reviewed and refined during our SSC meetings with Regional Node representatives. In Africa a Node supported by START/PACOM has been established that operates in association also
to LOICZ. In China a new initiative for a Node was motivated out of the national research community and tabled during the ESSP Congress – negotiations are underway and a delegation headed by Prof Ping Shi (Yantai Coastal Institute) visited the GKSS end of March. The opening of the East Asian Node is foreseen for September 2007 (see background document Yantai_Seminar-Exposé).

Following the move of the central IPO to the GKSS, the former Regional Node activities for Europe centred here at the Institute for Coastal Research have now been redirected towards a special scientific direction aiming to foster national and European networks and LOICZ involvement in Arctic research rather than keeping a physical Node. Major task is currently the planning of the Arctic Coastal Zones at Risk workshop in Tromsø in October. The European activities are part of the IPO operations and make use of the GKSS EU department and the ENCORA network.

Scientific workshops driven under leadership of the Nodes addressed issues of science dissemination and communication in a training and capacity building effort and catchment-coast interaction. The Nodes in Asia also engage in extended fundraising activities and strengthening links with regional organizations e.g., the APN (for further detail refer to the Node reports). Core scientific activities carried out by the Nodes can be supported by the Central IPO and may thus be a strong foundation for the topic implementation. In addition, the Regional Nodes are an expression of national support for the LOICZ implementation. A capacity building and training effort will support the effectiveness of the nodes focusing in particular on young scientists. The designated new colleague from China will likely spend a few months training time in the IPO later this year.

Scientific Activities

Synthesis

150 Synthesis Books “Coastal Fluxes in the Anthropocene” have been distributed freely to the contributing scientists in the developing world who in former years through participation in workshops etc contributed their expertise. LOICZ also reached agreement with Springer publishers to use the illustration material in the book for teaching purposes – the master CD available from the IPO has been copied and distributed to SSC members and Nodes; reports we received indicate that there is increasingly wide use of the book in teaching campaigns.

SPIS and subsequent mid-term Priority Topics

Subsequent to the publishing of the SPIS priority focus in 2006 has been to identify the niche for LOICZ and to develop the scientific direction for the next years. The scientific frame given by the LOICZ Science Plan articulates the broad scope of coastal change issues LOICZ aims to address in its second lifetime. However, in the near and mid-term the SSC has identified 3 Priority Topics for which society needs scientific information. In all of these Priority Topics the Scientific Themes outlined in the science plan are pertinent and represent a continuum of science research. 2006 saw various activities to conceptualize the Priority Topics as living documents. In the following they are sketched together with a list of related activities carried out in 2006/2007 and/or planned for 2007:

Topic 1: Linking social and ecological systems in the coastal zone

The objective of the topic is to gain insights on the likely future state of the marine environment in various economic and social scenarios.

This topic encapsulates much of the content of Scientific Themes 1, 2 and 5 of the LOICZ-SPIS. The ecosystem approach (underlying ‘ecosystem based management’) regards humans to be an integral part of current natural systems. There are large numbers of deterministic and stochastic models that examine various facets of the natural environment, and similarly large numbers of models dealing with human social systems. However, there have been very few attempts to couple them together into a single socio-ecological system that consider the system to consist of an assemblage of interdependent life forms – including humans – and their non-living habitats and resource base, the integrity of which is highly dependent upon human decisions.

A number of conceptual models have been employed to describe coupled socio-ecological systems, but such an interrelated and interdependent system poses a major challenge to the modeler who is always forced into making some assumptions in order to understand the system. This leads to models with a large range of complexity, from the huge mechanistic models used by many natural scientists to the probabilistic formulations employed to describe human decision making (e.g., game theory) or ‘market mechanisms’. It is the difference between the approaches taken by humans observing nature
and humans observing humans that make it difficult to model socio-ecological systems. Work within this topic will focus on:

1) **Conceptual modeling:** LOICZ will explore how models can incorporate dynamic interpretations of data and source empirical data to populate models.

2) **Quantitative models:** Mechanistic or stochastic models operate at various different scales and levels of complexity and this topic will explore how scale affects system properties requirements for data as well as mixed methodology approaches to accommodate the entire scale of systems.

3) **Scenario-building and decision support models:** One of the most exciting challenges for system models is to gain insights on the likely future state of the marine environment through their application in various economic and social scenarios.

**Decision – how to link the modeling here to the Earth System efforts e.g., under AIMES and Quest**

**Topic 2: Assessing and predicting impact of environmental change on coastal ecosystems**

This topic encapsulates much of the content of themes 3 and 4 of the LOICZ-SPIS, i.e. a) examining the changes in loads associated with human activities in coastal watersheds as well as other human-induced effects, and b) examining the response of coastal and shelf ecosystems to these changes. To the extent that we can extend or develop LOICZ approaches to apply to coastal governance, activities under this topic will also address "coastal management" theme 5.

Runoff, groundwater flows, nutrient and sediment loads are all affected by human activity and especially human-induced changes in climate and land use. These may be addressed using a variety of relatively simple analytical tools, including nutrient accounting approaches and large-scale hydrological-based models. The goal is to extend existing approaches either geographically or methodologically, and to permit estimation of nutrient loads, their uncertainty and variation.

The coastal and shelf systems response has been addressed earlier in LOICZ by estimating the metabolism of coastal and shelf ecosystems using the LOICZ budget methodology. This methodology will be refined and extended, specifically in an attempt to also address issues of coastal sustainability and governance. The use of additional modeling approaches will be evaluated to determine whether such approaches are more appropriate to address particular coastal management questions.

**Decision: How to link the modeling here to the Earth System efforts e.g., under AIMES and for instance Global News and the GWSP activities as well as advanced ecosystem modeling – link GKSS?**

**Topic 3: Linking governance and science in coastal regions**

This question integrates across the five themes of LOICZ. It addresses our primary goal: “to provide knowledge, understanding and prediction to allow coastal communities to assess, anticipate and respond to the interaction of global change and local pressures in determining coastal change”. A coastal community is defined to include policy makers, managers and stakeholders. The term "coastal ecosystems" embraces Large Marine Ecosystems (LMEs), coasts and their associated watersheds.

The approach will be to select sites for an analysis of success factors in bridging between ecosystem science and governance. The analysis will focus upon successes and failures in instigating the changes in human behavior (institutions, markets and civil society) that mark the implementation of a coastal ecosystem management initiative. In general the analysis will examine coastal governance within the context of the next larger system, a watershed, a Large Marine Ecosystem or geographic region. The analysis will address three central questions:

1. *How are overviews of ecosystem condition being developed and trends being communicated?*
2. *How can coastal ecosystem governance initiatives affect the behavior of societies more effectively?*
3. *What are the resulting outcomes and how can we improve upon them?*

**Comments requested if and how there might be links into Earth System modeling and typology – GIS applications?**

**Comments requested about potential partners and liaisons and who will take the lead for those – e.g., the Governance cross cut in IHDP.**

**General decision: Establishing a modeling component in each of the topics and a responsible working group in the SSC – links with AIMES? And others.**
Typology
The Priority Topics are supported by a variety of cross cutting activities i.e. modeling, education and an extended coastal typology approach for up-scaling and data-assimilation incl. also social data. Methods and tools will be developed further and it is planned to establish multiple user interfaces. The future typology will seek to make biophysical and human dimension data easily accessible for use in the clustering and visualization tools. A typology review and scoping meeting took place in Geesthacht in Nov. 06 exploring the next steps and future directions. Proper finalizing stage one plus documentation and inclusion of regional case studies was identified to be of ultimate relevance. This will be followed by workshops with new partners to explore additional datasets, user groups and potential user interfaces, GIS applications and finer resolution data – in general to make typology in its next generation a flexible utility to multiple clients encompassing communities along the whole water continuum. Most likely mid-term outcomes are anticipated also from the collaboration with Global Water Systems, Global News and – to be explored – with the data assimilation and modeling efforts under IHDP.

General decision needed in which direction typology needs to develop – Input from Buddemeier and Swaney – Implications for investment on the IPO side – hardware and personnel has been arranged.

Operational scientific activities
Following the move to Germany, the IPO has undertaken a sequence of initial activities listed here:

1) The 17th LOICZ Scientific Steering Committee Meeting was held at the GKSS Research Center and consolidated the scientific focus and next years’ Priority Topics and Cross Cutting activities.

2) Associated to this SSC a national Mini-Symposium attracted 77 national scientists from 17 institutions and representatives from the Ministry for Research and Education. The Symposium was meant as a kick-off for a national dialogue on LOICZ science together with the international SSC in awareness of the high potential in national coastal research. Various current high end approaches of national research on coastal change, dynamics and processes were presented and a platform for exchange provided. LOICZ will follow this combined SSC/Mini-Science Meeting approach in future.

Consequently, LOICZ is now participating/co-authoring in a proposal of Hamburg University for an excellence cluster CLISAP (Climate Change and adaptation), in a future statement towards the new generation of coastal research (Denkschrift) of the German Marine Research Consortium (KDM), in a Marie Curie Initial Research Training Network with Southampton University, and it is collaborating in various activities in Helmholtz. Principally, the LOICZ engagement in national activities is linked to LOICZ’’ global commitment and always keeps focus on the relevance for its Priority Topics and Scientific Themes.

3) Further 2006 activities/network building in brief:

Collaboration with parents and core projects as well as external partners

Observing (on invitation) in the SOLAS, IMBER, GWSP SSC Meetings (collaboration with all three in an advanced state of planning – see below)

Agreement on Terms of Reference and appointment of a core planning group for the establishment of a Continental Margins Task Team together with IMBER. Planning and announcing the first IMBER/LOICZ CMTT OSM (lead with IMBER-IPO)

IMBER/LOICZ Continental Margins Task Team initial Symposium, 17-21 Sep. 07, Shanghai, China; goal: to determine scientific agenda for the continental shelves in the next few years

Collaboration in the IGBP/SCOR Fast Track Initiative on Ocean acidification (lead SCOR, PAGES) through participation of J. Kleypass and H. Thomas

Providing infrastructural (database and publishing – through the LOICZ web site) and manpower support to the SCOR working group 128 on global hypoxia phenomena (Nancy Rabalais/LOICZ IPO) – online 11/06

IDGEC Synthesis (Bali 12/06) – future role of institutional dimensions research in LOICZ – own session initiated and advisory in designing the future of IDGEC (Follow up in form of collaboration with IVM – F. Biermann – Global Change Governance, and planning of a workshop on harmful algal blooms (Alcock – LeTissier)

• Consulting in EU ICZM Policy and Marine Strategy
• Consulting and reviewing of background material for the 2. Interministerial Review of UNEP GPA (IGR II), Beijing, China, 10/06

• Support of regional scientists in their intention to expand their local research activities towards establishing a wider Mediterranean and probably Black Sea research network associated to LOICZ. Contacts to support this activity and also include Northern Africa have been established with FAO and GTOS (see Newsletter 2006/2 and below under affiliated and planned projects) – needs urgent follow up

• Collaboration established with IASC (Stockholm) and AMAP (Oslo) as well as NILU and Akvaplan NIWA (Oslo/Tromsø) and IHDP in preparation for a LOICZ regional engagement in the Arctic – Arctic Coastal Zones at Risk, 1-3 Oct. 07, Tromsø

• SCOR / LOICZ WG 122 final synthesis WS in Boulder Colorado, 10/07.

Collaboration with partners in ESSP

• Working with international colleagues in three topical sessions at the Earth System Science Congress in Beijing, China, (11/06) – partners GECHS, GWSP, NOAA, WCRP, UGEC, (Sessions 21, 26, 37), plus MAIRS and the national Chinese LOICZ Committee. Follow up, joint Newsletter on coastal Urbanisation and Risk (Fragkias/Weichselgartner), Sea Level Rise WS initial planning for 2008/09 (Mimura, Church, Harvey, Nicholls, v. Storch, Kremer): collaboration with MAIRS strengthened in APN/LOICZ coastal vulnerability and modeling (link GKSS)

• Deltas at Risk – small scoping WS on data and scales, modeling and visualization of flux changes, H2O, nutrients, erosion issues, (LOICZ, GWSP, INSTAAR, Uni. Delft), 21/22 May 07 (Buddemeier and new post-doc Vera Djepa involved)

• Deltas at Risk – larger follow up WS on data and scales, modeling and visualization flux changes, H2O, nutrients, erosion issues, (LOICZ, GWSP, INSTAAR, UGEC, CIESIN, others), planned 26-28 Sept. 07, Boulder Colorado, new partners, data requirements, future of Typology

• LOICZ session in EGU, Vienna, April 07 (Lead: H. Thomas)

• LOICZ sponsorship in BALTEX (CLIVAR) conference, 4-8 June 07, Saaremaa, Estonia (J. Pacyna)

• WS-Harmful Algal Blooms Mote Florida, follow up from the IDGEC Bali Meeting – proposed for second half 07 or 08 (Alcock – Le Tisier).

Involvement of host institute and national science and vice versa

• Collaboration of MARCOPOLI (multi annual national marine, coastal and polar research project) experts in the LOICZ-IMBER Continental Margins Task Team, CMTT, (1. International Mini Open Science Meeting in Shanghai in 09/07)

• A concept note on the role, application and further development of remote sensing in LOICZ future coastal research is under development, coordinated from within the LOICZ-SSC and colleagues from GKSS. A targeted workshop on remote sensing in land ocean interaction studies integral to the CMTT OSM in Shanghai plus training courses

• Involvement of national coastal research experts (social and natural scientists) in the LOICZ/SPICE workshop linking practitioners and scientists (Bali 11/06)

• Organization of a governance regional study in the Arctic (10/07, A. Kannen)

• Participation of LOICZ in excellence cluster proposal, University Hamburg (see above).

Capacity building

• Summer school on coastal management and the role of science in collaboration with AWI (2006, 2007)

• Summer school on pollution in collaboration with GKSS, May 07 (J. Pacyna)

• Participation in summer schools as part of a Marie Curie Initial Training network (in collaboration with GKSS and University Southampton)

• Continued involvement in the Erasmus Mundus / LOICZ Master Programme for coastal and water management incl. hosting an intern from the program at the IPO (Su Jian, China)
In house training and scientific involvement of interns and trainees running or planned in cooperation with external partners and GKSS, involved scientists (currently GIS/Typology) and administrative staff in education (2008 ff)

Training and internships foreseen for Regional Nodes, e.g., Mr. Chen from Yantai will likely be joining the IPO in autumns 2007.

Typology

• Wrap up and concept workshop held in GKSS in Nov. 06 with US and Italian (LaguNet) partners – work plan for next years typology developments established, new partner structures and links explored; advice provided to GKSS for the physical design of a large typology / coastal database server to be based at the LOICZ host institute. The IPO will in the mid-term evolve to the LOICZ typology and data center – links with the GKSS Ferry Box monitoring database are established. The server has been set up in 02/07 and is running. Post-doc fellow (DAAD) has been identified and appointed – Dr. Vera Djepa, University Dundee, UK - start will be in context of GWSP-LOICZ Deltas at Risk Workshop, Durham NH, 05/07

• Typology workshop on external datasets and assimilation (potential partnering possible with GWSP, LAND, CIESIN, GKSS (Coast Dat, Ferry Box) – tentative second half 07.

Decision: SSC to advise on Typology future directions and general needs – to guide the necessary investments

Activities directly related to Priority Topic 1

• Conceptual planning of the implementation of the Topic initiated – 2 workshops (see below) lead by L. Mee (Plymouth) foreseen in 2007; links with QUEST initially established and confirmed by IPO in consultation with C. Prentice (Brazil IGBP SC) however, confirmation from Plymouth and concrete planning pending. Contextual links with EU ELME project and follow up proposal – documentation required

• Scoping WS Socio-Ecological Systems (Topic 1 – Plymouth first half 07 – postponed, due to over commitment of relevant parties, new approach pending)

• Priority Topic 1 – (Socio-Ecological Systems) full size follow up synthesis second half 07 – no concrete plans – info Plymouth and Topic Leader pending

• Two workshops/sessions on assessment of socio ecological systems as part of the EcoSummit 05/07 China and the Society for Human Ecology (annual conf.) 10/07 Brazil, M. Glaser, B. Glaeser.

Activities directly related to Priority Topic 2

• Conceptual planning of the implementation of the Topic initiated

• 2006 desk study on biogeochemical budget (review, model comparison, new challenges) conducted and report in editing stage (D. Swaney)

• Estuarine and Wetlands Conference – LOICZ session, Paris, 3rd week 01/07 (nutrient accounting, budget-modeling, J. Garnier, B. Billene, D. Swaney)

• Biogeochemical budget modeling (small technical workshop follow up on model review desk study), planned for summer 07, to be confirmed – final planning pending

• Ecosystem modeling; side event to IMBER/LOICZ CMTT, Shanghai, 09/07, (cancelled)

• Carbon modeling side event to IMBER/LOICZ CMTT, Shanghai, 09/07 (part of a session)

• Priority Topic 2 full size follow up WS second half 07; association to ERF Conference in 11/07 (under consideration, final planning pending).

Decision 1: The role of modeling and collaborations (eg. AIMES, IMBER, GWSP etc) needs urgent considerations. LOICZ is expected to provide socio ecological systems modeling, bgc models on global and smaller scale fluxes and implications and risk/vulnerability analysis on various scales. Model fit for purpose is a key issue. This is currently not comprehensively addressed and covered in LOICZ and needs a strategy and perhaps an own Working Group (meeting with AIMES suggested by Chair and IPO later 2007).

Activities directly related to Priority Topic 3

- Conceptual planning of the implementation of the Topic initiated
- Initial concept workshop held at CRC Rhode Island in 11/06, resulting in a concept paper outlining the Priority Topic 3 implementation
- Science-Practitioners WS Miedzyzdroye, Poland 03/07 (with affil. Project ODRA, SPICE) – IHDP
- 2. Scoping and Methods WS for Priority Topic 3 took place in April/May 07 in Cork, Ireland, aimed to drill down methodology for governance baseline studies
- Concept WS, Science-Practitioners on Governance baselines IAI, LOICZ, IHDP, CRC Rhode Island in Latin America, here demo site incl. the IAI Caribbean Coastal Scenarios CRN – likely Nicaragua (incl. EcoCostas-Network) early summer 07, leading into:
  - Science-Practitioners Full WS on Governance baselines, IAI, LOICZ, University Rhode Island, (IHDP) in Latin America incl. the Caribbean Coastal Scenarios CRN under IAI, second half 07
- Mini-symposium associated to 18. LOICZ SSC Meeting in Vancouver (05/07) (Gallaugher, Olsen)
- Regional study on governance baselines associated to Arctic Coastal Zones at Risk (Tromsø 10/07, A. Kannen, GKSS).

Decision: a continued dialogue between the Priority Topic 3 group and those within and outside the SSC working on related and relevant issues i.e. general transparency of scientific concepts behind each Priority Topic need to be promoted as to allow internal harmonization and synthesis of measures. (SSC Members and external experts need to be enabled to identify to which of the Priorities in LOICZ the activity they are involved in may contribute).

Regional Activities

- Arctic Coastal Zones at Risk – interdisciplinary workshop to be held jointly with IASC, AMAP, NILU, IPA, IHDP in Tromsø (Norway) 1-3 Oct. 2007 – http://w3k.gkss.de/events/arctic07/
- MAIRS-LOICZ (GKSS) considerations on collaboration in coastal vulnerability / climate change modelling and scenarios (SEA START, (Snidvongs-leading)
- LOICZ to encourage GWSP-Asia decision for a regional project on Asian delta and non-delta mega cities (APN approved initial funding)
- APN project approved and started: Integrated Vulnerability Assessment of Coastal Areas in the Southeast Asia and East Asian Region (06-09) – links with MAIRS, and Deltas at Risk
- Regional collaboration in Latin America explored in consultations with the IAI, examples could be the Sao Francisco River water and management initiative (IAI) – joint badging and exchange of participants; in general IAI is willing to collaborate in targeted and product oriented activities – a simple sponsoring of LA participation in LOICZ activities is not favorable
- European inventory of LOICZ relevant science under consideration (G. Flöser in collaboration with ENCORA, outcome still unclear)
- AfricaNess process (aimed to establish a framework promoting GC research in Africa – comparable to IAI and APN) currently unclear – two independent science plans have resulted from this initiative and coordination is questionable.

Decision: SSC to discuss and agree on role and links with the new START PACOM African Node at CAW which is supposed to be affiliated to LOICZ (C. Gordon) – proposal that was funded and lead to the Node in late 2006 is posted on the FTP site

IPO services and infrastructure, PR

- Database – interactive and password protected LOICZ project and contact database established and running, supports data policy for affiliated LOICZ projects (M. Paul)
- Interactive and protected areas on LOICZ website planned or established (Wiki for SCOR WG)
- Redesigning the LOICZ Newsletter - accomplished
- Web site under total renewal – first pilot version anticipated for summer 2007 (May schedule failed due to organizational delay in GKSS and time constraints in IPO)
- Server – advanced computer server set up at GKSS for coastal typology data base (mirror to KGS) and coastal portal – links to GKSS Ferry Box – done. Transfer of Typology database and clustering software planned for second half 07
• Presentation of LOICZ to several hundreds of visitors during the GKSS Open day (09/06) – successful; indicated public interest in coastal issues and in easy language explanations of global change complexity
• Initial contacts with schools etc established but currently no capacity in IPO to develop and implement multi target PR in practice. IPO applied for Erasmus Mundus Intern for PR – status of application unknown.

**Decision:** SSC to decide in as how much LOICZ really wants to engage in PR and which target groups to involve. This has implications on the reporting and information delivery of the Scientific Themes and Topics as well as Cross Cuts.

### Affiliated LOICZ Projects that terminated and joined the project

In 2006, LOICZ finished the revision and renewal process of the project affiliation and data policy (M. Paul leading). Both have been approved by the SSC and have streamlined the affiliation process and simplified the project categorization (categories of relevant and regional are no longer used) – see Research Area on www.loicz.org. The PI interested can get this information from the web and benefits and duties are more clearly visible. A call for project affiliation has been published in the Newsletters 2006/1 - 3 and on the web in order to promote links with ongoing or planned thematic scientific activities. PIs have a responsibility in regular reporting to LOICZ. Scientific Theme Coordinators are expected to screen the relevant information in affiliated projects for synthesis and feedback into the Priority Topics.

As a supporting infrastructure and in order to provide the scientific community and the affiliated projects with a useful platform to display their research the LOICZ project database has been renewed. The design and features of this now interactive database have been developed in the IPO and the work had been commissioned. The database allows different levels of access and interactive editing of the project information and provides search tools. Following pilot runs the database has gone online in 11/06 (see also Newsletter 2006/3; http://141.4.215.14:18186/loiczdb/faces/app/Welcome.jspx, presentation M. Paul).

While a number of affiliated projects had their sunset clause in 2006 (a variety of which from the Dutch LOICZ cluster) a range of new projects has been approved to enter the LOICZ project portfolio in 2006 and 07 is under consideration. Currently, a total of 54 projects are directly affiliated to LOICZ covering all STs and PTs to a various extent. For details please refer to the project database where projects are listed according to their contribution to STs and PTs.

In general, it can be observed that in particular small to medium size projects contact LOICZ even during their proposal phase to seek endorsement (usually in writing) which is seen to be helpful during the evaluation procedure. Promotion, however, of project affiliation needs to come out of the SSC and through its networks as well.

**Decision:** How to improve the visibility of LOICZ to projects under consideration or running and to foster project affiliation.

### Consultation, review and advisory involvement incl. joint chairmanship in 2006/07 included:

- LOICZ Consultation EU DG Environ., UNEP GPA – Assessment of assessments –Indicators, and State of the Environment (SoE) Report for Interministerial Review 2 of GPA in 10/06
- UNEP-GPA Interministerial Review Oct. 06 China – LOICZ involved in background doc. production and most likely the partnership day (S.Olsen)
- IGOS: McManus Co-Chair. Integrated Global Observing Strategy Coastal Theme
- IPY Proposal with Arctic Coastal Dynamics Project (PI) and AWI (Bremerhaven), plus collaboration with IASC
- LOICZ has continuously been engaged through individual scientists in the vital synthesis being prepared by the Continental Margins Task Team – a joint initiative of the two IGBP core projects. The CMTT synthesis (LOICZ/JGOFS) is in its final stage
- Marcopoli – LOICZ involved advising and observing
- EU Marine Strategy – Green Book consultation process
- UNEP DEWA approaching (01/07) LOICZ to join with GESAMP in Marine assessment review and project evaluation of GEF (international waters) – was favorably considered by the IPO and Chair
and communicated to the SSC seeking involvement. No response has been received and LOICZ was so far unable to answer with a concrete decision.

**Decision:** Since the latter may have implications for future links with such organizations that may also affect the potential for sponsoring there must be a strategy to avoid risking missed opportunities like that.

### 4. Publications

**Final editing of 4 LOICZ Reports and Studies Volumes:**

- LOICZ South and South East Asia Basins (workshop on river basin – coastal sea interaction and integrated management progress markers) supported by UNEP GPA and UNESCO IHP/IOC – R. Ramachandran to report on status
- Findings and synthesis of the LOICZ Inaugural OSM (Egmond, The Netherlands 06/05) – edited version returned to M. LeTissier for finishing.
- LOICZ AfriCat, Damming and coastal change, Pilot project LOICZ/START – peer reviewed paper published
- Science communication and dissemination (reflection of the IHDP/LOICZ Bangkok workshop late 2005)

**Selective publications**

- Database on metabolism in Europe, designed in EU - EUROTROPH. This database is freely available at http://www.obs-vlfr.fr/eurotroph/ and is analyzed and discussed in the paper: Gazeau F., Smith S. V., Gentili B., Frankignoulle M. & Gattuso J.-P., The European coastal zone: characterization and first assessment of ecosystem metabolism. *Estuarine, Coastal and Shelf Science*. Contact: Jean-Pierre Gattuso (gattuso@obs-vlfr.fr)

In late 2006 in collaboration with UNEP/GEF a biogeochemical modeling synthesis review of the long-term LOICZ biogeochemical budget modeling and assessment has been published that provides a synthesis designed to address policy and management information needs and in an internal document also informs the GEF about strategic policy directions: M.D.A. Le Tissier, R. Buddemeier, J. Parslow, D.P. Swaney, C.J. Crossland, S.V. Smith, H.A.Y. Whyte, W. C. Dennison, J.M. Hills and H.H. Kremer (eds). The role of the coastal ocean in the disturbed and undisturbed nutrient and carbon cycles - A management perspective. LOICZ, Geesthacht, Germany. This is to reflect the project findings in plain language plus a policy advisory document.
5. Links and Liaison

UNESCO

Links and liaison with UNESCO IOC and their GOOS project have slowed down considerably due to the transition. Re-establishing the contacts is a priority for LOICZ, a revision of the MoU from 1994 had been discussed but not been pursued. IPO visited J Barbiere in February; enhanced collaboration is foreseen for 2008.

IPO has also contacted IHP (S. Demuth) who is in charge for the water program and aware of the GC projects (links strongly to GWSP). Collaboration which had come to a hold as well is foreseen in concrete activities not before 2008.

The GOOS / COOP relations have not made any substantial headways in 2006. IPO and the new GOOS director (Keith Alverson) are in general agreement that LOICZ – C-GOOS relations would be rather beneficial to both since both parties aim to realize complementary agendas. The best chance for collaboration lies on the regional scale where GOOS has established Regional Alliances – Alverson suggests collaboration with the GOOS scientific steering coastal subcommittee (PICO) and expresses his hope that this committee will liaise with LOICZ when it first meets - probably either late 2007 or early 2008. IOC Secretarial contact is Mr Thorkild Aarup.

Decision: SSC to identify a liaison person to link with PICO and explore the collaboration

P. Bernal (Gen. Secretary IOC) has suggested to the IPO that one might explore the potential to have collaborative workshop e.g., in China/East Asia to address 3-5 cases where a strong collaboration and exchange between science (LOICZ) and monitoring/observation (C-GOOS) have or could support decisions making. This could be a proposal for the new Node in China but it needs a good ToR and should focus on East Asia.

Decision: shall this be developed further as to fit the Priority Topics or Cross Cuts and in which frame?

UNESCO Vice director P. Bernal suggested that LOICZ should explore options to sign a general MoU with UNESCO under which specific annexes could point out collaboration in detail with the different scientific programs. IPO has entered a dialogue with IHDP in Bonn after their move under the UN Banner whether we can expect assistance in this. The response is positive but practical implications are still vague.

Decision: Shall this be developed further in terms of strategic strengthening of LOICZ links to UN?

UNEP GPA

LOICZ links with GPA have slowed down substantially due to major changes in the GPA secretariat (Adriaanse, v.d. Guchte and Osborne left) and a new orientation GPA is seeking following last years Intergovernmental Review and the change in the UNEP leadership. IPO tries to keep contact with A. Datta and Vanderweert), S. Olsen had the last collaborative contacts.

LOICZ was, however, involved in the State of the Environment review, which was background in the 2006 2nd Interministerial Review of the GPA in Beijing and in the review of ICARM progress markers. Other GPA requests (advice on focus on nutrients and GIWA further development (draft GEF MSP proposal with UNEP DEWA) could not be dealt with due to time constraints in the LOICZ community.

UNEP DEWA

Besides the GIWA follow up proposal mentioned above S. Diop (Nairobi) invited LOICZ in early 2007 to join with GESAMP for a review of GEF international waters project relevance. This request has not seen a LOICZ response either for similar reasons presuming.

Decision: Decide how to deal with such requests in future in order to avoid overload and missing strategic opportunities.

UNEP GEF

Policy document looking at management and policy implications of the findings and methodology of the budgeting project has been published. Other relations and/or proposals with GEF are currently not applicable.
APN

The APN is highly relevant for regional LOICZ activities and contacts between the IPO and the Secretariat are maintained. APN keeps playing a role in regional funding for LOICZ related research and thus supports the work of the Regional Nodes.

Initial discussions following the APN suggestion to develop a MoU with LOICZ have taken place however, it seems reasonable to briefly review the strategic value of such a document because the collaboration is good already and application for funding is carried out in regular competitive mode.

IAI

IAI has been open for collaboration and a major LOICZ related proposal for regional scenarios of coastal change focusing on the Caribbean (lifetime 5 years (IAI CRN II) is currently running. Face to face discussions with IAI subsequent to the IGBP/IHDP SC in Brazil (03/07) suggest exploring regional collaboration on concrete case by case proposal basis. Funding has been confirmed for a joint collaborative workshop implementing LOICZ Priority Topic 3 (Governance) on regional scale – WS in 12/07. IAI and LOICZ agree to keep a close watching brief on each other’s activities.

START

START is a promoter of giving LOICZ a strong position in the integrated regional studies (e.g., Asia Monsoon – MAIRES – see below). Furthermore START has, via PACOM, provided the Centre for African Wetlands in Ghana with funds for coastal research. The Centre is playing a role of a LOICZ affiliated regional node and IPO and Chair are in contact to C. Gordon to link the activities meaningfully to LOICZ. Mrs I. Ng. Diop is willing to assist bringing in a stronger francophone dimension.

However, this initiative and the link need to be pursued more strongly as in the past.

Decision: LOICZ needs to determine the how and when regarding its African engagement. The call for session proposals in the IGBP 2008 Congress in Cape Town has received limited (although very qualified) response from the SSC (However, we might be well advised to use the Congress to strengthen the LOICZ African network and visibility).

EU

EU Contacts decreased over the last year mostly due to the fact that changes in responsibilities in Brussels and a rather complex process of reorientation at the Commission level (on its way into FP7) has made the future role of coastal research a bit vague. IPO and Chair are in exchange to plan a meeting with EU representatives of DG research in Brussels in the near future. However, considerable LOICZ relevant research is being covered in the approved SPICOSA project under leadership of Ifremer. Various running EU projects are affiliated to LOICZ one of the most important of which is the ENCORA network and CarboEurope.

Under FP7 various LOICZ related proposals have been developed and submitted aiming at socio-ecological systems analysis (following the sunset of ELME), storm forecast and coastal vulnerability as well as ocean acidification. Evaluation is pending. In addition, an Initial Research Training Network in the Marie Curie framework of the EU is under development. It links private sector and academia in a joint scientific and training focus on long-term prediction of European coastal morphodynamics and management. A pre-proposal has been submitted. Still the key EU funded contribution to LOICZ in terms of training and capacity building is the Erasmus Mundus Masters on Coastal and Water management. Further contributions to LOICZ particularly in the ICM context are supported as affiliated projects through the INTERREG funding mechanism, e.g., Corepoint. ENCORA has taken initiative to evaluate the appropriateness of the DG research funding mechanisms as compared to the INTERREG in their relevance for issue driven and problem solving coastal research.

Parent Programs IGBP/IHDP

Regarding the liaison with our parent programs this can be summarized in a way that we are building further our relations with the IHDP which in principle is a fruitful process although constrained by the heavy commitment of their core project members. Particular engagement focused on the 2006 autumn ESSP conference (in China) where LOICZ was actively involved in joint sessions with various core projects (e.g., GECHS, UGEC). LOICZ also played a role in the IDGEC synthesis in Bali in November which is currently being followed up by links of our Priority Topic 3 to their Governance Group around Frank Biermann (IVM Amsterdam) and initial plans for a workshop on harmful Algal Blooms) Le Tissier, Alcock – 2008). The next meeting between IHDP Secretariat and IPO is planned
for 06/07 when IHDP has settled in their new location under the UNU banner. The meeting will explore implications and options of the new IHDP set up in the UN system for LOICZ.

With IGBP our relations mostly reflect in concrete cooperation with other core projects. Positioning the new LOICZ with its much broader scope in the restructured IGBP makes some progress. However, occasionally the perception in some of the IGBP partners still is that LOICZ focuses on assessment and soft sciences much more than on fundamental process studies and new data. IPO and SSC therefore maintain and enhance good bilateral links with the core projects and sponsors.

Active collaboration and exchange is being carried out with

PAGES (Fast Track on Ocean Acidification with SCOR, IMBER, and SOLAS): Joany Kleypass based on her earlier engagement with LOICZ and Helmuth Thomas represented LOICZ.

IMBER (margins and shelf processes): N. Rabalais & J. Middelbourg chair the CMTTeam and a small core group planning for the Inaugural IMBER/LOICZ joint OSM to be held in Shanghai (09/07). The objective will be to identify the joint scientific agenda for the next years of continental shelf research and elaborate on ways for implementation (http s://www.confmanager.com/main.cfm?cid=792). IMBER will engage with LOICZ and/or GLOBEC where this is meaningful to help answer scientific questions and use other mechanisms such as fast tracks to address specific issues. Interesting developments have been brought to the IPO attention aiming at establishment of a national IMBER project (in charge Prof. Kay Emeis, Univ. Hamburg). A first screening of the draft proposal revealed that this proposal very strongly moves inshore entering even coastal waters. The IPO suggestion therefore is to see if it wouldn’t be strategically wise to make this at least a joint activity to be presented to the funding agencies.

SOLAS: From last year’s attendance of the SOLAS SSC two suggestions resulted made by P Liss and agreed by their SSC: That both projects should seek establishment of joint scientific synthesis on a) global assessment of trace gas concentrations and fluxes (transfer rates and processes); and b) eventually a fast track proposal together with IGAC addressing deposition processes (dry and wet) in coastal zones – idea generated by Tim Jickels). Both initiatives so far have not been pursued but currently the launch of a working group involving also IGAC is considered looking at the emission footprint of mega-cities (process started during the IGBP/IHDP SC in Brazil 2007).

IMBER/SOLAS Carbon Group and new CMTT: Both projects are in favor of a good representation of a coastal expert in the carbon group. I discussed this with co-chairs Truls Johannsen and Arne Körtzinger. Names that were mentioned were H Thomas (focus and strength on inorganic Carbon), KK Liu and Alberto Borges. In terms of coastal Carbon, this will be addressed as part of a session in the IMBER/LOICZ OSM, Shanghai, involved are A. Borges and H. Thomas as well as A Chen. In the mid term there should be a ToR for LOICZ on how to get involved in this continuously.

LUCC/GLOBAL LAND and others in the area of harmonizing Land Use and Cover Data for better applicability by other projects (led by Bill McConnell and John Letham, FAO/GTOS): The workshop that took place in Rome in 02/06 (attended by Buddemeier, Kremer) has not seen any concrete follow up from LAND. LAND has a new Chair and EO in place, based in Denmark. IPO and Chair are planning to contact them in the second half of this year.

AIMES: Atlas, global modeling, Nitrogen (INI) likewise with Global NEWS needs to be reviewed and evaluated for value added links with LOICZ – this should mostly be part of the ToR of PT 2 and ST II-IV. Also in terms of developing a concept for the highly expected LOICZ Modeling activities AIMES should be considered as a strong partner.

Decision: SSC to develop a concept and ToR for modeling in LOICZ and the necessary partners. Chair and IPO encourage a separate Modeling meeting subsequent to the SSC.

QUEST: In a recent consultation at the IGBP/IHDP SC in Brazil confirmed its in principle preparedness to consider collaborative sponsorship for LOICZ work relevant to the PTs and CCAs. Of primary interest are ST I and Typology. Interfaces to other thematic issues in LOICZ such as nutrient fluxes including biogeochemical modeling and observations of coastal/shelf seas are obvious (see also under AIMES). However, this needs to be in form of short concrete proposals and should come out of the UK. International participation is possible. So far there seems to have been no concrete response from the SSC. There is an invitation to QUEST project scientists to propose ideas for working groups and scoping meetings. This needs to be considered before we can carry ideas to the QUEST scientific liaison group (in June) to decide on the program for the next year. Sarah Cornell has copied Robert Nicholls in to this, to solicit his expert views. Other people we should get onside on the modeling front are Jim Aiken (PML, MarQUEST science coor-
dinator, whose interest is in process modeling and observation of coastal seas as distinct from open ocean).

**Decision:** SSC to decide if and how to approach QUEST and how takes the lead. Opportunities generated by people other than the LOICZ PIs are difficult since follow up can not be guaranteed.

(Hereunder in italics are extracts of comments from 2006 SSC – relevant to the decision above):

a) In the field of topic 1 we are planning to have a two-pronged approach to deliver the global synthesis: a small scoping workshop initially (say 8-10 people) for 2-3 days that analyses the current status, gaps and needs thereby setting the agenda for a bigger science synthesis workshop which would need to be repeated in regular intervals so that we are producing a continuous synthesis. This falls under QUEST Theme 3 which couples vulnerability of eco- and human systems and climate change. The LOICZ PI would be L. Mee. (We should look at this suggestion in the context of QUEST’s initial statement made in Norwich - that they still sort of search for a coherent Social Science agenda (and the necessary money obviously).

b) The same two pronged approach is going to be followed in the field of Topic 2 looking at biogeochemical processes, the advancement of modeling and the assessment of cycles of materials such as nutrients and trace gases and to trace the source categories of these fluxes. Obviously this interfaces closely with:

c) Where we asked QUEST’ interest in the global further development of the LOICZ typology (currently half geographical degree with about 120 parameters per pixel and a rather minor input from Land and Land cover data (i.e. provide GIS applicable databases of those drivers that really affect the coastal change). The implications for modeling and visualization but also comparison and up-scaling can be anticipated to be of crucial importance. Again we anticipate some two workshops with co-support not unlikely to be generated from FAO and or GTOS.

**MAIRS:** Following continued discussions of EO de F.P. de Vries in Brazil (March 2007) and coordinator A. Snidvongs MAIRS is seeking a platform to explore ways for collaboration. Our Regional Nodes and projects (e.g., under the APN) should be involved in this process to harmonize the regional implementation of MAIRS (in its coastal aspects) with LOICZ. For this year a joint workshop is being planned under the APN supported Coastal Vulnerability project that will in addition identify key areas for development and planning of proposal development. This will be in Sep. 07 hosted by Silliman Univ. Dumaguette City, Philippines.

**ESSP**

GWSP Collaboration in mainly two focus areas under the overarching issue of Coastal Vulnerability:

a) Study on Deltas at Risk looking at an upstream-downstream assessment of vulnerability driven from land-based and sea – based forcing (see draft ToR hereunder).

**DELTAS AT RISK**

---Initial Terms of Reference (WS Durham 21/22 May 07 & 26-28 Sep. 07 Boulder)---

A joint collaboration of the ESSP joint Global Water System Project and IBGP/IHDP-Land-Ocean Interactions in the Coastal Zone project has been agreed to on the issue of articulating the degree to which the world's coastal delta systems are made vulnerable and placed into risk as a consequence of global change. The effort will be unique in united both upland, coastal, and oceanic forces at play. Thus, analysis of the individual and conjunctive impacts of climate variability, water engineering and river regulation, consumptive freshwater abstractions, land management, coastal zone development and human occupancy, as well as sea level rise will be considered. For brevity, we refer to this joint effort as “Deltas at Risk”.

The proposed effort supports themes within both GWSP and LOICZ. Specifically, under LOICZ this work will contribute to the main theme of Vulnerability of Coastal Systems and Hazards to Society as well as on its Priority Research Topics on Assessing and Predicting Impact of Environmental Change on Coastal Ecosystems and Linking Social and Ecological Systems in the Coastal Zone, and under GWSP, to Theme 2 on Linkages and Feedbacks within the Global Water System, and Theme 3 on Resilience and Adaptability. Given the agreement to work on this subject, it was proposed to address this particular topical area through an Activity, which would sit within a set of broader theme areas, thusly:

Two key outputs are envisioned:

1. **A Global Digital Map of Watershed-Delta Complexes.** The specific nature of this product will be elucidated during forthcoming meetings, with the goal of digitizing as many such complexes as practicable, identifying contributing upstream basins, linking socio-biogeophysical data sets, and deriving mappable indices as part of the GWSP
Indicators and the LOICZ Coastal Typology work. Factors to be included will be GDP, agricultural development and activities, population distribution, hydrography, topography, dams and other diversions. The product will be linked to the GWSP dams and reservoirs characterization effort, which targets globally 8km resolution watershed hydrography and affiliated data sets and to the LOICZ coastal typology effort (database, data-analysis and clustering tool).

**Required steps:** Convene a small working group composed of UNH (Vörösmarty/Mayer), Univ. Colorado (Syvitski/Kettner), Columbia University (CIESIN/SEDAC), LOICZ Typology and Data; (Buddemeier KGS, and V. Djepa LOICZ IPO)).

**Workshop Goals, to:**
- Elucitate the nature of required information and approaches for the Watershed-Delta complexes
- Design and create a Version 1.0 of a customized Global-RIMS data and indicator system for deltas (following the approach of the Wallingford water poverty/wealth indicators workshop) (we should explore how this links to LOICZ data or what would be needed)
- Plan the larger Workshop for Fall 2007

**Timing:** This first WS is proposed for mid-May 2007. (Funding is expected to be covered jointly by GWSP and LOICZ)

(2) **A Global Delta Typology.** This categorization system would produce a definitive global system based on the provisional assessment of watershed-delta complexes made under step 1. It would also comprise a vulnerability map for such systems based on the physical state (freshwater, tides, sediments, topography), natural and disturbed ecosystems, population, infrastructure located in deltas, excess flooding, GDP at risk etc. The typology would then be applied in a series of contemporary and future assessments of risk. This will be one element of the further development of the LOICZ typology and should ultimately include scales and dimensions of governance systems.

**Required steps:** Convene a larger workshop (30-40 participants), tasked with developing the typology, exercising (in part) the Global-RIMS tool and data sets developed by the initial working group. Users of the information and typology developers will be invited specifically, so that key application areas can be openly discussed and agreed upon, that can create a "user community" for this information resource (((OTHERS??))).

**Workshop Goals, to:**
- Identify the concept to data base and typology developers and users
- Identify application areas
- Plan improvements, upgrades, access and archiving policies

**Timing:** This second, larger WS is proposed for Fall 2007. (((Changed from JUNE 2007)))

**Potential support:** GWSP, LOICZ, WEF, MunichRE. GWSP and LOICZ IPOs to facilitate and co fund this workshop

b) Emerging multi-group effort building off of the GWSP indicators work, aimed at uniting operational geophysical and social science data sets. The idea is to develop an end-to-end GEOSS demonstration test, as a contribution from the Earth systems science and GEC community. Again the notion of uniting an upstream-downstream perspective would be very interesting and compelling, and we believe that a LOICZ-GWSP partnership here would be very useful.

These activities are seen to relate to the LOICZ ambition to develop further the typology as an urgently needed cross cutting task.

In this context a few more relevant key words on potential LOICZ knowledge products:

- **Global Vulnerability mapping - work to consider:**
  - UNEP: A. Sing -coastal vulnerability index
  - WRI - Vulnerability analysis in Kenya
  - UNESCO ICAM/GOOS ODINAFRICA - related activities

**Decision:** SSC to see if related Scientific Themes and Priority Topics as well as the community involved in Cross Cut activities (e.g., Typology, Modelling) should engage continuously in this effort.

**Decision:** How best to develop a ToR for Scientific Theme 1 to inventories and synthesis the LOICZ relevant vulnerability work in affiliated projects and beyond?

- **GCP:** Has underlined that LOICZ should play a key role in the work on the marine Carbon cycle which is carried out under the leadership of IMBER and SOLAS (see above for more detail). This reflects in sessions planned for the IMBER/LOICZ OSM, 09/07 Shanghai.

- **The GECAFS relations could be substantiated.** This should ideally be done bilaterally between SSC and GECAFS. The role of LOICZ in Food Systems is not immediately clear and needs to be specified – as I see it – on a case by case basis. A willingness to collaborate is definitely there and
the latest exchange with J Ingram in Pune underlined the close parallels they see in our view on vulnerability – a field for joint forces?

- **HEALTH** – too preliminary to comment on.

**External:**

- **BALTEx:** Baltex (also based at the GKSS) seeks collaboration with LOICZ and has identified a first concrete joint activity in the upcoming 5th Study Conference on Baltex 4-8 June 07 in Estonia. Further exchange between the projects will be on the level of the secretariats in GKSS and between SSC members and Chair (http://www.gkss.de/baltex/conf2007/index.html).

- **GRDC:** Global Runoff Data Centre Germany (http://grdc.bafg.de) has underlined interest to collaborate with the new LOICZ in particular in the area of linking catchment and coastal data. T Maurer (director) is willing to jointly explore options in continuation of initial work carried out in collaboration with GRDC by our intern G. Gonzalez. Currently no further exchange – could become involved into the Typology further development.

- **IPY:** During the last year’s LOICZ and IASC had two successful joint projects, i.e. Land-Ocean Interactions in the Russian Arctic (LOIRA) and Arctic Coastal Dynamics (ACD). IASC and LOICZ have now continued and strengthened their cooperation in various ways. IASC is currently supporting two projects that are relevant for LOICZ (and affiliated):
  
  (1) Arctic Coastal Dynamics (ACD) which is entering a second phase, and
  (2) Arctic Coastal Biodiversity (ACBio).

Both projects are closely linked to the Working Group 3 of the 2. International Conference on Arctic Research Planning (ICARP II, www.icarp.dk). One common activity during the next years is focussed on establishing an Arctic Circum-Polar Coastal Observatory Network (ACCO-Net) in the framework of the International Polar Year 2007/08 (www.ipy.org). ACCO-Net has been endorsed by the IPY Joint Committee (Project #90) and LOICZ is in the proposal. The research activities should be relevant for several of the LOICZ STs and feed into PTs 1 and 2. IASC, LOICZ, AMAP, IHDP and the IPA are now jointly planning the conference “Arctic Coastal Zones at Risk” 1-3 Oct., Tromsø, Norway (http://coast.gkss.de/events/arctic07). The workshop will link natural and social sciences and aims to provide a coastal focus to the regional Change assessments published as ACIA and AHDR reports.

- **SCOPE (ICSU fast track PACKMEDS):** Again, on nutrients with focus on N. LOICZ has not been officially involved but Ittekkot (ZMT) in the last Bremen meeting carried the LOICZ flag and collaboration is been seen favourable. This link should be pursued by the PT 2 and ST IV people within LOICZ. AIMES plays a role here is well.

**Decision:** in consideration of little recognition of LOICZ in various SCOPE activities on how to improve this and arrange for stronger involvement also including the field of Capacity Building – contact B. Sundby (SCOR Chair) and V. Ittekkot (ZMT).

- **C-IGOS (a strategy!) / C-GTOS (comparable observing system as GOOS) that falls under the IGOS Partnership:** In particular, the joint LOICZ-IGOS Coastal theme products for the 2006 workshops that IGOS Coastal theme will hold (coastal hazards, nutrients and human health in coastal urban systems, interoperable data systems) will all be critical in getting products off the ground. We have not received information about outcomes and implications for LOICZ.

**Decision:** Identify liaison within the SSC to reestablish links with them – first contact could be L. McManus, P. Di Giacomo.

- **GEOSS:** The global change research programs and all observation systems were asked to map their respective goals and objectives against the GEOSS nine societal benefits and 2-year as well as 10-year (?) implementation plans. Co-Chair in the IGOS Coastal Theme, Paul Di Giacomo is one of the compilers of the inputs along with Rick Lawford of the IGOS Water Theme. The role of LOICZ remains unclear. This probably needs direct interaction between Chair/IPO and the Geneva GEOSS Secretariat (a representative participated in the IGBP/IHDP SC Meeting, Brazil 2007).

**Decision:** SSC to advise on how to proceed with this relations.
6. Outlook

In recognition of current challenges for LOICZ the milestones for the years 2006/07 were:

Following the transition from an originally biogeochemistry oriented global research cluster into an interdisciplinary research network aiming to provide knowledge products for better informed management decisions LOICZ needs to gain momentum in addressing those scientific questions described in the Priority Topics (the LOICZ niche).

General mechanisms to be employed (besides the sequence of workshops and reviews mentioned earlier) are to provide a platform for review and discussion of ongoing coastal research in context of the scientific framework of LOICZ and in light of conventions and directives as a means of coastal governance. LOICZ also aims to give guidance for new research on global but also on national and regional scales. It implies that LOICZ is expected not only to continuously provide knowledge products along a dynamically reviewed agenda but also to feed into an iterative discourse within and beyond the science community. Consequently LOICZ needs to balance between fundamental research and more applied and human dimensions science. Those need to be supported by extensive cross cutting activities incl. data management.

Some examples of current and future steps supporting LOICZ cross cutting activities:

Establishing an infrastructure for hosting and advancing the LOICZ coastal typology database, clustering and up-scaling tools – some detail:

LOICZ, aiming to foster interdisciplinary research, facilitates an extensive network of affiliated organisations, institutions and individuals. The LOICZ goal includes providing data and tools, and to collect and distribute research outcomes. In order to perform this function more effectively the LOICZ IPO establishes a new interactive database system in GKSS that includes a:

- Project and contact database
  This will be mutually beneficial in contributing to individual research efforts on all spatial scales, by lifting the global visibility of the science and supporting the institutes involved.

- Budget modelling database
  The development of budget models for C, N, P across a spread of global sites remains a focus and can be accessed through the biogeochemical budget web site (http://data.ecology.su.se/MNODE). New initiatives continuing this type of research will keep feeding into this database.

- Coastal typology database
  Grouping of the World's coastal zone into clusters of discrete, scientifically valid units based on physical and social features and processes is crucial in a global change context as well as on regional and local scales. One of the most important cross cutting tasks for LOICZ is therefore to further develop its global coastal typology both, descriptive and dynamic and including natural and social science data into the clustering as well as GIS information – the Typology Data Set and clustering tool. This will include efforts to harmonize and link catchment-based land use and cover change and demographic data with coastal change information (collaboration a.o.: C-GTOS, FAO, GLP, GWSP), and the advancement of biogeochemical assessment and modelling. Further thematic and topical collaboration is foreseen (e.g., with GLP, IDGEC, GECHS, Urbanisation, SCOR GWSP, and GECAFS).

The LOICZ-SSC in collaboration with the Kansas Geological Survey and the IfK at GKSS started to relocate the typology server to the GKSS and make the further development of the typology a key cross cutting task out of the IPO. Mirroring the Kansas server architecture and transferring the LOICZ data and inventories of existing typologies are the first activities. In support steps are underway to ensure regular staff in the IPO to work with the global science community on typology issues. Links are also established with the regional monitoring data (e.g., Ferry Box).

Decision: Directions and detail incl. supporting infrastructure and man power need to be identified and agreed by the SSC – typology working group across Themes and Topics might be worth considering.

Capacity building:

Further strengthening of our capacity building activities will be through links with START, the IAI and APN and the further development of initial plans for an integrated modelling LOICZ PhD course (needs to be revitalised through University of Kiel). Regional young experts could be supported to become Regional Mentors of LOICZ (build on experiences made during the UNEP GEF BGC project).
Outreach:
LOICZ is striving to become an interactive platform for dissemination and exchange of scientific knowledge that goes beyond the pure scientific community. Therefore, the development of a PR strategy using multimedia tools and features and which explores new ways of collaboration in the area of public education and stakeholder involvement is one key milestone for 2007ff.

Decision 1: Improving the regional performance and promotion through Committees, Mentors etc
Decision 2: Identify strategy and resources needed for effective PR.

7. Achievements/Challenges/Constraints

LOICZ will strive to complete restructuring to the best possible level to achieve an appropriate balance between the various disciplines and groups involved in coastal zone research and management. The ultimate objective of LOICZ in its second lifetime remains an improved integrative and policy relevant scientific understanding of the coupled socio-ecological dimensions of coastal change. This needs to be based on a balance of assessment, synthesis and process studies to enhance the understanding of the biophysical mechanisms and link them to cultural and societal values and priorities for sustainable management. This IGBP and IHDP partnership is to contribute to the sustainable human use of coastal systems.

The major challenge will be to establish a network of active researchers willing and able (in terms of time and man power) to overcome traditional disciplinary fragmentation to exchange ideas and knowledge in this critical endeavour. 2006 has provided the 3-4 years implementation strategy developed along the three Priority Topics outlined above with a variety of fundamental and synthesising scientific activities. The links with GKSS scientifically are very supportive and thus the scientific interaction with the host institute is increasing.

Appropriate manpower in the IPO remains a key concern, but is subject to ongoing improvement. The strategies applied to solve this problem include a variety of innovative mechanisms which enable the IPO to increase staff and in parallel still keep considerable core funding dedicated to science.

However, at least as important is to first of all focus properly, which could mean to implement fewer things but in a better fashion, and second to generate a critical mass of active, probably young researchers in contribution to the PTs, e.g., in the form of working groups who can drive the implementation process. This would allow the senior and highly committed SSC members to concentrate on guidance and oversight.

A key goal for 2007 in support of the above is to translate the LOICZ mechanisms, functions and operations including their interplay and the necessary communication flows into a lean and easy understandable strategy. This is critical taken that even after 3 years transition and the first year in Germany there are indications that some of these detail still seems to be unclear and ways of operation not transparent enough.

A second key goal now and in subsequent years will be to approve a transparent and doable business plan for LOICZ’ scientific implementation as to improve the time management and financial planning as well as to foresee personnel demands readily in advance.

Decision 1: Present, discuss and approve the strategy;
Decision 2: Develop and approve a business plan for 2008 and an indicative plan for 2009 (the final year for current Priority Topics).

8. Funding

All main activities and the IPO operations in 2006/7 were supported by the funding provided by the GKSS Research Center and its Institute for Coastal Research (IfK). The LOICZ-IPO receives this funding in its formal setup as a department of the IfK mostly from the budget of the institute complemented by an additional but in future regressive share from the GKSS directors’ fund. The total avail-
able amount per year (see GKSS, IGBP, LOICZ agreement 127/2005) is 430 K € of which 415 K € were allocated in 2006.

Different from the Dutch situation, LOICZ in Germany is requested to provide a one year business plan prior to the beginning of the fiscal year (identical with calendar year) as to enable forward-looking financial and also personnel planning. In addition a first estimate for the second next year is appreciated by the GKSS. In principle and again different from the former situation the financial carry over into the next year is formally limited to 20% (for investments and operations) and special permission by the Board is required in case this limit is exceeded. On the other hand, LOICZ and the hosting IfK can agree (based on the SSC and IPO planning) to handle the annual contribution flexible, i.e. linked to the anticipated demand deriving from the business plan. In this way we will be able to access more support if needed (e.g., for an Open Science Meeting in 2009) and may ask less if it can be foreseen that the annual demand will be below 430 K.

In general it is very important that the IPO gets a relatively clear idea about which workshops, conference sessions and support requests will finally materialize and need to receive financial allocations during a running business plan. This is recommendable in order to avoid that too many activities which are listed in the business plan are ultimately postponed into a coming year which may easily generate too much carry over. This is also relevant for the mid-term evaluation LOICZ will undergo and where delivery of knowledge products based on the science that the core funds support needs to be displayed.

Decision: SSC and IPO to agree on a business plan for the second half of the current and the coming fiscal year with an initial estimate for the second next year until end of September of a running year.

In addition to the core funding from the host 160 K € of unspent funds from the Netherlands complemented the LOICZ funding at the end of 2005 and was transferred to Germany. This resource is dedicated to scientific activities and to support measures which implement the LOICZ-SPIS (underlying is an agreement with NOW allowing gradual use over the next years).

In terms of fund raising, links with external organizations such as the UNEP GPA and the IHP/IOC of UNESCO which were rather solid pillars in the past needed to be partly re-established or revised in 2006/07 because of changes in policy in the partner organizations, changes in contact persons and also changes in the LOICZ scientific focus. This kind of “key account management” which has largely been on the shoulders of the IPO has suffered a bit from the time and resource constraints that we encountered with the move. It is expected, however, that this will regain momentum now after settling in is completed.

Others links could be consolidated i.e., with SCOR (although on very small scale), the merit of which has already materialized in identification of mutual agendas of future relevance, establishment of joint working groups (see WG 122 – Estuaries / Sediments) and the internet and database engagement in the WG 128 dealing with hypoxia. Further to that SCOR has confirmed co sponsoring (developing country participation) of the joint IMBER-LOICZ-OSM (shelf-processes and implementation issues) in 2007 which is currently in a progressed planning stage.

In general one major observation at the end of the transition is that the funding situation has become more complex. This is probably also because within the ESSP a kind of proliferation of almost parallel activities of the different projects leads to unavoidable competition for rather limited funding. On the other hand IGBP itself encounters problems with national contributions reflecting in a reduction of block grant support for their core projects in future. This may directly affect our future SSC Meeting reimbursement and so far IGBP has no clear signals in which direction their financial situation is likely to develop. The IHDP has changed its organizational setup by moving from University of Bonn to their new host, the United Nations University (UNU) also in Bonn. Financial implications for core projects cannot be foreseen at this stage. A small amount of support for concrete LOICZ scientific activities has been confirmed for 2007 and an expression of interest for stronger collaboration has been made end of 2006 by IHDP.

Obviously the major step forward for LOICZ, is the long-term commitment consolidating the funding for the new IPO. The GKSS commitment allows LOICZ to continue operations on a 5 years timeframe (first part 2006-2010) with an option for another 5 years extension (i.e. up to 2015). In addition, LOICZ successfully applied for investment money.

Decision: What do we consider as the official lifetime of the second phase of LOICZ? There is two views around regarding the LOICZ second lifetime; a) that this phase includes the 3 years transition (2003-05) and corresponds to an expected sunset clause mentioned in the SPIS in 2012; b) the one...
that has been communicated in the recent years and corresponds to the agreement with GKSS. In this view the second phase starts after the transition and runs from 2006-2015. This latter view also corresponds with the anticipated lifetime of the IHDP.

**Investment opportunity** in the Helmholtz Associations: the proposal (40 K €) from 2006 handed in to GKSS to generate additional funding for the LOICZ database and hard and software has been approved. The server has been set up and data and typology software transfer either started or will do so in due course. Parallel with this will be the need for additional software enabling flexible data processing and GIS applications. The allocations have been made in the 2007 budget.

**Decision:** SSC experts to link with the typology and GIS people around B Buddemeier to explore the directions for the further development of the typology database and the BGC budgets and modeling database (key work – coastal portal).

The **financial situation for 2006** is reflected below. Included is also a provisional financial statement for 2007, as well as a list of planned or running scientific activities in 2007 that reflect earlier SSC, Exec. Group and/or Priority Topic leader decisions and wishes:

<table>
<thead>
<tr>
<th>INCOME 2006 (status 02-02-07)</th>
<th>In €</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Income (GKSS-personnel)</td>
<td>200 000</td>
</tr>
<tr>
<td>Core Income (GKSS-operations)</td>
<td>215 000</td>
</tr>
<tr>
<td><strong>Total Core Income</strong></td>
<td><strong>415 000</strong></td>
</tr>
<tr>
<td>Approved investment (by application)</td>
<td>40 000</td>
</tr>
<tr>
<td>Other income (sponsors, and block grant IGBP, IHDP, reimbursement)</td>
<td>53 158</td>
</tr>
<tr>
<td>Unspent raised and NWO funding</td>
<td>153 288</td>
</tr>
<tr>
<td><strong>Total Other Income</strong></td>
<td><strong>246 446</strong></td>
</tr>
<tr>
<td><strong>Total Income (estimate)</strong></td>
<td><strong>661 446</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXPENDITURE</th>
<th>In €</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPO salaries (excl. MLT but incl. M Paul full time second half)</td>
<td>177 456</td>
</tr>
<tr>
<td>IPO operations (incl.: consultancy fees, MLT half time reimbursement, publishing and database (whole year), IPO and SSC travel, office equipment, investments and travel)</td>
<td>138 517</td>
</tr>
<tr>
<td><strong>Total IPO Operations (incl. salaries)</strong></td>
<td><strong>315 973</strong></td>
</tr>
<tr>
<td>Workshop and synthesis activities, support of external activities</td>
<td>82 900*</td>
</tr>
</tbody>
</table>
| • LOICZ Session at Littoral (6 K)  
• LOICZ SSC 17 plus Mini-Symposium (42 K)  
• SPICE/LOICZ practitioners WS, Bali, (10 K)  
• Typology Synthesis and Futures WS, Geesthacht, 11/06 (9 K)  
• Coastal Governance 1. Scoping WS, Rhode Island (15.9 K)  
• SCOR WG 128 (internet space – in kind) |
| **Total Expenditure (estimate)** | **398 873** |
| Balance | 262 573 |

51
### Estimates 2007 (incl. business plan, status per end of 05/07)

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income</strong></td>
<td></td>
</tr>
<tr>
<td>Core support IfK</td>
<td>430 000</td>
</tr>
<tr>
<td>Unspon 2005/6 incl. NWO</td>
<td>262 573</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>692 573</td>
</tr>
<tr>
<td><strong>IPO Salaries</strong> (3.6 FTE) but 0.6 FTE only for 6 Months</td>
<td>222 000</td>
</tr>
<tr>
<td><strong>Post-doc (DAAD, 7 months)</strong></td>
<td>15 200</td>
</tr>
<tr>
<td><strong>Assistant / Interns</strong></td>
<td>5 000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>242 200</td>
</tr>
<tr>
<td><strong>IPO Operations (incl. 10 K for Typology GIS software) ca.</strong></td>
<td>70 000</td>
</tr>
</tbody>
</table>

*List of activities considered 2007 (figures tentative):*

- Session and WG at Estuarine and Wetlands Conference “Integrated Budgeting of Nitrogen Fluxes in Regional Watersheds” UMR Sisyphie, Paris, 01/07 (7 K)
- Science-Practitioners WS Miedzyzdroje, Poland, 03/07 (with Affil. Project ODRA, SPICE) (10 K)
- 2. Concept WS Coastal Governance, Cork, 05/07 (13 K)
- Deltas at Risk, with GWSP, INSTAAR, Uni. Delft, 05/07 and 10/07 (6 K + 10 K)
- 18. LOICZ SSC Meeting, SFU, Vancouver, Mini-Symposium, addressing the Science-Policy Interface, (48 K)
- LOICZ sponsorship in BALTEX (CLIVAR) Conf., 06/07, Saaremaa, Estonia (1K)
- Two WS / sessions on assessment of socio-ecological systems as part of the EcoSummit 05/07 China and the Society for Human Ecology (annual conf.) 10/07 Brazil (10 + 10 K)
- LA practitioners network/science 1. Scoping WS with IAI in 2007 (8 K)
- IMBER/LOICZ CMTT OSM, Shanghai (18.8 K)
- Regional Node East Asia Opening (15 K)
- SCOR LOICZ IAPSO WG 122 ca. (5.5 K)
- Arctic Coastal Zones at Risk (LOICZ, IASC, AMAP, IPA, IHDP) (15 K)
- PT 2 full size follow up WS second half 07; association to ERF Conference in 11/07 (20 K)
- LA practitioners network/science WS with IAI and IHDP in Latin America incl. the Caribbean Coastal Scenarios CRN under IAI, 12/07 (15 K)
- Typology workshop on external datasets and assimilation (potential partnering possible with GWSP, LAND, CIESIN, GKSS (Coast Dat, Ferry Box) – tentative second half 07 (10 K)
- Summer school on coastal management and the role of science in collaboration with AWI (1 K)
- Summer school on mercury pollution in collaboration with GKSS, 05/07
- Server set up at GKSS for coastal typology data base (mirror to KGS) and coastal portal – links to GKSS Ferry Box – done. Transfer of database and clustering software planned for second half 07 (20 K)

### Total Workshops and Scientific Activities in 2007 (estimate)

243 300

### Total Expenditure 2007 (estimate)

555 500

### Balance*

137 073

*No external income has been listed so far – those activities which have not been implemented largely show budget estimates (the LOICZ share)*
2.1.14 Comments incl. Role of Modeling and Collaboration

IPO Comments on the Chair’s Note

LOICZ Structure, Operations, and Communication

Barriers and Gaps

Now, after 3 years transition and facing accelerating scientific activities in all Priority Topics it is timely to review past and present experiences of 14 years of LOICZ. This is under the impression of internal observations and of external feedbacks and review comments we get in reference to LOICZ directly or in relation to Global Change projects in general. Two questions arise:

- Is LOICZ an effective and flexible Global Change Research mechanism?
- Does LOICZ provide an efficient operational and communication structure?

When trying to answer these questions, our premise is that analyzing the operational processes can bring some light to the interpretation of barriers and thus support improved interaction and collaboration between the different LOICZ components and levels. So far, the following barriers and gaps as well as potential pathways for improvement can be identified (the bullet points below have been subject to a first exchange between Chair and IPO):

(1) Functional

- Compared to the first phase of LOICZ, organizational workload of the IPO has changed in character and amount in the new LOICZ due to the broadened scope of the project and the resulting multiple activity strains
- Scientific Theme and Priority Topic leadership is facing various levels of problems due to time, money, and man power constraints (usually day to day business of our dedicated scientists in the SSC is not necessarily linked to LOICZ and, therefore, LOICZ is perceived as an extra burden and – quite logically – does not always rank high in individual SSC member’s agendas)
- Shortcomings in the clarity of task descriptions, responsibilities of Coordinators, and expected deliverables of Scientific Themes
- Shortcomings in the information flow from the Scientific Themes including Affiliated Projects and thus momentum generated through the Scientific Themes in support of the Priority Topic Implementation
- So far, it has not always been possible to sufficiently establish active task teams around some of the Priority Topic Leaders to support them
- While Regional Nodes have proven to be an effective mechanism to promote LOICZ and even generate extra funding, mobilization of national and regional representatives to promote LOICZ science in general still needs improvement. In order to become a powerful asset in the regional networking or promotion, the role of e.g., National Committees or simply groups of interested/dedicated scientists needs to be identified and mobilized in a significant fashion. Nodes can improve their role here and the best mechanism for every region needs to be identified (be it committees, individuals or different constructions).

(2) Structural

- Administrative structures and formalities requested by the hosting GKSS still generate considerable extra workload for the IPO in day to day business and often hinder flexibility. In general to reestablish the former standard of our external collaboration is still work in progress, irrespective of continued efforts to communicate with the GKSS admin departments and the directors
- As a consequence, time and man power needed for day-to-day business, particularly in administration and bookkeeping, is considerably higher than before the move and pivotal tasks such as outreach, PR, websites and providing support for proposal developments cannot be fulfilled
In order to improve efficiency of communication flows and decision making processes the size of the SSC and probably the commitment people can make to LOICZ as part of their day to day business seems to be worth reviewing (more flexible involvement of active corresponding members in SSC meetings might be considered).

As a result of the traditional reward system for scientists, which is based largely on products for the academic arena, LOICZ researchers are rewarded for peer reviewed scientific publications, whereas little acknowledgement results from their work on LOICZ incl. contributions to brochures, reports, and the wider dissemination.

Therefore, LOICZ in its current form may not be the ideal platform to lift individual scientific work to higher recognition levels, whereas contributions for example to the IPCC probably do.

LOICZ in its current form has faced considerable constraints in responding external requests for review and advice (e.g., UN) – this may have implications for future opportunities incl. funding.

(3) Social

From the above, and taking an individual perspective may follow that at least in a number of cases there is too little incentive for strong commitment to LOICZ as compared to daily work.

There are at least temporary shortcomings in direct interaction and communication between SSC, IPO, Scientific Theme Coordinators, Priority Topic Leaders, and Affiliated Projects.

The profile of “LOICZ Members” i.e. SSC, Nodes, IPO, should be lifted to enhance their visibility in the role for LOICZ and actively attract new scientists and foster project affiliation.

Possible Pathways and Improvements

The most important conclusion of the identified barriers and gaps is that the LOICZ operational structures and functions in their current forms can be improved. This is meant to increase the support for the LOICZ science work and to promote and foster the implementation of the project in the most effective way. Therefore, a few possible pathways for LOICZ might be worth discussing, such as:

General

- Increase the transparency of LOICZ and its structures and operations in form of a publicly available short and concise strategy document complementing the SPIS.
- Approving and implementing a multi-annual business plan to enable better financial and organizational planning.

Branding of LOICZ and involvement, improvement of services

- Creating incentives to increase the input from the LOICZ community (improved branding of LOICZ).
- Encouraging and involving more young, active scientists through development of a kind of scientific career lever (i.e. the brand name LOICZ should be a brownie point for young scientists’ individual careers).
- Implementing measures allowing LOICZ to evolve into such an attractive brand name that it will able to advertise functions in support of the ST Coordination, the PT leadership and the CCAs either within the SSC or in the institutional surrounding of the respective leaders.
- Improving perception and impact of LOICZ also outside the scientific community by establishing a Policy Advisory Board (LOICZ-PAB).
- Create the man power to respond to external requests for scientific advice and review (so far these requests cannot be answered positively due to lack of capacity in the SSC and IPO – opportunity might be missed therefore, e.g., UNEP).

Support of the scientific implementation

- Improving flexibility and communication by
  - Restructuring the SSC (e.g., leaner core group plus lifted involvement of corresponding members) and by externalizing tasks to reduce workload for SSC members.
Forming a team around the “thinking mind” for leading a PT
Finding ways to allocate financed (e.g., PhD or post-doc) positions to the PTs (and STs and CCAs?)
Appointing external scientific experts as Corresponding Members to fulfill certain tasks, e.g., support ST or CCA Coordinators and PT Leaders in their implementation efforts
Encouraging and enabling PT Leaders to have additional meetings with corresponding members and external scientists.

Communication and outreach
- Creating mechanisms allowing frequent communication of core findings and knowledge products resulting from ongoing LOICZ activities (featuring science highlights)
- Improving the LOICZ web-portal (including interactive and multimedia elements) to establish a useful source of information and exchange
- Expanding the service of an interactive project database (interactive version online since 11/06)
- Organizing and branding targeted workshops under the leadership of SSC as well as of external people/organizations
- Involve the media, i.e. develop a communication strategy and allocate the resources
- Increase IPO staff to enable the necessary support for the implementation of the communication strategy.

Regional and national networking
- Establishing and encouraging a regional network of National Committees
- Thoroughly expanding the Regional Node network and strengthen their role and visibility in the Global Change arena
- Generating new positions within both the IPO host (under way) and SSC member institutes to allocate and share work and duties
- Accommodating certain targeted scientific research activities in form of interns, Master students, international scholars/fellows and young researchers (also in the IPO – under way).

Continued review and future vision of coastal Global Change research
- Conducting a feasibility study (as a master thesis) on how to improve LOICZ in the new context of a changed Global Change research arena and changed demands (as compared to 1994)
- Using the annual SSC Meetings to oversee and direct the PT implementation as well as the strategy and concept for the overall LOICZ integration process.

Comments from SSC Members

Comment from A.T. Forbes, 15 May, 2007

Dear Jozef/Hartwig,

I have been perusing your respective note and comments this morning & can identify particularly with the problems outlined in the "comments". I am not quite sure where to start because ever since my first linkage with LOICZ via the work on the Thukela dams which was presented at workshops in Nairobi and my subsequent election on to the SSC I have been involved in work/research/consultation/project management etc which falls squarely within the LOICZ sphere of interest and more specifically within Theme 3 much more so than Theme 2 - where I am meant to be theme co-ordinator. Theme 3 to me has got much more of the here and now whereas Theme 2 is, to me, although highly significant, much more a matter of forecasts and modelling which takes me out of my comfort zone. As I think I have mentioned previously there is very little insulation between us and our interaction with engineers, farmers, harbour developers etc. We operate very often in the immediate -
the engineer at the meeting will tell us that he knows what an estuary is and we do not. Makes for
sometimes interesting discussions. As I have retired from the university, although I have retained
Honorary professorial status, the work we do is now all on contract (so there are no research
proposals etc - things generally happen pretty quickly) and we provide the scientific/environmental
assessments of biological status, potential impacts etc. This may be desktop stuff but very often
involves field work where we bring in odd other retired people or some post-grads for any heavy stuff.
The demands in the last year have been remarkable and the pressures and the deadlines for
production of reports make the academic life a doodle. What I am basically saying here is that
information, data, understanding, management procedures and more recently economic assessments
of goods and services provided by Durban Bay are being generated on a more or less continuous
basis. I am sure I am not alone in this situation amongst the members of the SSC. I am greatly
appreciative of the opportunities that LOICZ has afforded me - it's been really great - but it is still a
source of frustration that it has not been possible to progress with Theme 2 nor to feed the results of
the above into the LOICZ system in a constructive and productive manner. There was a mention in the
comments of promoting LOICZ science - my feeling is that LOICZ type science is already being done
on a large scale - it does not really need promotion - what is needed is a way and an incentive for the
people involved to communicate with each other. Could probably add some more thoughts but I had
better stop here.

Regards

____________________________________________________________________________________

Comment from H. Kremer, 15 May, 2007

Dear Ticky,

First of all many thanks for your comments of which I hope we will receive more from other colleagues
as well. I have two questions

[…]

b) is there any conclusion in terms of what you may want to suggest to make things move forward
better or become more involving? (I take your point that a lot of LOICZ science is happening anyway
but not necessarily linked to LOICZ - actually a problem not unique to LOICZ but more and more and
even stronger applying to IGBP - I guess this also because the community and social surrounding in
which science is conducted has changed and so have the communication channels)

[…]

____________________________________________________________________________________

Comment from Prof A.T. Forbes, 17 May, 2007

Hi Hartwig,

[…]

(b) Nicolette & I tend to get thrown into and have to comment/provide advice on all sorts of things - a
fish kill on an estuary, what do we do now? An estuary mouth closes because of heavy seas & the
water backs into a farmer's sugar cane which is on the flood plain. We say this does not justify
breaching the bar so he wants to know who is going to pay for the rotting cane. I digress. Should we
be thinking about the role(s) of SSC (or any other category of member) in terms of making known to a
wider LOICZ oriented audience what is already happening in their part(s) of the world on the
ground? Should we be asking what is out there and how might this be brought together? I am
not talking about translating & integrating the activities of SOLAS, IMBER and all the rest of them into
something the manager on the ground can handle or understand. The sort of low level activity I
referred to at the start of this para might not generate earth shattering science but the sort of decisions
demanded have to be defensible and grounded in a reasonable level of understanding of these systems & there is often also an unavoidable input from the social and economic side as well which can complicate decision making. These comments might form the basis of some sort of discussion.

[...]

Comment from J. Parslow: The roles and directions of coastal modeling in the Anthropocene

The LOICZ context for modeling

The LOICZ primary objective is: “to provide the knowledge, understanding and prediction needed to allow coastal communities to assess, anticipate and respond to the interaction of global change and local pressures which determine local change”. Modeling has a variety of important roles to play in meeting this objective.

LOICZ, along with other IGBP Core Projects, has a contribution to make towards the quantitative understanding of the role of the coastal zone in global biophysical systems, especially the earth’s climate system, and the global biogeochemical cycles which feedback to the climate system. While we may think of the coastal zone as an interface, it is in fact a deep interface, comprising catchments, rivers, estuaries and coastal floodplains, coastal embayments and seas, and the continental shelves which exchange with the deep ocean. This deep interface plays a role in global biogeochemical systems (and in human systems) out of proportion to its area.

As a site of intensive human settlement and activity, the coastal zone is subject to a diverse array of human pressures, including land use and changes in land cover, water diversion and retention, coastal engineering and urban development, and associated changes in flows and loads of nutrients, sediments, organic and inorganic carbon, and contaminants.

The diverse nature of coastal systems, and the wide range of space and time scales involved in these systems, pose a particular challenge for the development of a global or even regional understanding of their contribution to global cycles. How do we best scale up from local observations and predictive models to make regional and global assessments and predictions? It is difficult enough to resolve the natural role of the coastal zone in global systems. How are we to quantify the cumulative impact of the myriad local changes resulting from human uses?

As the evidence for human-induced changes in climate grows stronger, we are increasingly concerned about the impact of changes in global climate, and global biogeochemical cycles, on coastal systems. The potential impacts are substantial. Changes in rainfall amount and distribution affect river runoff and loads, and both urban and rural water supply. Changes in ocean circulation may potentially affect primary production, ecosystems and fisheries on continental shelves. Ocean acidification poses a direct threat to coral reefs and calcareous organisms. Increases in sea level, and in the intensity or frequency of severe storms pose threats of coastal inundation or erosion, and major losses of infrastructure. As we struggle to come to grips with the role of coastal systems in global cycles, we are faced with rapid changes in those systems from both local and global pressures.

Given the intensive human occupation and use of the coastal zone, it is perhaps unsurprising that the strongest drive to understand these pressures and impacts comes not from the need to address feedbacks in the global biophysical system, but from the need for coastal communities to anticipate and respond to these changes. The challenge we face here is substantial and pressing. There are arguably few examples where we can argue that existing patterns of coastal use and development are sustainable in the face of local pressures. But coastal communities are now faced with the urgent need to adapt to local impacts of global change.

One of the immediate consequences of global change is an increase in uncertainty. Whether justified or not, much of our past planning has been based on an assumption of stationarity. We plan infrastructure based on analyses of past interannual variability, or return frequencies of extreme events such as floods and storms. We develop agriculture and irrigation systems, and urban water systems, on the assumption that the future pattern of good and bad years will be much like the past. How do we modify planning and development strategies if we have to abandon this assumption?
Of course, high levels of uncertainty aren’t new in environmental planning and management. It has long been accepted that we can’t expect to have perfect knowledge or prediction for natural systems. This has led to an implicit or explicit recognition of the need for adaptive management or learning by doing. Adaptive management involves a feedback loop of making and implementing decisions, monitoring and assessing the system response, modifying our understanding and prediction of future system behavior in relation to objectives, and making new decisions accordingly.

Models contribute in a variety of purposes to the design and implementation of adaptive management strategies. Models are used to predict future scenarios, under a range of possible management decisions and actions. These scenarios are important not only for choosing actions in an operational sense, but also to help us explore the range of possible futures, and consider objectives, tradeoffs, indicators and targets. Models are also used in assessing current system state. It’s rare that we can observe all the system indicators we would like, at the time and space scales we’d prefer. Models are used to allow use of surrogates, for interpolation, and for interpretation and diagnosis of cause and effect. Models can be used to inform monitoring design. Finally, models contribute to understanding. It is increasingly recognized that communication of understanding is critical to informed decision-making.

We have seen an evolution in the scope of the models considered appropriate for environmental and coastal management. Traditionally, many models have focused on the biophysical system, and its responses to human actions. Human social and economic systems were considered apart from biophysical systems. We are now increasingly aware of the need for integrated analysis and modeling of biophysical and socio-economic systems. This trend started from a recognition that focusing on the natural or biophysical system alone is ineffective. As the saying goes, fishery managers don’t manage fish, they manage fishermen. But experience has shown repeatedly that management strategies which allow for fish population dynamics, but don’t allow for the social and economic dynamics of the fishing industry, are not adopted or effective.

In the case of coastal management, we are faced with much more complicated situations, in which multiple sectors, communities and institutions interact through biophysical, social and economic systems. It is questionable in these systems whether there is a “manager” with hands on a set of management levers. Actions result from a complex interplay of industry, institutional, community and political decisions, which in turn depend on the information available, but also on incentives, values and regulations. We increasingly recognize that adaptive capacity and resilience are not properties of biophysical systems alone, but of the interaction among biophysical, social and economic systems. Given the important role that adaptive capacity and resilience will play in the Anthropocene, the development of tools which allow us to assess and design for these properties will be critical.

Trends and directions in modeling relevant to LOICZ

I suggest that there are two key trends in modeling relevant to LOICZ. One is a trend towards larger, more sophisticated and more complex models, which strive for greater accuracy and realism. The other is a trend towards simpler models, which are easily implemented, broadly understood, and useful in planning and decision-making. These might be seen as opposing trends, but I argue below that both are desirable and useful, and they may be regarded as complementary.

ESS Modeling: “Bigger is Better”

The trend towards larger, more sophisticated, and computationally intensive models is evident in a number of areas relevant to LOICZ. The obvious area is that of climate system modeling itself. We see several trends in global and regional modeling.

Models are driving towards ever greater spatial resolution, supported by the ongoing exponential growth in computing power. Particularly for the physical models, there is a clear pay-off in increased realism and accuracy. At the same time, techniques for nesting high-resolution regional / local models within coarse resolution global/regional models are improving, and now techniques are being developed to allow dynamically adaptive grid. We are foresee a time when we can expect to be able to ask for and demand models with the resolution we require anywhere.

Modelers are dealing with model-data fusion, error analysis and uncertainty in more quantitative and sophisticated ways. In fact, this is enabled by a merging of two streams of modeling. Techniques for data assimilation and short-term forecasting in atmospheric models have been developed over the last few decades for numerical weather prediction. These techniques are now being applied to (physical)
ocean forecasting models. We are experimenting with applying these techniques to biogeochemical models in the ocean, and to terrestrial catchment and land cover models. While these techniques are most applicable to short-term forecasting, their application is already leading to dramatically improved now-casting and hind-casting, offering us a picture of 3-D ocean circulation and its interannual variation over the last decade or more that we could never gain by observation alone. And we are seeing a trend towards merging the operational models and climate models used for climate change scenarios. There is still a need for caution of course: good short-term predictive capability by no means ensures sound long-term prediction, as different processes are important at different time scales. But there are still spill-over benefits in terms of improved process understanding, model performance and techniques.

Of course, improved techniques for model-data fusion are only useful if we have data. We have seen an explosion in data quantity and quality, mostly driven by satellite remote sensing, but increasingly driven by technological advances in automated in-situ platforms and sensors. The ARGO array is arguably the most advanced and impressive. But other techniques (coastal radar, gliders and AUVS) also offer exciting opportunities. As digital processing and communication costs continue to shrink, driven by the consumer market, cheap intensive sensor networks offer a feasible way to monitor catchments and coastal marine systems in situ at the time and space scales they require. The stumbling block at the moment is arguably sensor technology itself. When we can provide robust salinity, oxygen, nutrient sensors (or genetic probes and optical scanners) for the same price as temperature loggers, we will see a radical transformation in coastal observing systems.

Models are continuing to expand in scope. In global models, we are seeing a move from Climate models to Earth System Models. At minimum, these models attempt to include the key terrestrial and marine system components needed to predict feedbacks in the global climate system due to changes in land surface fluxes, albedo, ocean carbon cycle etc. But some are now attempting to expand the scope further to include ecosystem impacts, and even social & economic impacts, responses and feedbacks. Again, we can see synergies between earth system models and operational models. For example, there have been substantial advances in marine ecosystem (trophodynamic) models in the last decade or so, driven primarily by a move towards ecosystem-based fisheries management. GLOBEC has obviously contributed to these advances, but “operational” modeling systems such as ECOPATH/ECOSIM have been very widely applied. We are now seeing a move towards integration of biogeochemical and trophodynamic models, championed by IMBER.

We should not be overly-optimistic of course in our assessment of the current state of models or the future rate of progress. We still have areas where scientific understanding and predictive capacity are poor. A few examples in the biophysical coastal domain include:

- The fate and impacts of sediment loads into coastal waters, especially in terms of chronic effects on turbidity;
- The role of coastal floodplains in modifying loads from catchments to coastal marine systems;
- The long-term fate of organic (and inorganic) carbon and nutrients buried in coastal sediments;
- The importance of top-down vs. bottom-up control on both biogeochemical cycles and ecosystems.

Most of these have been recognized as significant problems for some time, but they have proved hard to crack. This may be attributed to some features they have in common. They involve long time scales, of years to decades. We find it very hard to conduct sustained scientific studies on those time scales. Paradoxically, they are also often strongly influenced by extreme events, such as floods, storms etc. They typically also involve intrinsic diversity or complexity (types and sizes of sediment particles; variety of landscape features, and chemical and biological diversity).

**Models for Management: Small, Cheap and User Friendly?**

The opposing trend is toward simpler models. This trend is most evident in local studies, and particularly in more applied studies related to coastal zone management. There are several aspects and underlying motivations for this trend.

There is a move away from complex, process-based models and towards models which are simple, easily implemented and easily understood and communicated. These include conceptual models, qualitative models, “expert-based” risk assessments, Bayesian Believe Networks and Bayesian Hierarchical Models, semi-empirical models including budgets, surrogate models etc.
The move away from complex process-based models is partly driven by the perception that these are expensive, require large investments in data collection, and are uncertain in delivery and then in usefulness. There is often inadequate commitment to ongoing support, maintenance and application, so that expensive models end up parked on the shelf.

Complex process-based models are also often difficult to explain, or at least poorly explained, and regarded with suspicion by non-expert stakeholders. The use of simple easily communicated approaches and models becomes more attractive when decisions and actions involve community or political decisions, rather than decisions by agency regulators, who may have relevant science training. Increasingly, processes for co-development of models with stakeholders, resulting in shared ownership of the resulting models and predictions, are regarded as more productive.

Adaptive management approaches are often adopted, or at least espoused, in coastal management situations with high levels of uncertainty. There is a valid argument for use of simple models in adaptive management strategies. After all, the whole point of adaptive management is to reduce reliance on long-term prediction. The thermostat provides a simple example. A process-based model of heat exchange to accurately predict long-term changes in temperature in a building could be extremely complicated. But a simple feedback rule can successfully regulate temperature at a prescribed level, based only on the qualitative “model” that the temperature will increase when the heater is on.

It is worth keeping in mind however that the thermostat, along with many other examples of day-to-day adaptive management, has the important simplifying property that we have just one indicator and one management lever. In most coastal management situations, we have multiple indicators, and multiple levers. Here the diagnosis of causes of change, and the choice of appropriate management responses, is inherently more complex. There are arguably still few studies which have examined the inherent “controllability” of complex multi-dimensional coastal management problems.

In practice, there is often lip service paid to adaptive management in ICZM, without any formal adoption or analysis of adaptive management strategies. It is customary to make decisions, and implement actions, on the basis of “best available” information, and undertake to review the actions at some point 5 or 10 years in the future. A monitoring program may be implemented to measure performance against objectives. In these cases, model scenarios are often used to inform the original decisions, but there is no formal learning process by which monitoring results are assimilated to refine the model, and provide an improved basis for the next round of decisions. Techniques to do this are still lacking for complex, computationally-intensive coastal models, and simpler semi-empirical or Bayesian models are arguably better suited for this purpose.

It’s arguable that we lack a widely accepted framework for ICZM or sustainable coastal development. Various conceptual frameworks and approaches are promoted and used, including environmental risk assessment, adaptive management, ecosystem-based management, regional multiple-use management, economic incentives and auctions, and community capacity building. These are not necessarily mutually exclusive, but each promotes a particular view of the problem, and comes with its own requirements for information, prediction and modeling.

Many reviews, both scientific and jurisdictional, have attributed the poor effectiveness of coastal management to institutional conflict and dysfunction, rather than lack of scientific information and predictive capability. This encourages the view that we have sufficient knowledge and predictive power, often available through simple models or expert opinion, but lack the ability to act on the advice. But most decisions involve tradeoffs across social, economic and environmental values, and require resolution of conflicts across sectors, community groups etc. Scientific uncertainty frequently plays a prominent role in such disputes.

Most practitioners would agree that at minimum, we should strive to deal explicitly and objectively with scientific uncertainty. But there is still room for argument about the relative merits of different modeling approaches in dealing with uncertainty. It’s certainly true that traditional, process-based deterministic models have not dealt explicitly with uncertainty, and led to its underestimation, and overconfidence. On the other hand, system models at least allow the possibility of capturing nonlinear interactions and thresholds. It’s entirely unclear whether expert opinion adequately deals with these phenomena.
A Synthesis of Big and Small Models?

Is there a reconciliation or even synergy possible between “big” earth system science modeling and small user-friendly models, or can we expect to see two diverging communities of modelers and users. I argue that we can expect convergence and synergy in the long term, for a number of reasons.

We can expect Earth System Models to become more accurate and more relevant in terms of spatial resolution and scope, but perhaps more importantly, we can expect these models to increasingly become “operational”, and their outputs to become more widely available and accessible. This should remove some of the cost and timeliness barriers to uptake. As stakeholders become accustomed to accessing these model outputs, one might expect the outputs to be taken on their merits, and not ignored as “black box” model outputs. After all, the public doesn’t refuse to use weather forecasts because they don’t understand numerical weather prediction models.

As local impacts of global change become increasingly apparent and important in coastal systems, we can expect to see increased interest in and uptake of the outputs of Earth System Models in coastal zone management. One way to think about this is that, as we are forced to abandon assumptions of stationarity, we will either have to accept a rapid growth in uncertainty, or rely on Earth System Models as a partial substitute. If they are to fill this role, then providing uncertainty or confidence limits around global change scenarios will be critical.

This does not mean that we should expect to see Earth System Models or other complex process-based models replace the simpler models discussed above in coastal zone management applications. Many of the arguments for the use of simpler models in assessment and decision making will remain valid.

One conceptual framework which offers a complementary role for both model types has been developed and widely adopted in fisheries and renewable resource management. The approach, known as Management Strategy Evaluation, encourages the formulation of formal adaptive management strategies, with explicit decision rules, and then simulates the application of these strategies. The simulation test-bed represents not only the bio-physical system in question, and relevant industry or other sectors, but also the application of the prescribed monitoring program, the interpretation of the resulting data, the updating of any assessment model, and the implementation of agreed decision rules. In principle, this can be extended via agent-based modeling to represent behavior of individuals or institutions, and their response to incentives and policies, so it is not necessarily confined to classical “management by regulation”.

Management Strategy Evaluation places a heavy emphasis on dealing explicitly and realistically with uncertainty. The strategy is tested not in one simulated version of reality, but in an ensemble of versions, which endeavor to span the range of feasible versions. And each strategy is run multiple times, because dynamic models and observation models are typically stochastic. The output is not a predicted outcome of the application of the strategy, but a probability distribution of outcomes. And strategies are typically chosen because they are robust across the range of versions of reality, rather than necessarily optimal under one version.

Management Strategy Evaluation is interesting in the context of the current discussion because it provides a role for two kinds of models. The model used to form the simulation test bed is required to simulate reality in a way which provides a useful basis for evaluating management strategies. Subject to computational constraints, complex process-based “realistic” models are useful in this role. The management strategy being tested may or may not include explicit models for assessment and prediction, used to inform management decisions. If present, these assessment models need to be strongly linked to monitored indicators and management decisions, and support quantitative error analysis and data assimilation. Simple semi-empirical / Bayesian models are likely to be useful in this role. Thus, Management Strategy Evaluation is at least one framework which allows a synthesis of the two modeling approaches.

A LOICZ Modeling Strategy

As discussed above, LOICZ embraces a very broad set of issues and challenges, and a correspondingly broad suite of model types and applications. Should LOICZ focus its attention and resources within this breadth, and if so where is the LOICZ “niche”? And how should LOICZ seek to advance modeling and its application within this niche?
Earth System modeling

Within the Earth System Science modeling arena, there are many other major national and international initiatives, including climate modeling in WCRP, the Global Carbon Project, IMBER, AIMES, GODAE, GWSP etc. It's clearly inappropriate for LOICZ to seek to duplicate these activities, and much more appropriate for LOICZ to focus on ensuring that the coastal zone and coastal interface is adequately captured in these initiatives. That might include ensuring that:

- There is adequate attention to matching up loads from catchment models to inputs into coastal marine models, in terms of time scales, composition etc.
- The effects of key coastal processes and features (e.g., coastal floodplains, estuaries, shallow benthic ecosystems and sediments) are adequately resolved or parameterized in regional and global models.
- Techniques are developed and implemented for downscaling outputs from global models to scales relevant for assessing coastal impacts using statistical or nested dynamical approaches.

These objectives might constructively be pursued through developing or participating in joint workshops with key ESS modeling groups and initiatives, and by identifying and supporting key case studies where appropriate techniques are developed. A specific suggestion is that LOICZ cosponsor a workshop on the representation of the coastal zone in ESS models, perhaps with AIMES.

Adaptation to Global Change on the Coast

LOICZ clearly plays into the broad ICZM arena, but there is arguably a need to identify a LOICZ niche within that arena. An obvious focus would be the development of effective approaches and tools for climate change adaptation, or more broadly global change adaptation, in coastal zone planning and management. As the strength of the evidence for climate change impacts has grown, the debate has largely shifted from whether impacts will occur, to how much has already occurred, how quickly we can move to mitigate future change, and how we can adapt to future change which is now unavoidable. The need for adaptation is now widely accepted, and nations are investing in research to support adaptation. This is still a new and rapidly evolving field. We are moving from preliminary assessments of vulnerability and risk, to debate about possible actions and strategies. But this is still subject to all of the issues, uncertainties and confusions of ICZM, compounded by the additional uncertainty around global change impacts.

How then can LOICZ most effectively contribute to the development and application of effective models to support coastal adaptation to global change? Coastal management is typically characterized by enormous diversity in approaches and tools, even within nations, let alone internationally. There is a marked lack of communication, much reinvention of wheels, and a notable lack of retrospective evaluation of performance, and intercomparison of tools. One might then reasonably conclude that LOICZ can most effectively contribute by:

- Fostering and encouraging intercomparison and evaluation of case studies, approaches and tools;
- Providing information to the science community, and equally importantly the stakeholder and user community, about the available approaches and tools, and their relative strengths and weaknesses.

Specifically, I suggest that LOICZ might

- Identify a set of high-profile international case studies, and support a process of inter-comparison and evaluation.
- Create a website and newsletter focused specifically on adapting to global change in the coastal zone.

Note that these activities are not model specific. One cannot sensibly separate modeling from monitoring, decision rules or the underlying conceptual framework in evaluating and comparing approaches to coastal zone management.
The integration of social, economic and biophysical models

The need to integrate social, economic and biophysical models and approaches is not unique to LOICZ. But LOICZ may be best positioned to champion this within the ESSP, given its joint role with IGBP and IHDP, its focus on human response as well as prediction, and the position of the coastal zone as the hotspot in human-earth system interactions. I’m not well-placed to make recommendations in this area, but perhaps LOICZ might take a lead in organizing or promoting international workshops or conferences, or championing this as a new and vital research area.

Comment from B. Buddemeier: Implications for LOICZ Research leaders and stewardship
The Example of the GWSP-LOICZ collaboration

Deltas at Risk – Durham NH, 21-22 May 2007

Please note that during the editing of this text key issues have been highlighted and additional comments from the IPO have been put in italics!

General Remarks (The role of the IPO as sever host and Typology and GIS hub)

With the location of the Typology database and server at the IPO, LOICZ will have some data and the ability to serve and process data -- even if only to a limited degree. This will make things very different from LOICZ 1. The ability to generate intermediate or final products, to supply some services, and to be an active participant and collaborator, will make it possible to do a lot more steering of common projects, and to establish a real give and take with associated projects.

An example: by consolidating raster and polygon data into packages of point and/or new polygon data sets (i.e. -- the characteristics of deltas, or catchments, or estuaries) and making those available, LOICZ helps o provide people with incentives to work on them, and to set priorities of how to work on them.

Another possibility is, with LOICZ associated products (e.g., those deriving from affiliated projects or our own Topics), to insist that they either serve electronic data products themselves or allow the IPO to database and serve them. Similarly with "cooperative" efforts (e.g., LOICZ in collaboration with others) -- LOICZ can shape the approaches of other projects in the support of bottom-up (multiple practitioners) rather than (or as well as) top-down mega-project approaches (Comment from the IPO: this has implications for the enforcement of the LOICZ affiliation policy). Previously, LOICZ did not have the resources to set the terms of cooperation or to do what needed to be done if the partners failed -- now, there is at least a credible thrust, and maybe the real capability.

This is what Bob sees as the real long term strength in getting into the IT world -- at least as much as maintaining existing data and capabilities.

Concrete Impressions from the GWSP-LOICZ DELTAS at RISK

Introduction

Marcel Enderjahn (GWSP Bonn) was rapporteur and will be sending out results (or access links via Google.doc) soon. What is presented below reflects the impressions as of the end of this first scoping workshop.

What are the implications for LOICZ:

LOICZ needs to identify a delta mangrove person (preferably who works somewhere other than the MS delta -- Bob suggested Twilley, but the wetlands people had already been named and that seemed to dictate someone else. Also a CZM type with a delta or delta-issues orientation. Bob had suggested Liana McManus as an existing interdisciplinary person, but that met with the "does she work on deltas" response -- not a flat turndown, but not acceptance. I think the IPO/SSC can name several people either as primary candidates or in response to turn-downs, but I was not in a position to insist.
Bridget Anderson from CIESIN is very good, and kept bringing up biogeochemistry (pollution) which kept getting batted down, primarily by Syvitski.

Overall I think it is shaping up well; but there is concern that there needs to be more solid LOICZ input to the participants list (attached) to keep it away from the old boy network, at least on the science side.

Workshop contents:

The rationale was taking a rather narrow focus on aspects of primarily physical stability and vulnerability in terms of the deltas — Bridget Anderson was coming from the human vulnerability side and so kept bringing up pollution, health, fisheries — all of the more chemically related things. It would be good to build that CIESIN bridge from LOICZ directly — there clearly would be interest in pursuing that.

Bob repeatedly brought up the idea of LOICZ interests in deltas but also in the many aspects of broader coastal zone functioning to which the delta study could potentially contribute. Bob thinks this (context and applications) has to be the area in which LOICZ takes stewardship and leadership, and to do this fairly forcibly.

In this GWSP-LOICZ collaboration LOICZ encounters a traditional situation: — Vörösmarty, Syvitski, Endejahn (and Kettner) all have interlocking funded projects and research interests in this specific area and they are determined to see it through in a form that will work out to their advantage. They aren't necessarily against LOICZ — it's just that these partners aren't about to make any concessions that might shift the focus unless they have to. LOICZ, as in various other occasions, doesn't have anybody representing their unique and broader interest from a position of strength/authority (i.e., with money or ongoing research) (IPO comment: This is a critical and important observation which has general implications for LOICZ).

LOICZ needs to have people actively involved who make the case from the LOICZ perspective which should be different and likely broader than just physical, morphological issues. (Example — at the end of this workshop financial commitments were made and specific people identified to recruit and fund (is there any role for LOICZ to play?) — this was probably appropriate to do, but there was no way that Bob could do that on behalf of LOICZ.

Conclusions

What's different this time as compared to previous LOICZ times? A couple of things

1. Experience: We probably know enough to realize that the LOICZ interests have to be looked after at the IPO level — Hartwig simply has to be willing to play hardball and say whom he wants at the meeting (e.g., "I'm bringing Dennis and Vera because this is basic to our database, modeling, and typology initiatives") (IPO comment: this was what the IPO did in this case when asking Bob and others to attend – however the IPO would suggest that this is also a very important task for those who run the science in LOICZ i.e. the SSC- the IPO alone cannot and should not do it).

Both the SS and IPO need to be clear about what they want to accomplish and are willing to pay for, and to chime in firmly on the details of the outcomes LOICZ needs. This will likely be more complex more independently powerful and less in need of LOICZ goodwill. LOICZ endorsement is important to partner (e.g., here the GWSP), as is any $ contribution that may come, so these partners for example will maneuver to get things their way but they will stop well short of rupturing the collaboration. (IPO comment: this should be looked at in all kind of collaborations)

2. IPO tech staff: If the DAAD post-doc fellow Vera Djepa — anticipated to start in the IPO soon on typology GIS and data issues (with some assistance from intern Christoph Sebald, and advice from us and others) takes this on as a LOICZ-oriented database and analysis project, it will almost reverse the situation, in that LOICZ will be the only project with a researcher focused specifically on that project as opposed to having it closely overlap a wide range of other research activities. That plus having in-house databases will potentially shift the initiative (IPO Comment: the SSC may want to decide as to what level LOICZ wants to put man power and money into this and what level of leadership to accomplish in such co-operations in general).

Decision: the SSC may want to decide as to what level LOICZ wants to put man power and money into this and what level of leadership to accomplish in scientific co-operations in general.
### 2.1.8 IPO Review Action Points

#### Review Action Points

*Draft, no editorial comments received until 24 May, 2007*

<table>
<thead>
<tr>
<th>Name</th>
<th>Action</th>
<th>Deadline</th>
<th>Status 05/07</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>All SSC</td>
<td>1. Forward suggestions for new IGBP SC members to Hartwig Kremer</td>
<td>End 07/06</td>
<td>Done</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Send to Hartwig Kremer possible funding agencies for LOICZ</td>
<td>On-going</td>
<td></td>
<td>Pending – needs overall discussion about funding LOICZ 2007ff</td>
</tr>
<tr>
<td></td>
<td>3. List options for regional support of LOICZ – send to Chair</td>
<td>End 08/06</td>
<td>?</td>
<td>The role of regional support/networks, committees needs to be addressed</td>
</tr>
<tr>
<td></td>
<td>4. Send to IPO existing collaborations and options for strengthening for LOICZ</td>
<td>End 09/06</td>
<td>IPO received a few</td>
<td>Worked if initiative was taken by a SSC member; usually links with other research activities – leads to project affiliation or WS sessions (e.g., EGU, Littoral etc)</td>
</tr>
<tr>
<td></td>
<td>5. Send Bill Dennison ideas for symbol library</td>
<td>End 07/06</td>
<td>?</td>
<td>General discussion needed about the strategy for dissemination and communication and the role of symbols</td>
</tr>
<tr>
<td>Bill Dennison</td>
<td>1. Send IPO reference for Handbook on Science Communication</td>
<td>Immediate</td>
<td>Done</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Discuss with Ino linking of vulnerability and communication activities through APN</td>
<td>Immediate</td>
<td></td>
<td>Ino and Bill to report back</td>
</tr>
<tr>
<td></td>
<td>3. Liaise with Whyte use of graphics from UNEP Vital Water</td>
<td>Intermediate</td>
<td>Exploring external sources from within the IPO, pending; SSC?</td>
<td>H Whyte involved in UNEP GEF policy summary on budgeting – there application of conceptual diagrams;</td>
</tr>
<tr>
<td></td>
<td>4. Advise IPO on options for involvement in global coastal lagoon workshop</td>
<td>Immediate</td>
<td></td>
<td>Needs follow up with Bill</td>
</tr>
<tr>
<td>Juan Restrepo</td>
<td>1. Advise IPO on options to revisit SAMBas/CariBas including proposal for future activity</td>
<td>By 08/06</td>
<td>Proposal received in 06/06; WS proposal for SAMBas announced</td>
<td>Restrepo: suggests Magdalena Catchment Initiative Follow up pending, recent status info from Colombia requested</td>
</tr>
<tr>
<td></td>
<td>2. Explore COLCIENCIAS support for Magdalena activity</td>
<td>Immediate</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Maintain correspondence with IPO &amp; Olsen on Latin America activity including IAI workshop support.</td>
<td>On-going</td>
<td>?</td>
<td>Latin American network currently little if any; discussions with Lacerda, Knoppers and IAI initiated in 07 by IPO; suggestion for Latin America PT 2 activity in 08</td>
</tr>
<tr>
<td></td>
<td>4. Coordinate with IPO for LOICZ Latin America meeting 03/07</td>
<td>On-going</td>
<td>No update</td>
<td></td>
</tr>
<tr>
<td>Stephen Olsen</td>
<td>1. Maintain correspondence with IPO &amp; Restrepo on Latin America activity including IAI workshop support</td>
<td>On-going</td>
<td>On-going</td>
<td>Embedded in the implementation of PT 3 – WS planned in 12/07</td>
</tr>
<tr>
<td>Name</td>
<td>Task Description</td>
<td>Timeframe</td>
<td>Status</td>
<td>Notes</td>
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<tr>
<td>IPO and S. Olsen</td>
<td>Tried to arrange for concrete involvement – Olsen advised the process and provided background docs (see Newsletter)</td>
<td>Immediate</td>
<td>Done</td>
<td>IPO and S. Olsen tried to arrange for concrete involvement – Olsen advised the process and provided background docs (see Newsletter)</td>
</tr>
<tr>
<td>Olsen – Newton asked</td>
<td>for update</td>
<td>End 10/06</td>
<td>?</td>
<td>Olsen – Newton asked for update</td>
</tr>
<tr>
<td>Felino Lansigan</td>
<td>1. Discuss with Dennison linking of vulnerability and communication activities through APN</td>
<td>Immediate</td>
<td>See above</td>
<td>J. Parslow to comment in wider context of embedding this link in LOICZ modeling activity – currently on hold – questionnaire circulated to SSC</td>
</tr>
<tr>
<td>John Parslow</td>
<td>1. Contact AIMEs with regard to collaborative action</td>
<td>Intermediate</td>
<td>?</td>
<td>J. Parslow to comment in wider context of embedding this link in LOICZ modeling activity – currently on hold – questionnaire circulated to SSC</td>
</tr>
<tr>
<td>Alice Newton</td>
<td>1. Draft a modus operandi for a cross-cutting capacity building task group</td>
<td>09/06</td>
<td>?</td>
<td>A. Newton to update</td>
</tr>
<tr>
<td></td>
<td>2. Liaise with Goh on scholarships to support Node activity</td>
<td>Immediate</td>
<td>?</td>
<td>A. Newton to update</td>
</tr>
<tr>
<td></td>
<td>3. Discuss with Buddemeier Typology training module</td>
<td>Intermediate</td>
<td>?</td>
<td>A. Newton to update</td>
</tr>
<tr>
<td>Isao Koike</td>
<td>1. Explore funding opportunities for LOICZ from Japan</td>
<td>Immediate</td>
<td>?</td>
<td>No concrete feedback back so far, IPO requested update in 05/07</td>
</tr>
<tr>
<td>Beverly Goh</td>
<td>1. Liaise with Newton on scholarships to support Node activity</td>
<td>Immediate</td>
<td>See above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Liaise with IPO on Node MOU</td>
<td>Immediate</td>
<td>Started</td>
<td>Needs to be revisited since initial plans for such MoU have not been pursued</td>
</tr>
<tr>
<td></td>
<td>3. With Nalin explore links with SARCS &amp; SASCOM</td>
<td>Immediate</td>
<td>Links on working level?</td>
<td>B. Goh, N. Wikramanayake to update</td>
</tr>
<tr>
<td></td>
<td>4. Explore links with Sea-START</td>
<td>On-going</td>
<td>Intensive contacts with A. Snidvongs</td>
<td>Collaboration on project level – B. Goh to update</td>
</tr>
<tr>
<td>Bob Buddemeier</td>
<td>1. Discuss with Newton Typology training module</td>
<td>Intermediate</td>
<td>See above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Draft terms of reference for Typology workshop</td>
<td>Immediate</td>
<td>Done</td>
<td>WS took place in 11/06; follow up under way, server established, initial links with new partners/data-sources under exploration, links with LOICZ – GWSP collaboration, new WS planned for end 07, Intern under education, post-doc identified</td>
</tr>
<tr>
<td>Weigen Huang</td>
<td>1. Advise IPO on planning for remote sensing workshop at CMTT mini-symposium</td>
<td>Immediate</td>
<td>?</td>
<td>Weigen to update – links with Doerffer GKSS?</td>
</tr>
<tr>
<td></td>
<td>2. Draft concept note on remote sensing for LOICZ – send to IPO</td>
<td>End 09/06</td>
<td></td>
<td>Weigen to update</td>
</tr>
<tr>
<td>Nancy Rabalais</td>
<td>1. Draft planning document on LOICZ liaison with CMTT</td>
<td>10/06</td>
<td>Underway</td>
<td>Embedded in OSM planning for 17-21 Sep. 07 Shanghai</td>
</tr>
<tr>
<td></td>
<td>2. Explore options for (in-kind) support options for SCOR WG128</td>
<td>Immediate</td>
<td>Done</td>
<td>IPO supports through protected web space for development of scientific papers</td>
</tr>
<tr>
<td>Nalin W.</td>
<td>1. With Goh explore links with SARCS &amp; SASCOM</td>
<td>Immediate</td>
<td>See above</td>
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<tr>
<td>Liana Talae McManus</td>
<td>1. Liaise with JPICO re: coastal IGOS</td>
<td>End 06</td>
<td>? Needs update</td>
<td></td>
</tr>
<tr>
<td>Hartwig Kremer</td>
<td>1. Send nominations to IGBP for SC membership</td>
<td>End 08/06</td>
<td>Done</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Get information on &amp; options for IGBP 2008 congress Cape Town &amp; report to SSC</td>
<td>Immediate</td>
<td>Done Currently under discussion (see recent email circular, 21 May, 2007)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Contact Falk Schmidt (IHDP) re: contact list for PTs and CCAs</td>
<td>Immediate</td>
<td>Done Contacts in IHDP core projects that liaise with LOICZ activities could be improved</td>
<td></td>
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<tr>
<td></td>
<td>4. Contact Ino re: contact Frauke Kraas (UGECH)</td>
<td>End 07/06</td>
<td>Done IPO talked to F. Kraas (Uni Cologne) at ESSP China; interest in collaboration (coastal urbanisation) confirmed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Contact FAO-C GTOS re: involvement in LOICZ typology activity</td>
<td>Immediate</td>
<td>Done and currently on hold Major contact in FAO left to Nairobi; re-establishing the links will likely work via LaguNet and J. Latham / B. Christian – urgent need for action</td>
<td></td>
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<tr>
<td></td>
<td>6. Coordinate LOICZ response to UNEP-GPA nutrient concept paper when received</td>
<td>On-going</td>
<td>Done However, ultimately GPA commissioned a consultant in Paris – LOICZ did not contribute concretely in this during IGR II – current status of UNEP-GPA unclear</td>
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<tr>
<td></td>
<td>7. Explore ways to support Regional Nodes</td>
<td>On-going</td>
<td>Done For the time being through money allocations for targeted scientific activities; discussion for access of fellowship programmes needs to be discussed as part of funding strategy</td>
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</tr>
<tr>
<td></td>
<td>8. Coordinate options for Regional Nodes in Oceania/Africa/ Europe and Americas</td>
<td>On-going</td>
<td>Underway Steps that developed in 06/07 include links and approved MoU with Yantai Coastal Institute, Prof. Ping Shi, (Opening 09/07); Oceania through Australia was dropped due to unexpected problems in the country and with institutions involved; IPO explores START Oceania as alternative hub; Greece has received a draft MoU for consideration; PACOM support approved for CAW in Ghana, LOICZ affiliated research Node – to maximize synergies with them a meeting seems advisable</td>
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</tr>
<tr>
<td></td>
<td>9. Liaise with GKSS on German support for LOICZ activity</td>
<td>On-going</td>
<td>Done Various forms – supported projects, investment opportunities through GKSS, however no direct support from the Fed. Gov. for LOICZ on national scale (competing with IMBER?); IPO contributes to white papers and</td>
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<td></td>
<td>10. Coordinate revision of SSC Corresponding members TOR</td>
<td>End 09/06</td>
<td>Done</td>
<td>See background document 2.4.1</td>
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<tr>
<td>11. Develop fund raising strategy for LOICZ</td>
<td>End 09/06</td>
<td>Not fully accomplished</td>
<td>Due to changes in personnel and administrative procedures not sufficient time to address this in detail; however, investment sources accessed, collaboration in proposals offered, links with EU department in GKSS established and restaffing accomplished with limited extra expenses from IPO core funds – needs follow up and input from SSC</td>
<td></td>
</tr>
<tr>
<td>12. Coordinate activities re: South Asia vulnerability</td>
<td>On-going</td>
<td>On-going</td>
<td>Nodes involved, IPO supports J. Hinkel’s involvement in APN project</td>
<td></td>
</tr>
<tr>
<td>13. Contact J. Kleypass re: acidification fast track initiative</td>
<td>Immediate</td>
<td>Done</td>
<td>Participated in SCOR IGBP acidification fast track together with H. Thomas</td>
<td></td>
</tr>
<tr>
<td>14. Coordinate LOICZ involvement in GWSP: Delta proposal</td>
<td>End 06/06</td>
<td>Underway</td>
<td>1. WS currently running in Durham (Syvistki, Kettner, Buddemeier, Vörösmarty involved) – follow up planned for 09 in Boulder, Colorado, hosted by INSTAAR</td>
<td></td>
</tr>
<tr>
<td>15. Coordinate activity re: iKZM/Odra workshops</td>
<td>Immediate</td>
<td>Done</td>
<td></td>
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<tr>
<td>16. Coordinate establishing Policy Advisory Board</td>
<td>End 10/06</td>
<td>Done</td>
<td>Draft is part of the SSC 18 background documents for discussion – delay due to other obligations in form of the move</td>
<td></td>
</tr>
<tr>
<td>17. Contact APN re: MOU</td>
<td>End 08/06</td>
<td>Done</td>
<td>In following up on EMECS consultations – currently on hold – both desk officers at APN on leave and collaborative projects run irrespective of MoU in place or not</td>
<td></td>
</tr>
<tr>
<td>18. Contact GOOS and C-GOOS re: links with LOICZ</td>
<td>End 08/06</td>
<td>Done and repeated in 04/07</td>
<td>K. Alverson recommends LOICZ participation in GOOS planning group (meeting anticipated for early 08) – see also IPO Report</td>
<td></td>
</tr>
<tr>
<td>19. Coordinate procedures for LOICZ decision making</td>
<td>End 08/06</td>
<td>Not pursued directly</td>
<td>The communication flow and decision making should reveal from the LOICZ organisation and membership document plus ToR for members that are part of SSC 18 background No 2.4.1</td>
<td></td>
</tr>
</tbody>
</table>

Martin Le Tissier

<table>
<thead>
<tr>
<th></th>
<th>1. Contact Ino &amp; Bill D re: 2007 workshop vulnerability links to ST I</th>
<th>Immediate</th>
<th>?</th>
<th>Ino and Bill to update</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Contact Forbes re: expertise list for ST II</td>
<td>Immediate</td>
<td></td>
<td></td>
<td>Ticky to update</td>
</tr>
<tr>
<td>Task Description</td>
<td>Target Date</td>
<td>Status</td>
<td>Notes</td>
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<tr>
<td>3. Coordinate with PT Leaders and CCAs LOICZ workshop program</td>
<td>End 08/06</td>
<td>Done</td>
<td>Resulted in the implementation strategy of one scoping WS followed by a sequence of synthesising WS and finally publishing for each PT</td>
<td></td>
</tr>
<tr>
<td>Maike Paul 1. Contact SSC re: research inventories and use of project database</td>
<td>Immediate</td>
<td>Done</td>
<td>Contact and project database developed and online since 11/06, interactive etc, M. Paul to update</td>
<td></td>
</tr>
<tr>
<td>2. Coordinate with Buddemeier, cross cuts &amp; topics setting-up of working group on databases and typology</td>
<td>End 07/06</td>
<td>Partly done</td>
<td>SSC needs to get involved in the WG set up for typology further development – Buddemeier, Swaney (Kremer) to update</td>
<td></td>
</tr>
<tr>
<td>3. Coordinate GKSS investment opportunity for databases</td>
<td>On-going</td>
<td>Done</td>
<td>Currently IPO follow up regarding software for GIS applications in typology further development (IPO plus Intern)</td>
<td></td>
</tr>
<tr>
<td>4. Get costs for 2007 SSC meeting options</td>
<td>End 10/06</td>
<td>Done</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hester Whyte 1. Coordinate actions regards UNEP-GEF paper</td>
<td>Immediate</td>
<td>Done</td>
<td>Document published – LOICZ to consider other volumes of that kind since they address a wider not purely scientific target group</td>
<td></td>
</tr>
<tr>
<td>2. Distribute Synthesis book figure CD-ROM</td>
<td>Immediate</td>
<td>Done</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Explore options for Synthesis book figure translations</td>
<td>Immediate</td>
<td>Not done</td>
<td>Comments? Do we need that?</td>
<td></td>
</tr>
<tr>
<td>4. Coordinate with Dennison re: LOICZ graphics set</td>
<td>On-going</td>
<td>?</td>
<td>Bill to update</td>
<td></td>
</tr>
<tr>
<td>5. Contact SSC re: partner priority links for LOICZ</td>
<td>End 09/06</td>
<td>?</td>
<td>SSC to update</td>
<td></td>
</tr>
<tr>
<td>6. Contact SSC re: future conference participation by LOICZ including criteria setting</td>
<td>End 10/06</td>
<td>Not followed up</td>
<td>SSC to revisit</td>
<td></td>
</tr>
<tr>
<td>7. Liaise with Dennison re: LOICZ information packs for SSC &amp; Nodes</td>
<td>10/06</td>
<td>?</td>
<td>Bill to update</td>
<td></td>
</tr>
<tr>
<td>8. Coordinate communication &amp; reporting between IPO and Regional Nodes</td>
<td>End 08/06</td>
<td>Not followed up</td>
<td>Needs revisiting since Hester moved back to Holland</td>
<td></td>
</tr>
<tr>
<td>9. Develop LOICZ communication strategy</td>
<td>End 10/06</td>
<td>Not accomplished</td>
<td>Needs revisiting (B. Goldberg a.o.) but not possible before personnel situation improves</td>
<td></td>
</tr>
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</table>
2.2 Day 2: Mini-Symposium

2.2.1 Agenda

Mini-Symposium

Applying the Best Available Science to Policy, Decision Making
and to Changes in Societal Behavior

In conjunction with 18th LOICZ Scientific Steering Committee Meeting

Wednesday, May 30, 2007, 8:30 – 16:30

SFU Vancouver, Harbour Centre, 515 West Hastings, Room 7000

Sponsored by: Genome British Columbia, LOICZ, Oceans Management Research Network (OMRN)
Co-conveners: Stephen Olsen (Director, Coastal Resources Centre, University of Rhode Island) and Patricia Gallaugher (Director, Centre for Coastal Studies, Simon Fraser University)
Dialogue facilitator: Stephen Olsen

SYMPOSIUM DESCRIPTION

This symposium is designed around a set of case studies that illustrate a diversity of initiatives in Canada and elsewhere that are applying the best available science to issues posed by coastal ecosystem change. The primary focus is upon bridging between the generation and interpretation of science and policy and decision making. But the big question is to examine how policy and decision making can in turn engender the changes in behavior (in government, in civil society and in markets) that signal the implementation of a plan of action. The case studies and subsequent dialogue will work to identify enablers and resistors of progress towards ecosystem stewardship and ecosystem-based management of coastal and oceans resources. The case studies will address the following three questions:

1. What are you learning about resistors and enablers of forms of governance that advance principles of ecosystem stewardship?
2. How would you define the outcomes of governance in your case? As you look to the future, what actions or process would, in your opinion, improve on these outcomes?
3. What are you learning about the best way to communicate the condition of an ecosystem in order to influence the processes of governance?

We offer the following definitions to assist in framing the discussion.

Governance encompasses the values, policies, laws and institutions by which a set of issues are addressed. It probes the fundamental goals and the institutional processes and structures that are the basis for planning and decision making (Olsen 2003). Governance therefore addresses the formal and informal arrangements, institutions, and mores that structure and influence:

- How resources or an environment are utilized
- How problems and opportunities are evaluated and analyzed
- What behavior is deemed acceptable or forbidden
- What rules and sanctions are applied to affect how natural resources are distributed and used

The three principle mechanisms by which the processes of governance are expressed are the marketplace, governments, and the institutions and arrangements of civil society (Juda 1999; Juda and Hennessey 2001).

Ecosystem-based governance recognizes that human communities, like plant and animal communities, are interdependent and interact with their physical environment to form distinct ecological units called ecosystems. Such management is driven by explicit goals, executed by policies, protocols, and
practices, and made adaptable by monitoring and research based on our best understanding of the ecological interactions and processes necessary to sustain ecosystem goods and services (Christensen et al. 1996). Since neither current governance practices nor scientific knowledge permits us to manage large ecosystems comprehensively and reliably, ecosystem-based management must focus upon human activities (NAS 1999), and seeks to find ways in which the negative effects of human activities on ecosystems as a whole can be minimized.

**Stewardship** is knowledge-based wise use of ecosystems on behalf of current and future generations. Stewardship is the result of the successful practice of ecosystem-based governance.

**AGENDA**

08:30  Welcome and Introduction
08:45  Presentation on LOICZ (Jozef Pacyna, LOICZ SSC Chair)
09:00  The morning dialogue will be based on the following case studies:
- Restoring Coquitlam River Sockeye: can we resolve competing interests? (Craig Orr, Watershed Watch Salmon Society, Coquitlam)
- Moving toward higher order outcomes: sharing knowledge, resources and accountability (Kelly Vodden, Department of Geography, Memorial University, St. John's)
- Linking sustainable livelihoods to coastal policy in Aceh Province, Indonesia (Jackie Alder, Fisheries Centre, University of British Columbia, Vancouver)
- MPAs in Thailand: research and application (Philip Dearden, University of Victoria and Marine Protected Areas Working Group of the OMRN, Victoria).

12:15 – 13:00  Lunch Break, Segal Centre, Room #1410
13:00  Presentation on ENCORA (Franciscus Colijn, Director, Institute for Coastal Research, GKSS)
13:15 – 16:30  The afternoon dialogue will be based on the following case studies:
- Managing contaminants: the difficulty with time series and assessing risks (Robie Macdonald, Institute of Ocean Sciences, Fisheries and Oceans Canada, Victoria)
- The science and politics of the B.C. shellfishery (Leah Bendell-Young, Biosciences, Simon Fraser University, Burnaby)
- Harbour seals as sentinels of coastal health (Lizzy Mos, Hemmera Environmental, Victoria)
- Research that influences policy makers: a case study of cruise ship tourism on BC's north coast (Peter W. Williams, School of Resource and Environmental Management, Simon Fraser University, Burnaby).

**BIOSKETCHES AND ABSTRACTS** (listed alphabetically by author)

**Jackie Alder** is a research associate with the Fisheries Centre. Her research interests include fisheries policy, community based management of marine areas, MPA management, coastal planning and management. She has worked throughout Southeast Asia, the IndoPacific, Australia and Canada. She is a member of the editorial advisory board for Coastal Management and reviews manuscripts for a number of journals.

**Abstract:** The Indian Ocean tsunami of 2004 devastated many coastal communities in Aceh. In the response, recovery and now rebuilding of Aceh the need to develop policies, especially for sustainable coastal communities is urgent. Yet the history of 30 years of conflict, a rural-natural resources based economy, and limited capacity to manage these resources call for innovative processes and policies to restore, and in some cases create new, livelihoods. The Aceh Autonomy Law provides the foundation
for developing a sustainable coastal policy to rebuild coastal communities. However, to ensure that rebuilding efforts provide sustainable and equitable livelihoods that incorporate the principles of ecosystem management requires an understanding of the resistors (e.g., lack of management capacity at provincial and district governments) and enablers (e.g., Panglima Laut system in fishing communities). Current efforts to restore livelihoods are, in most cases, uncoordinated and are often sector focused resulting in short-term gains but long-term issues, much of it driven by the need to respond to the disaster. However, the focus is now turning to development and in doing so, good coastal governance needs to be developed – governance that is based on ecosystem management principles and engages those most affected in a consensus building process.

Leah Bendell-Young, Professor in the Department of Biological Sciences at SFU, holds a Ph.D. (1990) in zoology and geochemistry and a B.Sc. in zoology and chemistry, both from the University of Toronto. She accepted her appointment (Natural Science and Engineering Research Council [NSERC]-University Research Fellowship) in Biological Sciences at SFU in July 1993. She is a member of The Center for Coastal Studies (Continuing Studies, SFU) and co-investigator of the Oceans Management Research Network. She has served as chair of the undergraduate Environmental Science Steering Committee, (1998-2000) and has developed and taught courses related to Environmental Science including Environmental Toxicology and Ecotoxicology for 10 years. She has written over 100 articles focused on determining the impact of anthropogenic activities on ecosystem structure and function. She is a recent co-editor (with P. Gallaugher) of the book “Waters in Peril” Kluwer Academic Publishing, which serves to highlight the current state of our oceans.

Abstract: Beginning in summer of 2000, a group of scientists at SFU embarked on a series of studies to assess the ecological impact of the shellfishery on the foreshore of certain regions of BC. Of concern was the covering of the foreshore with anti-predator netting, a farming practice thought to increase bivalve biomass. Close to six years later we have reached some conclusions. Although we see some evidence of netting leading to increases in bivalve biomass at low tide, the nets appear to have limited effectiveness at mid-tide levels. Rather, the nets degrade foreshore habitat quality and simplify the benthic species composition. Based on our research outcomes, netting at mid-tide is an ineffective practice and for the average shellfish farmer, it is unlikely to yield the expected economic returns.

Philip Dearden is a Professor of Geography in the University of Victoria. He leads the Marine Protected Areas Research Group at UVic and has research interests ranging from seagrass ecology through to coral reef monitoring and diver surveys in South East Asia. He is particularly interested in understanding MPA use patterns, zoning and developing incentive-based approaches to conservation and advises the World Bank, Asian Development Bank, UN, IUCN and national governments in Asia on protected area management. He is the Leader of Canada’s national MPA Working Group for the Ocean Management Research Network and Co-Chair of Parks Canada’s NMCA Marine Science Network.

Abstract: Thailand is well advanced in the designation of MPAs as a form of coastal governance, but is less well developed in terms of addressing management challenges. This paper reviews a program of research on MPAs in Thailand that seeks to address some of these challenges. At Koh Chang Marine National Park studies have been completed on community dependence on fisheries, the sustainability of these fisheries and potential for improved stewardship through zoning. Further studies have examined the sustainability of the marine tourism industry with coral reef and visitor surveys helping to identify conservation and tourism zones, but effective management remains lacking. One framework for planning sustainable marine tourism is described with reference to research that has been undertaken with respect to SCUBA diving on the Andaman coast of Thailand, and its implications for management are outlined. MPAs have had modest success as a form of governance to encourage improved marine sustainability in Thailand, despite their great potential, and the paper concludes with some observations based on the preceding research program.

Robie Macdonald is a senior research scientist with the Department of Fisheries and Oceans. He works on environmental pathways in a wide range of geographic locations including the Arctic Ocean, Hudson Bay, Pacific Coastal waters and west-coast lakes. Topics of interest include the carbon cycle, the hydrological cycle within the ocean, climate change and the entry and transport of contaminants in
aesthetic systems. He has been involved in a number of international assessments for the Arctic including the Arctic Climate Impact Assessment and the Arctic Monitoring and Assessment Programme.

**Abstract:** Contaminants form one component of stress on coastal systems. Contaminants tend to be managed reactively following a number of steps that lead to a assessment that harm is, or probably is, occurring. These steps include 1) Time series showing increasing exposure, 2) Laboratory studies that develop effects thresholds to which exposures can be compared and 3) Evidence that harm has occurred in certain populations. More proactively, methods have been outlined to identify compounds that have a high potential to cause harm in consideration of their physical properties, amounts being released and toxicity (e.g., Klecka et al. 2000). However, it is becoming clear that these approaches do not always provide adequate protection and, indeed, often lead to a policy reaction (ban or curtail a chemical’s use) long after environmental reservoirs have been loaded to the point that downturns then require decades. Here, I will discuss three issues of environmental complexity that need to be addressed and communicated to managers in regulating harmful chemicals. First, environmental change can impact contaminant pathways and thus trends monitored in complex environmental components (like seals or polar bears). Second, whether a chemical has an effect or not depends on biological vulnerability, which is also impacted by environmental change and variability. Third, certain long-lived animals (e.g., orcas) require special treatment because their vulnerability and response to harmful chemicals depends much on their life history and, often, epidemiology is not available due to population size or fragility. In this case, recourse to models may provide a key adjunct to risk assessment. The difficulty facing managers and politicians is providing adequate protection to marine resources in the face of multiple and changing stressors.

**Lizzy Mos** holds a BSc/MSc degree in Environmental Science from Wageningen University (The Netherlands) and a PhD in biology from the University of Victoria (Canada). She has worked on the development and application of biomarkers as tools in wildlife toxicology in collaboration with universities, and provincial and federal governments in the Netherlands and Canada. She is currently working at Hemmera, a western Canadian environmental consulting company, where she is involved in ecological risk assessments and research & development projects that incorporate novel genomics tools into the regulatory risk assessment process.

**Abstract:** Harbor seals are important indicators of coastal health, providing an integrated signal of environmental contaminant exposure and the associated effects. Within the transboundary region of British Columbia, Canada, and Washington State, USA, a gradient of Persistent Organic Pollutants (POPs) exists, providing opportunities for toxicological studies of harbor seals in a relatively controlled scenario. Such studies have included the characterization of dietary and body burden contaminant concentrations, identification of priority POPs for toxicological effects, life stages of special concern, and assessment of biomarker endpoints. Results indicated that PCBs remain to be priority POPs of concern to marine mammals, and to nursing seal pups exposed to contaminants through milk in particular. Biomarker endpoints suggested that PCBs may be causing adverse effects on the immune system and endocrine function of seals. In addition to the effects of chemical contaminants such as POPs, immunological profiles and disease surveys of harbor seals have indicated that biological pollution may also affect coastal wildlife by exposing them to novel “spilled-over” pathogens and elevated levels of bacteria and pathogens. Since the greatest mortality among juveniles is commonly associated with infectious disease in large mammals, increased susceptibility due to chemical contaminants in combination with biological pollution may be of the greatest concern to wildlife in urban coastal areas.

**Craig Orr** is a behavioral ecologist, salmon conservationist, and the executive director of Watershed Watch Salmon Society. Craig specializes in science outreach and since 1998 has helped Simon Fraser University organize more than two dozen workshops for the Speaking for the Salmon series. He has also published popular and scientific papers on sea lice and ecosystemic effects of salmon farms, and currently helps the Kwikwetlem First Nation in its efforts to restore the Coquitlam River.

**Abstract:** Sockeye salmon were extirpated from the Coquitlam River with the construction of British Columbia’s first hydroelectric dam in 1905. Several expert reports, as well as members of a recently-established “fish passage committee,” have concluded that there are no known biological impediments or risks to restoring this unique race of spring-migrating salmon. Though the science is compelling, and there is wide-spread support for restoring Coquitlam River sockeye – including a strong aboriginal interest – efforts to proceed have ground to a halt over competing interests in water and rigid posi-
tioning by the agency responsible for safeguarding drinking water quality. This as yet unresolved situation is a troubling but instructive indictment of the difficulties of incorporating science into decision-making (including the shifting of the burden of proof), and of advancing environmental stewardship. The inability to successfully resolve competing (but apparently not mutually exclusive) interests in water through a science and community based process will now likely be addressed through legal means.

Kelly Vodden is a PhD candidate in the Department of Geography, Simon Fraser University (SFU), Centre for Coastal Studies researcher and, as of July 2007, Assistant Professor in the Department of Geography, Memorial University of Newfoundland and Labrador. She has been a consultant to government and non-government organizations, communities, First Nations, industry and academic institutions and a volunteer with conservation and community development organizations. Kelly’s academic and professional endeavors have focused on community and regional development and community-based resource management initiatives, particularly in coastal/fishing communities. Kelly’s PhD research examined models of collaborative governance in three Canadian coastal regions.

Abstract: Findings from six Canadian cases studies demonstrate that, after more than a decade, outcomes of collaborative coastal governance initiatives remain largely first and second order. Ecological outcomes have proven especially difficult to achieve, particularly in more complex systems. Social, economic and cultural outcomes of ecosystem initiatives are under-recognized despite stated commitments to integrated coastal management. Resistors include lack of financial investment, support and flexibility at senior levels of government, differing perspectives, even rivalries among actors, limitations in understanding and capacity and cultures that favor exploitation over stewardship and specialization over integration. Culture and commitment to place can also be significant enablers, often personified in a small number of instrumental leaders and supporters at local but also provincial and national levels. Ecosystem management efforts are often launched in response to a shared sense of urgency when problems of ecosystem condition have become apparent and ways of life are threatened. Persistence and a multifaceted communications approach, including tools such as representation, employee and school programs, local media, workshops, cross-cultural sharing and community events are needed. Formal networks enable cross-scale communication while informal relationships and are also critical. Community-university-government partnerships build knowledge, capacity, and credibility but require relationship building over time. Findings suggest that open and ongoing communication about specific problems and strategies but also deeper values and principles, should be coupled with mechanisms for collaborative planning and evaluation, and shared accountability if higher order outcomes are to be achieved and resistors overcome.

Peter W. Williams is Director of the Centre for Tourism Policy and Research in Simon Fraser University’s School of Resource and Environmental Management. He is a strategic planner and policy analyst in the field of tourism management. His research focuses on creating more sustainable forms of tourism development, especially in rural and remote regions.

Abstract: There is often a disconnect between systematically conducted research and policy decisions in natural resource management situations. This situation is caused by the many uncertainties, as well as focused character and situational contexts of most science-based research endeavors. This presentation explores the constraints and barriers to making research influential in policy decision making processes and suggests methods for overcoming these challenges. It illustrates the utility of specific policy influencing strategies in the context of the cruise ship tourism industry. More specifically it outlines the planning approaches used to incorporate cruise ship tourism values and interests into coastal land use policy and planning decisions on British Columbia’s North Coast, as demonstrated during the region’s extensive Land and Resource Management Planning process. The research conducted identified the spatial implications of this industry on the area’s land and resource base; and explored management strategies for addressing the probable impacts of shore excursion activities pursued by cruise passengers in the region’s mid and back-country areas. The overriding intent of the work was to provide North Coast LRMP Table members with a clear appreciation of the land and natural resource requirements, as well as related resource management strategies needed to plan for cruise ship tourism, particularly in the region’s coastal zone. The presentation outlines strategies and experiences encountered in gaining the attention of policy makers in such research endeavors.
2.2.2 Participants from Canada

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2.3 Day 3: Scientific Planning

2.3.1 IGBP Congress Proposals

4th IGBP Congress on Sustainable Livelihood in a Changing Earth System
Cape Town, South Africa, 4-9 May 2008

Session Chair: Dennis Swaney (others welcome)

Coastal Impacts of Biofuel Production

Biofuels are potentially important contributors to the global energy system, and are increasingly being touted as relatively eco-friendly energy sources, especially from the standpoint of their net effect on global CO2 emissions. In the United States, the rising popularity of corn-based ethanol production has triggered increases in the price of corn, with ramifications for the entire North American agro-ecosystem. Corn acreage is increasing, displacing other crops, such as soybeans. In Brazil, the dominant biofuel feedstock is currently sugarcane, from which ethanol is produced relatively efficiently, and the associated agricultural and environmental impacts are very different.

Environmental impacts of biofuels depend specifically on the feedstocks used, the agricultural management practices employed in their growth, and the fate of the byproducts of biofuel processing. While impacts span scales from local to global, this session focuses on the potential environmental impacts on coastal ecosystems downstream of biofuel crops and their processing plants. While such impacts are arguably no different from those of conventional agricultural systems, the explosive growth in the biofuel sector in recent years suggests a corresponding impact on coastal zone material fluxes in the near future due to increased agricultural land, water and fertilizer use. Changes in the global market for agricultural commodities may have unforeseen consequences on both agricultural production and coastal areas in regions far removed from the site of intensive biofuel production.

Vulnerability of Coastal Livelihoods and Response Strategies to Changing Earth System
Cape Town, South Africa, 4-9 May 2008
Session Chairs: Felino Lansigan and Alice Newton

Changing earth system is threatening the coastal communities and their livelihoods particularly in densely populated and urbanizing regions of the world. The vulnerability of various livelihoods in coastal areas to global environmental changes such as sea level rise (SLR), sedimentation, occurrence of extreme climatic events, and related disasters etc is an important concern for sustainable coastal zone development. This will involve the assessment of vulnerability of coastal systems, institutions, and communities including their livelihood activities as well as the identification and evaluation of response strategies and adaptations to reduce the negative effects and impacts, and also increasing their resilience. The session will cover vulnerability assessment, adaptations, and coping strategies of coastal areas focused on sustainability of livelihoods in coastal regions. The session would provide the forum to present and discuss the protocols for vulnerability assessment and risk analysis of coastal systems including bio-physical processes and societies and their livelihoods. Various research approaches, experiences, and results on addressing issues in the analysis of socio-ecological systems, and on vulnerability or resilience of coastal-based livelihoods across different regions of the world are expected to be presented which can provide for excellent comparative analysis and synthesis.
Evidence is increasing that, even in the remotest and most pristine parts of the earth, transformation and change are no longer determined by purely natural dynamics but by interactions between humans and nature. The separate analysis of natural and societal dynamics is therefore becoming ever more inadequate. Human ecologists have studied the human-nature relationships for almost a century. Similarly, proponents of analyzing human-nature relations through the social-ecological systems approach (Gunderson and Holling, 2002; Becker and Jahn, 2006, Glaser, 2006) argue for a move away from viewing society and nature as two autonomous systems which are merely linked through external relations towards adopting a complex systems approach in which the increasingly dense and intensive interrelations or linkages between humans and nature are the (social-ecological) system. Social-ecological systems are complex, adaptive and delimited by spatial or functional boundaries surrounding particular ecosystems and their problem context.

The proposed session will continue the discussions at the Eco-Summit in Beijing in May 2007 and the Society for Human Ecology conference in Rio in October 2007. It will continue to assess and compare past and possible future transformations of coastal social-ecological systems (SES). Participants will present problem-focused introductions to coastal regions and ecosystems in Brazil, Indonesia, the European Union, the United States, and Mozambique. Different ways of linking data and knowledge from the natural and social sciences with the differently situated forms of knowledge which exist in other stakeholder groups will be discussed. Innovative methodological approaches to SES analysis, including participatory modeling and the construction of scenarios will be explored. Presenters’ different regional expertise, their common interest in inclusive participatory action research to capacitate in particular marginalized stakeholders’ participation in the construction of viable futures and their shared academic roots in human ecology and social ecological systems analysis should lead to positive and productive synergies in this session. The session will start with keynote speech on social-ecological systems analysis and a national analysis of coastal SES and at least one problem-focused local/regional presentation for each research region.

This introduction is subject to change according to the outcomes of the Beijing and Rio meetings.

Preliminary List of Presenters and Topics

- Luky Adrianto (BAU, Bogor, Indonesia): Exposure and resilience in different regions of the Indonesian coast
- Cristina Maneschy (UFPA, Belém, Brazil): Becoming a “pescadora”: a gender-based view of vulnerabilities and resilience in North-Brazilian coastal fisheries
- Karen Diele (ZMT, Bremen, Germany): Constructing social-ecological resilience to a crab fishery system in North Brazil
- Gesche Krause (ZMT, Bremen, Germany): Options and resilience in a mangrove SES (North Brazil)
- Adriano Marcia (Maputo University, Mozambique): Crab fishery on Inhaca Island Mozambique as a complex SES
- Carlos Diegues (USP, Sao Paulo, Brazil): Complexity of artisanal fisheries in Brazil
- Bela Buck (AWI, Bremerhaven, Germany): Co-evolutionary potential for fisheries transformations under technological change: off-shore wind energy and open-ocean aquaculture in Germany
- Glaeser, Bernhard (Social Science Centre, Berlin, Germany): Integrated coastal zone management between hazards and development
- Halliday Andrew (Open University, Milton Keynes, UK): How can projects bring “good change” in complex adaptive systems?
- Joko Samiaji (University of Riau, Sumatra): Vulnerability and resilience of the Siak River basin, Sumatra as a social-ecological system.
Session Proposals with relevance for LOICZ

4th IGBP Congress on Sustainable Livelihood in a Changing Earth System
Cape Town, South Africa, 4-9 May 2008

Sea Level Change, Ice Sheet Stability, and Vulnerable Coastlines
Session Chairs: Julie Brigham-Grette (PAGES), LOICZ, WCRP

Rising sea level is threatening the coastlines and near-shore societies and economies. However, the projections of the magnitude and rates of sea level rise are much debated in spite of a moderate rise over a narrow range conservatively summarized by the IPCC 4th AR. Uncertainties arise mainly from deficits in our quantitative knowledge of the levels of ocean warming and related seawater expansion and of polar ice sheet stability and glacier dynamics in a warming world. New results from observations of rapid glacier flow and ice sheet melting, especially in Greenland and western Antarctica, are reminiscent of earlier periods in the geologic past when these ice sheets experienced substantial retreat. Furthermore, improved measurements of surface and sub-surface ocean warming and related seawater expansion as well as new reconstructions and modeling of past sea level highstands and retreated coastlines provide additional evidence that the sea level projections are likely to require revision. The session will review the state of the art of sea level projections, discuss uncertainties, estimate potential ranges of future sea level dynamics in light of past scenarios, and identify IGBP-WCRP research needs for the coming years.

Interface between Biogeochemistry and Ecosystems
Session Chairs: Dennis Hansell, Carol Turley

Several IGBP projects are currently developing strategies for investigating the interface between biogeochemistry and ecosystems, and the response of biogeochemistry, ecosystems and their interactions to global change. With a few notable exceptions, ecosystems and biogeochemistry are largely treated unequally in evaluating a system, largely reflecting the strengths of the scientists undertaking the analysis. This workshop session will seek to identify approaches from all the relevant IGBP projects on integration of ecosystem and biogeochemical research. Discussions will include the design of joint experiments, observations, and modeling efforts, which together will integrate the science of both ecosystems and biogeochemistry. The goal of the workshop will be to improve our analytical approaches to understanding an ecosystem, through integration of its physical, chemical and biological elements and controls, using the wide array of tools that are available.

Oceanic Oxygen Minimum Zones
Session Chairs: Wajih Naqvi, Jing Zhang, Jack Middelburg

The oceanic oxygen minimum zones (OMZs) with their vastly different ecology compared with the rest of the oceans are sites of unusual redox transformations involving a number of key biogenic elements (e.g., N, S, Fe). As a result, the OMZs play an important role in carbon cycling including modulation of “power” of the biological pump, thereby influencing the climate. Additionally, the OMZs are also globally significant sources of nitrous oxide, a potent greenhouse gas, to the atmosphere. Moreover, due to the delicate biogeochemical balance that exists in these zones, they are among the most vulnerable to global environmental change. Global warming has been projected to cause expansion and intensification of these systems, and recent trends of decline in subsurface oxygen concentrations in many geographical areas are consistent with this prediction. Moreover, eutrophication is causing the formation of new sites of coastal hypoxia around the globe. These changes are expected to have a profound
impact on ocean biogeochemistry and ecosystems. Recent rekindling of interest in the OMZs and application of new techniques (e.g., molecular and stable isotope tools) have led to substantial advancement of our understanding of both biogeochemical and ecological processes in the OMZs. This session will make an assessment of the state of the art in this field and identify outstanding questions/topics for future work in the context of global change.

**Biogeochemistry and Food Interaction at Continental Margin: Toward the Feed-back of Carbon Cycle to Atmosphere and Open Ocean**

Session Chair: Jing Zhang

No abstract.

**Nitrogen in the Earth System: from fundamental research to application**

Session Chairs: Hibbard, Martinelli, Seitzinger

Nitrogen is one of many elements that is key to understanding fundamental nutrient cycling and transformations in the biosphere and, after the carbon cycle, is arguably the most important nutrient to living organisms. Over geological time scales, changes in N have affected terrestrial and ocean productivity, and as well as contributed to climate changes (e.g., through N2O). In the Anthropocene, humans have dramatically altered the earth’s N dynamics by more than doubling the amount of reactive nitrogen (Nr) that annually enters terrestrial systems from biological N2-fixation in natural systems. This additional creation of new Nr is primarily associated with the production of food (industrially produced N fertilizer; biological N2-fixation by certain agricultural crops) and energy (NOx emissions with fossil fuel combustion) to supply the needs of the over 6.5 Billion people on earth. Reactive Nitrogen, however, is not distributed uniformly among nations of the world. This discrepancy leaves some regions with little to no available nitrogen, and others, particularly with large fertilizer inputs with over-abundance. As the human population continues to change, there will continue to be further imbalances in the global distribution of anthropogenic Nr.

Nitrogen is a component of many IGBP projects. However, communication and synthesis of that knowledge across the projects is needed. The goal of this session is to provide a mechanism for communication and collaboration of N research among IGBP projects from process studies to applied research, from the past to the present. We welcome talks that discuss nitrogen effects on ecosystems and society, inter-connections among terrestrial, aquatic (freshwater and marine) and atmospheric processing of N, climate change effects, as well as addressing solutions to management of N at local, regional and global scales.

**Global Change in the Arctic**

Session Chairs: Kathy Law (IGAC), Julie Brigham-Grette (PAGES), AIMES?, GLOBEC (if combined with 1st proposed session, “Climate Influences and Biological Controls in High Latitude Marine Ecosystems”)

The Arctic is one of the most susceptible regions of the globe to changing climate – a point of particular concern given the positive feedbacks associated with snow and ice melt and (potentially) the release of methane from melting permafrost. In addition, there is the question of whether the disappearance of sea ice will enhance the emission of trace chemicals (such as the bromine compounds) from the open ocean, and how this would affects the chemistry in the troposphere and stratosphere. Over the past 50 years, the largest warming trends anywhere in the globe are seen in areas of the Arctic, and significant downward trends in ice thickness and cover are occurring, with implications for biota and wildlife, native populations, and the climate itself via the sea ice-albedo feedback and the hypothesized release of methane currently frozen in the permafrost. More extreme scenarios of sea
and ice sheet retreat are documented in the paleoclimate records from earlier warm intervals. In this sense, the Arctic is the “canary in the coal mine” of global warming. At the same time, an ice-free Arctic opens opportunities for new shipping routes, oil and mineral extraction, and possibly fisheries.

While most of the warming in the Arctic is attributed to increases in long-lived greenhouse gases (e.g., CO2, CH4), there is also some contribution in the late Winter and early Spring by short-lived species transported into the area from Eurasia and possibly from boreal forest fires, forming the well-known “Arctic haze”. At this time of the year, tropospheric ozone and black carbon aerosol both contribute to atmospheric warming, and black carbon deposited on the snow/ice surface may be accelerating melt rates in the Spring and Summer by absorbing sunlight. The atmospheric chemistry during this period, transport pathways into the Arctic, and the degree to which black carbon are contributing to snow and ice melt are not currently well-understood but are the subject of a suite of field campaigns taking place during the 2007-2008 International Polar Year (IPY). In addition to understanding the current state of the Arctic atmospheric chemistry is a need to understand how it will change with less ice cover (e.g., potentially a larger natural contribution of sulfate aerosol from oceanic dimethyl sulfide emissions, and decreased emissions of halogens and NOx from snow and ice), how dynamical changes in an altered climate might affect transport pathways into the Arctic, and how changing emissions in Eurasia and/or changes in the frequency and location of intense boreal forest fires might alter the Arctic haze composition.

2.3.2 Yantai Seminar Expose

LOICZ – Yantai 2007 International Seminar on

“Tackling Land Ocean Interactions on Regional Scale”

Objective: Identification of priority questions on regional scale that need immediate scientific attention within the following topics:

Potential Topics:
- Ecosystem functioning and socioeconomic impacts in changing coastal zones
- Material fluxes and ecosystem response
- Governance frameworks for ecosystem-based management

Additional Topics include
- Regional research collaboration
- Technology development
- Funding strategy for regional research

We should invite a limited number of presentations and allow for substantial discussion (mediators to be identified and prepared prior to the meeting).

10-15 foreign people to be identified from/through LOICZ.

Advertise/announce in newsletter (just information) and via Internet.
2.4 Day 4: Administrative Planning

2.4.1 LOICZ Organization

LOICZ Organization and Membership

Draft of 14 May, 2007

1. Organization and Structure

LOICZ has a thoroughly designed Science Plan and Implementation Strategy (SPIS) and a corresponding implementation structure which have been developed and approved by the SSC. According to the LOICZ-SPIS (2005: 2ff), five selected Scientific Themes (STs) provide a clear and organized description of scientific areas of interest, scope and questions LOICZ will address during its second phase lifetime. The STs, run by a Theme Coordinator who is in parallel member of the SSC, form the backbone of the LOICZ project and also explain the interdisciplinary approach (Fig. 1).

ST coordination includes “to engage with and to involve the projects that contribute to LOICZ as so-called Affiliated Projects” in the scientific synthesis. In other words: Theme Coordinators are asked to develop oversight of the scientific scope represented in these Affiliated Projects (APs) that operate in contribution to their Scientific Themes. They are also asked to encourage external projects to join LOICZ and become part of the project portfolio and synthesis.

Based on these five STs which represent the frame for the whole LOICZ second lifetime, a focused mid-term concept of the LOICZ implementation has been iteratively developed by SSC and IPO. This is represented by the so-called Priority Topics (PTs). The PTs are aimed to effectively focus the LOICZ scientific activities, to enable a continued synthesis and integration and to allow LOICZ to operate with an element of flexibility in its science agenda. Consequently, the concept of PTs is to start with a small scoping workshop followed by 2-3 scientific synthesis workshops and to conclude and deliver a product after a lifetime of 3-4 years (alternatively different approaches such as a set of regional workshops may be possible as well). The PTs are representing what the SSC considers the current most important niche for LOICZ to fill in global change research in coastal systems.

Priority Topic Leaders are SSC members. Their key role includes to promote and guide the implementation of the PTs and subsequently to organize the relevant workshops and synthesis mechanisms. This is ideally done by establishing a team to deal with writing, communication and dissemination as well as capacity building. This process is expected to capitalize on the expertise inherent for example in the Affiliated Projects (APs), where the contacts to the ST Coordinators become pivotal. Therefore the coordinators of the STs outlined above have a critical role to play in communicating relevant information from within the Scientific Themes and related affiliated projects to the Priority Topic Leaders. In conclusion, both functions; i.e. ST coordination as well as PT leadership encompass targeted scientific oversight and communication.

The IPO is asked to execute and to support on various levels logistically, with man power and seed funds including fundraising, linking with international donor and policy organizations, the hosting agency and other external stakeholders. It can also strategically contribute its networking capacity as to find the right participants and partners for scientific and synthesis activities where appropriate, but should not be considered as the main source here in principle. The IPO can contribute scientific comments and expertise where appropriate. It links to and assists in providing oversight of the whole Earth System Science Partnership (ESSP) and generates meaningful opportunities for collaboration within and outside this scientific community.

2. Membership Status and Composition

There are three different classes of LOICZ membership: SSC Members (as defined in the ToR), SSC Corresponding Members, and LOICZ Members. SSC membership, to attend SSC meetings, is by election; appointment is for a fixed term of three years with the possibility of one extension. Further-
more, it is suggested to establish a SSC Corresponding Membership status to link together and strengthen the community of interests in coastal research.

2.1 SSC Members
See ToR of SSC Members (including ST Coordinators, PT Leaders, and IA Leaders).

2.2 SSC Corresponding Members
SSC Corresponding Member status is appropriate for individuals that wish to keep in touch with the LOICZ activities, but who are not eligible for attending all meetings. Corresponding Members are not, unless specifically requested, consulted on dates and venues of meetings. However, they have access to selected information (e.g., SSC papers, LOICZ web site), are actively involved in developing and promoting LOICZ themes and activities, are invited to submit agenda items, and have a standing invitation to attend meetings if an issue they are keen to discuss is on the agenda. Corresponding Member status will imply a commitment of time to the work of LOICZ, but should also be regarded as a source of professional development.

2.3 LOICZ Members
LOICZ membership is open to anyone with an interest in specific LOICZ activities. LOICZ Members will receive news about selected activities; they may ask questions of the work and can participate in discussion and e-conferences. They may also view and download files from the LOICZ web site and are routinely invited to participate in peer review of new activities. All core members of LOICZ are strongly encouraged to participate as list members to share their expertise and experience.

2.4 Functional Groups
In addition to SSC, Corresponding and LOICZ Members, there are the following time-limited functional groups:

2.4.1 Executive Board Members
At the 17th SSC Meeting, it was decided to establish an Executive Board as part of the SSC to decide on core funds and issues that need immediate decision or initial strategic consideration (report of the 17. SSC Meeting). The LOICZ-SSC advocated for a core constitution of the Board with one year life-time and a flexible approach to bring in other expertise as they or the Chair see fit.

Elected Executive Board Members for 2006/07:

<table>
<thead>
<tr>
<th>Name</th>
<th>E-Mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jozef M. Pacyna (SSC Chair)</td>
<td><a href="mailto:Jp@nilu.no">Jp@nilu.no</a></td>
</tr>
<tr>
<td>Nancy Rabalais (SSC Vice-Chair)</td>
<td><a href="mailto:Nrabalais@lumcon.edu">Nrabalais@lumcon.edu</a></td>
</tr>
<tr>
<td>Ino Lansigan (SSC Vice-Chair)</td>
<td><a href="mailto:fplansigan@yahoo.com">fplansigan@yahoo.com</a></td>
</tr>
<tr>
<td>William C. Dennison (ST I Coordinator)</td>
<td><a href="mailto:dennison@umces.edu">dennison@umces.edu</a></td>
</tr>
<tr>
<td>Laurence Mee (PT1 Leader)</td>
<td><a href="mailto:L.Mee@plymouth.ac.uk">L.Mee@plymouth.ac.uk</a></td>
</tr>
<tr>
<td>Alice Newton (CCA Leader)</td>
<td><a href="mailto:Anewton@ualg.pt">Anewton@ualg.pt</a></td>
</tr>
</tbody>
</table>

2.4.2 Task Group Members
LOICZ may establish time-limited Task Groups on defined issues where there is value in bringing together a number of interests in order to develop and coordinate time-limited LOICZ activities, e.g., on specific technology or pan-service issues. One possibility is that two core and/or CG members nominated and agreed by the SSC will serve as Convener – e.g., to run meetings and act as a formal representative of LOICZ – and Coordinator – e.g., to arrange the effective dissemination of information, to maintain membership lists, to organize meetings, and to draft agendas and minutes. Task Group members and roles should rotate on an annual basis.
3. Activities

Corresponding and LOICZ Members will contribute to the work of LOICZ in the following ways:

- **Participation in meetings**: they will contribute to the preparation of LOICZ activities and meetings, but will not be included in planning dates and venues of meetings unless requested by SSC and IPO.
- **Mapping of existing research**: they will forge links with scientists and organizations working on LOICZ-related research issues.
- **Make available existing research**: they will be expected to identify and make available existing knowledge and data on global environmental change in coastal zones.
- **Participation in discussion**: they will contribute comment and make suggestions to ongoing LOICZ discussions.
- **Communication and promotion**: they will contribute to web site maintenance through the provision of materials and to the publication and dissemination strategy and thus, supporting the promotion of LOICZ.
- **Representing LOICZ**: they will, if requested and agreed upon, represent LOICZ at selected meetings and initiatives. Where appropriate, they may be asked to act, on behalf of LOICZ, as representatives and report back to the SSC and IPO.

4. Communication

Corresponding and LOICZ Members will communicate to LOICZ in the following ways:

- **Agendas**: Agendas will be drafted by the person in charge and approved by the SSC and/or IPO. Invitations to contribute agenda items will be sent to all SSC members before the date of meetings. Finalized meeting agendas will be circulated prior to meetings.
- **Minutes**: Minutes of meetings will be drafted by the person in charge, and will be approved by the SSC and/or IPO. Minutes will be circulated to all core members and placed on the LOICZ web site after each meeting.
- **LOICZ discussion list**: An email discussion list with unrestricted membership will be maintained by the IPO as the responsibility of one or more LOICZ members. This will provide at least the following as archived documents available to all list members: Terms of reference; current list of SSC and Corresponding Members; approved minutes of LOICZ meetings.
- **LOICZ web site**: A web site will be maintained as the responsibility of the IPO, together with one or more LOICZ members, to support the effective communication of information and data about the work, activities, and findings of LOICZ.

**Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA</td>
<td>Integrating Activities</td>
</tr>
<tr>
<td>IPO</td>
<td>International Project Office</td>
</tr>
<tr>
<td>PT</td>
<td>Priority Topic</td>
</tr>
<tr>
<td>SSC</td>
<td>Scientific Steering Committee</td>
</tr>
<tr>
<td>ST</td>
<td>Scientific Theme</td>
</tr>
</tbody>
</table>
Fig. 1: LOICZ integration and structure (Weichselgartner 2007)
### 2.4.2 LOICZ Formalities

#### LOICZ Formalities

*Draft of 24 May, 2007*

#### Payment procedures

for LOICZ Conferences, Sessions and Workshops

<table>
<thead>
<tr>
<th>Responsible Organizer</th>
<th>Task Allocation</th>
<th>Money Transfer (LOICZ)</th>
<th>External Funding</th>
<th>Sub-Contractor/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>1* LOICZ (no external funder)</td>
<td>LOICZ only</td>
<td>LOICZ to own sub-contractors/participants</td>
<td></td>
<td>Commissioned only by LOICZ/GKSS</td>
</tr>
<tr>
<td>2* LOICZ (plus external funding)</td>
<td>LOICZ only</td>
<td>LOICZ to own sub-contractors/participants</td>
<td>To LOICZ</td>
<td>Commissioned only by LOICZ/GKSS (if applicable)</td>
</tr>
<tr>
<td>3* LOICZ (plus external funding)</td>
<td>LOICZ allocates tasks also to others</td>
<td>LOICZ only to own subcontractors</td>
<td>External Co-funding will be allocated directly to subcontractor/s</td>
<td>Commissioned by LOICZ and/or Co-funders</td>
</tr>
<tr>
<td>4* External Organizer</td>
<td>external</td>
<td>From LOICZ to external organizer, against offer and itemized invoice</td>
<td></td>
<td>Commissioned by external organizer</td>
</tr>
</tbody>
</table>

* Examples:
  1) Workshops at GKSS (Typology),
  2) SSCs either in Germany or elsewhere (IGBP external funder), Open Science Meetings
  3) Priority Topic 3 Latin America Workshops (co funders IAI, IHDP)
  4) Workshops organized by others (e.g., ZMT Topic 1, Cork Topic 3, Miedzisdroye etc)
Contracts with LOICZ as a department of GKSS Research Center

In accordance with German law the LOICZ IPO cannot sign contracts itself. Contracts have to be made with the purchase department of the GKSS Research Center GmbH (private limited company) as follows:

As a contractor the GKSS purchase department requests to receive an official offer including

1. the full contractors address and bank details
2. a list of services and/or products incl. timelines for delivery (if applicable)
3. and an itemized statement of anticipated costs per line item

GKSS (referring to LOICZ) would then generate an order number and would order officially from you the delivery of the agreed services and/or products.

Subsequent to the delivery of services and/or products the contractor sends the invoice about the occurred costs to the LOICZ IPO.

This invoice should state the order number given by GKSS and list the provided services/ products and related costs.
LOICZ Application Form
for Acceptance of Travel Costs

LOICZ International Project Office
Institute for Coastal Research-GKSS Research Center
Max-Planck-Strasse 1
D-21502 Geesthacht, Germany

Applicant

Last name: ______________________________________________________
First name: _____________________________________________________

Status:
☐ LOICZ SSC Member
☐ LOICZ Priority Topic Leader
☐ LOICZ Scientific Theme Coordinator
☐ LOICZ Cross Cutting Activities Coordinator
☐ Other

Organization/Institution:
Complete Address:

Short description of the requested activity:

<table>
<thead>
<tr>
<th>Priority Topic</th>
<th>Scientific Theme</th>
<th>Cross-Cutting Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>II</td>
<td>III</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>A</td>
</tr>
<tr>
<td>B</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

The requested attendance refers to:
Benefit of your attendance for LOICZ:

To fill in by LOICZ IPO
Application approved: ☐
Application declined: ☐
Statement:

Please notice, that every attendance of any activity covered by LOICZ

- has to be documented in the annual LOICZ Report
- demands a feedback to LOICZ-IPO, as well as
- a report to LOICZ-IPO for distribution via LOICZ Website or Newsletter to the LOICZ community. The report has to be send to LOICZ-IPO within 30 days after workshop/conference/meeting, and
- has to be accounted by the LOICZ Travel Claim Form.

The LOICZ Host Institute, GKSS, covers

- Accommodation costs and per diem according to the German law for “Federal travel cost". LOICZ can provide a list with different rates for different countries. The costs for accommodation should not top the rate since GKSS can only reimburse costs as foreseen in the list.
- Economy class air-tickets

Any variations of the terms have to be requested to the LOICZ IPO for confirmation. Together with LOICZ Travel Claim the applicant documents the reason for variation from standard procedures in an understandable and comprehensible way.

Yes, I accept the GKSS/LOICZ modalities to cover my requested travel costs. I ensure to inform LOICZ-IPO immediately if there are any changes.

Last name, first name
Place and date

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2.4.3 ToR Policy Advisory Board

LOICZ Policy Advisory Board (LOICZ-PAB)
Terms of Reference

Draft of 6 May, 2007

1. Introduction and Role

One goal of LOICZ is to provide a framework to encourage the fullest participation of multi-national, regional, and national research activities in its scientific activities that are focused on achieving the objectives outlined in the LOICZ Science Plan and Implementation Strategy (SPIS). One way we accomplish this is to actively engage with the international research community whose work concerns natural and socioeconomic sciences of global environmental change in the coastal zone.

LOICZ provides a forum to assimilate, integrate and synthesize the outputs of the research community, as well as to communicate and disseminate these outputs to the global LOICZ community. In order to strengthen our network of researchers, policy makers and practitioners we set up a Policy Advisory Board (PAB) to develop proposals for policies and rules for consideration by LOICZ. The PAB acts as a bridge between LOICZ and the various stakeholders to channel feedback from policy makers and practitioners into the development of LOICZ SPIS, as well as to provide non-binding advice to the LOICZ IPO and LOICZ SSC on the non-operational guiding principles regarding the oversight of the SPIS. The PAB has the following objectives:

- To provide advice and guidance and, where applicable, offer expert interpretation to LOICZ SSC Members. This advice is not binding but carries strong influence and the SSC is obliged to take any such advice into consideration when making decisions
- To provide policy advice which
  - is sufficiently clear to be acted upon and flexible enough to apply as a general theme/rule/idea
  - assists in advising on the policy direction LOICZ should be moving towards, but not how to get there
- To consider and bring to the attention of the Board any policy issues that may be of future importance or affect the LOICZ SPIS
- To review current policies
- To review the performance of the PAB and its members.

2. Structure and Controls

The PAB is governed by the PAB rules. The PAB can propose changes to the PAB rules, taking into account input from the SSC or others where appropriate, for approval by the Board. PAB controls include a code of conduct and processes for:

- The declaration of potential conflicts of interests
- The removal of PAB members for gross misconduct
- The maintenance of a PAB Register of Interests.

3. PAB and Member Communication

The PAB should:

- Be prepared to occasionally represent the PAB at SSC Meetings and other events
- Educate members about the work of the PAB and the effect that policy changes have had
- Communicate with members via a PAB session at relevant meetings of LOICZ
• Report to members as part of the LOICZ Annual Report
• Communicate with members generally on matters of policy
• Pass on any relevant communications, feedback and comments made by members to LOICZ
• Approve and publish the PAB Meeting Report
• Get members views on nom-steer and contribute to the open public debate of LOICZ policy and outreach activities.

4. PAB and Stakeholder Communication
The PAB should:
• Field people to represent the PAB at stakeholder events
• Assist LOICZ in educating stakeholders about the work of the PAB and the effect that policy changes have had
• Report to stakeholders as part of the LOICZ Annual Report
• Assist LOICZ in communicating with stakeholders generally on matters of policy and outreach
• Pass on any relevant communication, feedback and comments made by stakeholders to LOICZ.

5. Consultations
The PAB should agree, communicate to both the LOICZ-IPO and SSC Members and publish a PAB response to LOICZ consultations (PAB Meeting Report). This may include setting up working groups and/or sub committees as appropriate.

6. PAB Members
The membership of the PAB is drawn from representatives of appointed organizations, the LOICZ SSC Chair and elected SSC members. There may be any number of corresponding members of the appointed organizations. These corresponding members may participate in the meetings as observers but may not vote. The term of office of a PAB member is three years, after which he/she may be re-appointed or replaced and a new Chairman and Vice-Chairman are elected. If the Chairman is not present or available, the Vice-Chairman shall act in this capacity until the next meeting. Members are expected to attend every meeting of the PAB, which will normally take place once a year, and to conduct business by correspondence between meetings. In the event of a member's absence from two consecutive meetings, that member's status on the PAB will be considered to have lapsed and a call will be made for a new appointment. Although appointments are made by the SSC and the appointees are accountable to their own organizations, they are expected to serve as individual experts in their own right. However no statements or publications may be issued in the name of the PAB without its prior approval. Everybody is encouraged to contact any of the PAB members in order to raise issues or suggest ideas. The LOICZ-PAB’s current serving members are listed below:

Chairman and Vice-Chairman of PAB

<table>
<thead>
<tr>
<th>Name</th>
<th>E-Mail</th>
</tr>
</thead>
</table>

Elected PAB Members

<table>
<thead>
<tr>
<th>Name</th>
<th>E-Mail</th>
</tr>
</thead>
</table>
Representatives of Appointed Organizations

<table>
<thead>
<tr>
<th>Name</th>
<th>E-Mail</th>
</tr>
</thead>
</table>

7. Meetings and Reporting
The PAB holds shall normally meet once a year at a venue and time that minimize cost. It shall report to the SSC and IPO on its activities at least once each year, publish a Meeting Report, and adopt a work program, which can be ordered from the LOICZ-IPO. Anyone wishing to put forward agenda items should contact the LOICZ-IPO and the PAB Chair with your suggestions.

8. Public Consultations and Amendments
The PAB regularly undertakes public consultations during which all stakeholders are invited to submit their own views on issues affecting the management of the LOICZ-SPIS. All the consultation responses are published in the PAB Report and are considered carefully by the PAB before they make a formal recommendation. Please send any feedback you wish to make to the PAB on policy issues to the LOICZ-IPO and the PAB Chair.

Amendments to these Terms of Reference may be proposed and considered by the PAB at any time. A review of the Terms of Reference shall be carried out at least every two years. Proposed amendments, recommended by the PAB, must be approved by all appointed organizations.
2.4.4 ToR Regional Node East Asia

LOICZ Regional Node East Asia
Yantai Institute of Coastal Zone Research for Sustainable Development (YIC), China

Terms of Reference
Draft of 7 May, 2007

Background

LOICZ, the Land Ocean Interaction in the Coastal Zone core project of the International Geosphere, Biosphere Programme (IGBP) and the International Human Dimensions Programme for Global Environmental Change (IHDP) aims to develop and maintain global foci on coupled natural-human dimensions of coastal change. It promotes and encourages science that relates to Millennium Development Goals and applies a dynamic perspective to sustainable development covering a broad span of global to regional and local scales. A pivotal role of LOICZ is to seek greater fusion of trans-disciplinary analyses and model development. This includes establishment of links and cooperation with other implementation oriented bodies and research activities. The regional scale is of critical relevance for LOICZ and as a consequence the role of the Regional Nodes is pivotal for the implementation of the LOICZ project as a whole. The Regional Nodes have a mandate to develop and foster scientists’ networks and promote greater collaboration and ownership among scientists, policy makers and practitioners at three levels of regional effort:

- Region to Local
- Regional Integration
- Region to Region.

This is in recognition of the urgent need to apply scientific knowledge to clearly defined issues posed by global environmental change in coastal zones; these issues are framed by regions with common socioeconomic, socio-ecological, cultural and institutional features. Underlying is the LOICZ Science Plan and Implementation Strategy (SPIS) published in 2005 and the Priority Topics and Cross Cutting activities as defined by the global LOICZ Scientific Steering Committee (SSC).

Mandate

The mandate of a LOICZ Regional Node is to facilitate a “Synthesis of patterns of change and trajectories in the region’s coast and implications to policy and management”. A LOICZ Regional Node should develop a Regional Implementation Strategy based on the scientific framework provided by the LOICZ Science Plan and the mid-term Priority Topics.

Objectives of the LOICZ East Asia Node

1. Facilitate, promote and coordinate the scientific synthesis of past and contemporary change in coastal socio-ecological systems in East Asia
2. Develop a regional implementation strategy to achieve the synthesis which reflects and addresses regional needs and specific local features
3. Provide a nucleus for organizing a national and regional network of coastal scientists in the natural and social science arena
4. Liaise with national LOICZ Committees, as well as with institutions in the region in order to promote the study of integrated coastal socio-ecological systems in recognition of and contribution to the LOICZ scientific priorities. The goal is to underpin integrated management of coastal resources and the sustainability of coastal goods and services
5. Facilitate and help coordinate the development of research projects which plan and implement scientific investigations and field programs that fall within the scope of the LOICZ SPIS and
foster links of integrated coastal science with policy; a close collaboration with the Regional Nodes based in Singapore and Sri Lanka in the wider Asian region is recommended

6. Disseminate information and research results in recognition of the multilingual nature of the region where appropriate

7. Identify and facilitate capacity building mechanisms for both the scientific and user communities

8. Identify and secure funding and support for the operation of the Regional LOICZ Node

9. Report to and coordinate with the LOICZ Scientific Steering Committee and the Central IPO based at and supported by the GKSS Research Center, Geesthacht, Germany.

General Terms

Note: The structure below is a skeletal structure and which may be improved upon as a Regional Node matures and increases in scientific scope and in size.

Regional Nodes are a national and/or institutional expression of support for the regional scientific and user community which are or want to become involved in LOICZ or wish to be informed by LOICZ science. The Nodes aim to provide the necessary platform embedded in the global LOICZ project framework.

Regional Nodes are an adjunct of the Central IPO and appropriate co-ordination and association between each and with the SSC is necessary to ensure that LOICZ functions and is presented as a single coordinated unit.

The operation of each Regional Node, and its support from the IPO administratively, should reflect local needs and work within the contexts of regional institutional frameworks to ensure support and relevance.

General Tasks

In order to represent a collective approach rather than being structured by individual nodes, it will be an important task for each Regional LOICZ Node to develop a Regional Implementation Strategy based on the scientific framework provided by the LOICZ-SPIS. In this context important tasks are

- to identify regional needs and undertake a SWOT Analysis
- to provide multilingual thematic packages and communication media including regionalized training and education materials
- to provide a platform for regional synthesis and to identify gaps and define future regional priorities calling for increased scientific attention
- to link with START and/or appropriate regional and intergovernmental networks, e.g., the APN, to develop regional coastal modules for the new Earth System Science Partnership (ESSP) including their integrated studies (e.g., MAIRS)
- to provide and maintain an inventory and directory including an active database of existing, planned and needed projects within the region
- to provide and maintain a directory of coastal scientists, stakeholders and donor agencies in the region, and to continuously engage with these groups in the implementation of the Regional LOICZ Strategy
- to promote inter-Node interaction (e.g., North-South, South-South exchanges).

Specific Tasks of the LOICZ East Asia Node

1. A Regional Node Coordinator shall administer the Node operations on a day to day basis. He/She coordinates the formation of a Regional LOICZ Committee from among active regional scientists. He or his deputized representative represents the Regional Node in the LOICZ Executive and SSC Meetings.

2. The Regional LOICZ Committee and the Regional Node Coordinator in consultation with the SSC and the IPO set the regional research agenda as guided by the LOICZ Science Plan and Implementation Strategy. Representation in the Regional Committee shall be based on leader-
ship of a regional or national LOICZ research activity and on geography, as appropriate. When
the Regional LOICZ Committee has reached critical mass, it may be prudent to select a Com-
mittee Chair, and which may rotate among countries, modalities for which may be developed as
the Regional LOICZ Committee matures.
3. At least one current LOICZ SSC member from within or a neighboring region shall sit in the
Regional LOICZ Committee. He/She represents the LOICZ SSC in the Regional LOICZ Com-
mittee. During his term at the SSC, Weigen Huang, who is based at the Second Institute of
Oceanography (SIO), State Oceanic Administration (SOA), Hangzhou, will sit as the LOICZ
SSC representative in the Regional LOICZ Committee.
4. The LOICZ Central IPO can be approached to assist in or provide directly seed funds for imple-
menting individual scientific activities on a case by case basis.

Specific Terms of Reference for the Host Institution YIC

1. Collaborates with the Regional Node Coordinator and Regional LOICZ Committee in soliciting
the active participation of coastal scientists from among its institutional and regional network to
implement LOICZ science.
2. Cooperates with the Regional Node Coordinator in raising funds to implement regional scientific
activities including research projects, workshops and conferences, among others.
3. Provides institutional and logistical support to the operations of the East Asia Regional Node
Office including office space, and oversight for financial and employment matters (if applicable).
4. In coordination with the LOICZ SSC and Central IPO, the host institution will conduct a periodic
review of the Regional Node Office as a mechanism to determine that its operation serves a
common interest for the region, LOICZ and its regional host.

Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>IPO</td>
<td>International Project Office</td>
</tr>
<tr>
<td>LOICZ</td>
<td>Land-Ocean Interactions in the Coastal Zone</td>
</tr>
<tr>
<td>SPIIS</td>
<td>Science Plan and Implementation Strategy</td>
</tr>
<tr>
<td>SSC</td>
<td>Scientific Steering Committee</td>
</tr>
<tr>
<td>SWOT</td>
<td>Strengths, Weaknesses, Opportunities und Threats</td>
</tr>
<tr>
<td>YIC</td>
<td>Yantai Institute of Coastal Zone Research for Sustainable Development</td>
</tr>
</tbody>
</table>
2.4.5 Marie Curie Initial Training Networks

Information on
Marie Curie Initial Training Networks

What are Marie Curie Initial Training Networks?

Marie Curie Initial Training Networks (ITN) are aimed at improving the career perspectives of researchers who are in the first five years of their career by offering structured training in well defined scientific and/or technological areas as well as providing complementary skills and exposing the researchers to other sectors including private companies. The action will be implemented by supporting competitively selected networks of organisations from different countries engaged in research training. The networks will be built on a joint research training programme, responding to well identified training needs in defined scientific or technological areas, with appropriate references to interdisciplinary and newly emerging supra-disciplinary fields. Direct or indirect involvement of organisations from different sectors is considered essential in this action, including full participation by industry.

Who can apply?

Normally, a network will comprise at least three participants (e.g., universities, research organisations, industrial firms, SME’s, international organisations) proposing a coherent and integrated research training programme. However, in certain cases single or twinning host organisations may also be eligible.

What is the scope of a training programme?

Participants of the network will apply for support in the frame of the execution of a joint training programme. These training programmes will address in particular the development and broadening of the research competences of the early-stage researchers. Training will be primarily focused on scientific and technological knowledge through research on individual, personalised projects, complemented by substantial training modules addressing other relevant skills and competences, e.g., in the field of management and financing of research projects and programmes, intellectual property rights and other exploitation methods of research results, entrepreneurship, ethical aspects, communication and societal outreach.

Due attention should be paid to the quality of the joint research training programme, with provision for supervision and mentoring arrangements and career guidance, while exposing the researchers to other disciplines and sectors represented in the network through visits, secondments and other training events. The joint training programme shall exploit complementary competences of the participants in the network, including from industry, as well as other synergies and should reflect existing or planned research collaborations among the partners. With a view to complementing a network's capacity to transfer new knowledge and strengthen supervision, the action can also support the setting up of a limited number of senior “visiting scientists” positions (both in public sector and enterprise partners) for experienced researchers. Support for such positions would be typically for multiple stays within the network, each with a duration of at least one month.

Which research topics are supported?

Proposals from all areas of scientific and technological research of interest to the European Community are welcome and there are no pre-defined priority areas.

How does it work?

Networks will be selected competitively following a two-stage evaluation process. Successful proposals will be invited to enter into grant agreement negotiations with the Commission in order to define the implementation of the project in more detail, also taking into account the experts' comments made.
during the evaluation, and to finalise the budget. Researchers can be appointed from the start date of the project mentioned in the grant agreement. An advance payment is made at the beginning of the project; subsequent annual payments are released upon acceptance of the annual reports.

**What does the funding cover?**

Funding is primarily provided for the benefit of the researchers appointed by the host (including their living allowances, travel expenses etc). There is also a contribution to expenses linked to the execution of the project in the host organisation, along with a contribution towards overheads and management related expenses.

**How long is the duration of funding?**

The maximum duration of funding for ITN will normally be **four years** from the contractual start date.

**How long is the duration of appointments?**

The length of individual appointments for researchers will be limited to between **3 months and 36 months for early stage researchers** and **3 to 24 months for experienced researchers** that are in the first five years of their research careers. Visiting scientists should be recruited for a minimum of one month up to a maximum of 24 months spread over the lifetime of the contract.

**How to apply?**

Proposals are submitted electronically via the Commission’s Electronic Proposal Submission Service.

**What is the size of an IRN?**

Normally a network will be composed of **at least three participants**, but mono-sites and twinnings are also possible under certain conditions. There is no predefined size. However, based on past experiences, the indicative maximum number of partners would be 10.

**What is the expected impact of the action?**

Projects under the action are to contribute to the structuring of existing high-quality initial research training capacity throughout Europe in both public and private sectors. By bringing complementary providers of research-training from **different countries** together to **focus their efforts in broad initial training programmes**, the projects under this action are expected to deliver better overall quality of initial research training in Europe. This will not only help to develop future generations of researchers more capable of contributing effectively to the knowledge-based economy and society, within and between public and private sectors, but also add to the intersectoral and trans-national employability of these researchers and to the attraction of young people to a research career.

**What are community contribution and applicable rates?**

The financial contribution of the Community to the indirect actions takes in general the form of grants covering up to 100% of the budget of the indirect action, comprising, if the case arises, predetermined unitary amounts according to rates for certain expenses. The Community contribution is normally calculated on the basis of eligible activities as well as possible specific conditions given in the description of each action and according to the tables given below.

For each eligible researcher, the host organisation can opt between recruiting him/her under an employment contract/fellowship with full social security coverage or on a fixed amount fellowship with minimum social security, depending on the legal and/or administrative situation of the host organisation and/or the researcher.

Column A. in Table 1 gives the amount per year in Euros per category of researchers who are recruited under an employment contract/fellowship with full social security coverage. These amounts include the provisions for all compulsory deductions under national applicable legislation.
Column B. in Table 1 gives the amount per year in Euros per category of researchers who receive a fixed-amount fellowship with minimum social security coverage. Fixed amount fellowships with minimum social security coverage are not employment contracts. Researchers can only be recruited under a fixed-amount fellowship with minimum social security coverage if this is compatible with national legislation of the host organisation. The host organisation must ensure that minimum social security coverage has been provided to the researcher, not necessarily paid from the Community contribution for the fixed-amount fellowship.

Along with the monthly living allowance, a "mobility allowance" will be paid for some categories of researchers as specified in Table 2, which will take due account of the family situation of the researcher.

Tab. 1: Reference rates for monthly living allowances (cost of living index 100)

<table>
<thead>
<tr>
<th>Categories</th>
<th>A (€/year)</th>
<th>B (€/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early stage researchers</td>
<td>33 800</td>
<td>16 900</td>
</tr>
<tr>
<td>Experienced researchers (4-10 years experience)</td>
<td>52 000</td>
<td>26 000</td>
</tr>
<tr>
<td>Experienced researchers (&gt;10 years experience)</td>
<td>78 000</td>
<td>38 000</td>
</tr>
</tbody>
</table>

Tab. 2: Travel allowances

<table>
<thead>
<tr>
<th>Distance1 (km)</th>
<th>Fixed-amount contribution (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 500</td>
<td>250</td>
</tr>
<tr>
<td>500 – 1 000</td>
<td>500</td>
</tr>
<tr>
<td>1 000 – 1 500</td>
<td>750</td>
</tr>
<tr>
<td>1 500 – 2 500</td>
<td>1 000</td>
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<tr>
<td>2 500 – 5 000</td>
<td>1 500</td>
</tr>
<tr>
<td>5 000 – 10 000</td>
<td>2 000</td>
</tr>
<tr>
<td>&gt;10 000</td>
<td>2 500</td>
</tr>
</tbody>
</table>

For researchers eligible to receive travel allowances, the allowance is based on the direct distance between the place of origin and the host institution of the researcher, calculated on the basis of one payment for every period of 12 months or less, when the first period or the last one is less than 12 months. Only one travel allowance shall be paid per period of 12 months, independently of possible interruptions or stays with different partners.
3. Appendix

3.1 Activity Reports SSC Members

Activity Report on Scientific Themes I and III
Yoshiki Saito

Co-Leader UNESCO-IUGS-supported IGCP-475 DeltaMAP (Deltas in the monsoon Asia-Pacific region), Leader of CCOP (Coordinating Committee for Geoscience Programme in SE and E Asia) DelSEA project (integrated geological assessment for deltas in SE and E Asia region)

2006/07 Activities since 17th SSC Meeting


3. International Workshop on “Coastal Erosion and Geological Assessment of Deltas in Southeast and East Asia”. CCOP, Bangkok, Thailand, May 24-25, 2007. Supported/organized by CCOP, GSJ/AIST. Twelve participants from nine countries; present status of coastal erosion were reported from seven countries (1. meeting on coastal erosion).


2007/08 Activities after 18th SSC Meeting


2. LOICZ/SCOR 122 Symposium, Boulder, USA, September 23-26, 2007. Special issue from ECSS.


6. 5th International Conference on Deltas. Shanghai and Qingdao, China, late October/early November, 2008. Shanghai meeting will be held in conjunction with EMECS-8 (8th International Conference on the Environmental Management of Enclosed Coastal Seas).
Publications


Marion Glaser and Bernhard Glaeser

The LOICZ symposium “Social-ecological Systems Analysis: The Way forward in the Anthropocene” organized by Marion Glaser took place for 3.5 hours in the afternoon of May 23rd. Eleven Speakers from five countries contributed. Conceptual introductions to Social-Ecological Systems Analysis and to Integrated Coastal Zone Management were given by Marion Glaser and Bernhard Glaeser (see Annex). Contributions from regional studies in Indonesia, Germany, China, India and Brazil followed. All speakers had been asked to address four questions in order to provide the symposium with a common starting point. These questions related to:

1. The definition of “Social-Ecological System” (SES) employed in the respective regional study
2. The drivers of the studies SES and possible future scenarios
3. Sources and methods of identifying resilience, vulnerability, adaptability and transformability
4. Recommendations for steering the SES into more sustainable trajectories.

The major intention behind this first of three Symposia on regional social-ecological systems analysis was to establish a common conceptual framework as a first step towards the generation of relevant knowledge to steer human-nature relations in the coastal zone into more sustainable directions.

Outputs are planned as follows:
1. Report/review article for LOICZ Newsletter
2. Special Issue (of *Ecology and Society*, *Regional Environmental Change* or *Coastal Management*) to concentrate on scenarios of dynamic coastal socio-ecological systems at the regional scale with special reference to resilience/vulnerability (LOCIZ Scientific Theme 1)
3. Initiation of project proposal involving a number of study regions around the world.

The following conclusions emerged from our presentations and the three discussion sessions which were held during the symposium:
Most speakers could provide a clear definition of their study SES. Natural science contributors tended to focus on the administrative and social system aspects. SES were defined either as multi-use spatial units (Kannen, Adrianto, Glaser) or problem/sector focused (Buck).

One paper (Feng) was a purely theoretical contribution which provided some groundwork for the mathematical interpretation of alternative – desirable and undesirable stable states. Although much work remains to be done, the connections between such models and applied analyses (e.g. Diele et al.) were made.

Most speakers clearly identified drivers at various different system scales.

Most speakers interpreted system resilience and vulnerability both in the ecological and in the social (including economic) sense. While at least two contributors (Kannen, Goswami) took a systems analysis point of view, vulnerability, resilience and adaptivity were mostly examined in relation to major types of change: i.e. disaster (Glaeser), natural dynamics (Glaser), pollution (Samiaji, Liu), development and conservation interventions (Buck, Adrianto).

The question of how to steer their respective study SES into more sustainable directions using the SES concepts of vulnerability, resilience, adaptivity and transformability produced different types of responses from the study regions. Identified as major generators of resilience were for instance: participation (Liu), the strengthening of cooperation/co-management (Diegues, Diele, Liu), the combination of knowledge systems/provision of information/ design of effective communication (Glaser, Glaeser, Kannen). Technical, natural-science based approaches to simulate nature’s ability to produce desirable outputs were also identified (Diele, Adrianto).

Follow up

A next symposium on Social-Ecological Systems Analysis to take place at the annual Conference of the Society for Human Ecology (SHE) at Rio de Janeiro is now being prepared by Bernhard Glaeser for October 2007. This will be designed around follow-up questions which have arisen during the Beijing meetings. While a structured analysis of the contributions in Beijing is still to be completed, the following themes are likely to be the subject in the follow-up symposium in Rio:

- Methods of integrating knowledge systems in SES analysis (traditional knowledge and other system user and stakeholder knowledge, natural and social sciences…)
- Methods of reconstructing the interlinked behaviors of human and societal actors and natural elements of social-ecological systems.

As several of the Beijing participants managed to find extra funding and since the Rio symposium is the follow-up to the Beijing meeting, it is proposed that the remaining funds from Beijing are transferred to fund the Rio meeting.

The Journal Regional Environmental Change has expressed interest in publishing a Special Issue. This will be tackled after the Rio de Janeiro meeting in October.

A third SES symposium is planed as part of the IGBP Conference in Cape Town, May 2008.

Beijing/Bremen/Vancouver, 29 May, 2007

ANNEX

ECOSUMMIT 2007: LOICZ Symposium Programme

Social-ecological systems analysis: The way forward in the anthropocene?

Conceptual Introduction

- Marion Glaser (Social-ecological systems analysis: Why and how?)
- Bernhard Glaeser (Integrated Coastal Management (ICM) between Hazards and Development)
Indonesia

- Luky Adrianto (Building Local Sustainability under a Complex Social-Ecological System: The Case of Sea Farming in Semak Daun Shallow Waters Ecosystem, Seribu Islands District, Indonesia)
- Joko Samiaji (Vulnerability and resilience of the Siak River basin, Sumatera as a social-ecological system)

Germany

- Bela H. Buck (Co-evolutionary potential for fisheries transformations under technological change: Off-shore wind energy and open-ocean aquaculture in Germany)
- Andreas Kannen (Integrated Assessment of Changing Coastal Environments: Linking scenarios, decision making scales and stakeholder perceptions)

India

- S.N. Goswami (Restoring the perturbed humid subtropical ecosystems: A study from Dimoria in Assam, northeast India)

China

- J.F. Feng (Sustainability of a Social-Ecological System: Effect of Pollution)
- J. Liu (Stakeholder analysis on coastal ecosystem: A Case from Qingdao, China)

Brazil

- Antonio-Carlos Diegues (Ecological and cultural complexities of artisanal fisheries in Brazil)
- Karen Diele (Constructing social-ecological resilience to a crab fishery system in North Brazil)

Activity Report on the 7th SOLAS Scientific Steering Committee Meeting

Weigen Huang

The 7th SOLAS Scientific Steering Committee Meeting was held from 4-5 March 2007 in Xiaman, China. As a representative of the LOICZ, I attended the meeting and gave a talk on “Land-Ocean Interactions in the Coastal Zone”. The LOICZ organizational structure, science plan and implementation strategy were presented. The LOICZ linkages with SOLAS were discussed. The SOLAS SSC expressed the wish to establish the joint scientific synthesis on 1) global assessment of trace gas concentrations and flux; and 2) sea surface and atmosphere interactions in the coastal zone. I suggest that LOICZ discusses the joint scientific synthesis on those two projects with SOLAS.
3.2 Travel Claim Form

Return to: LOICZ-IPO, GKSS Research Center, Max-Planck-Str. 1, D-21502 Geesthacht, Germany

<table>
<thead>
<tr>
<th>Full Name (incl. title)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Address (incl. phone/fax/e-mail)</td>
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</table>

<table>
<thead>
<tr>
<th>Event Account Number</th>
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<tbody>
<tr>
<td>18. LOICZ SSC Meeting, 29 May – 1 June 2007, Vancouver</td>
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<table>
<thead>
<tr>
<th>Per diem</th>
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<tr>
<td>days a 24,00 Euro</td>
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<td>Per diem allowances at a standard rate of 80% per day (taken from GKSS ARV list). No per diem to be claimed for days of departure and arrival.</td>
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<table>
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<th>Specify currencies:</th>
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<td>Public transport</td>
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<tr>
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<td>0,00 Euro</td>
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<tr>
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<td>0,00 Euro</td>
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<tr>
<td>Overnight expenses</td>
<td>0,00 Euro</td>
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<tr>
<td>Other</td>
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</table>

<table>
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</table>

<table>
<thead>
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</thead>
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<td>BIC / SWIFT:</td>
</tr>
<tr>
<td>Name of Bank:</td>
</tr>
<tr>
<td>Address of Bank:</td>
</tr>
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</table>

I attach the original documents (railway tickets, flight tickets, taxi receipts, hotel bill etc). I confirm the accuracy of my entries. The costs entered are the costs that I incurred. I claim reimbursement from the LOICZ-IPO for the above expenses and I declare that no other organization has reimbursed me for any part of my expenses claimed from LOICZ-IPO.

Signature.....................................................................Date......................................................................
3.3 Evaluation Sheet of SSC Meeting

1. Please evaluate the SSC Meeting as a whole

Very poor ☐ poor ☐ OK ☐ good ☐ excellent ☐

2. Please assess the preparation and organization of the SSC Meeting

Very poor ☐ poor ☐ OK ☐ good ☐ excellent ☐

3. Please assess the structure and design of the SSC Meeting

Very poor ☐ poor ☐ OK ☐ good ☐ excellent ☐

5. Please assess the overall logistics of the SSC Meeting (location, technical equipment etc)?

Very poor ☐ poor ☐ OK ☐ good ☐ excellent ☐

6. Please evaluate the individual components of the SSC Meeting

<table>
<thead>
<tr>
<th>Component</th>
<th>Very poor</th>
<th>poor</th>
<th>OK</th>
<th>good</th>
<th>excellent</th>
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<td>Reporting (Day 1)</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Mini-Symposium (Day 2)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<td>Scientific Planning (Day 3)</td>
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<td>☐</td>
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<tr>
<td>Administrative Planning (Day 4)</td>
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<td>☐</td>
<td>☐</td>
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</tr>
</tbody>
</table>

7. Please suggest improvements to the SSC Meeting

Thank you for your time!
• Cape Town, South Africa
• 5-9 May, 2008
• SC, SSCs, NCs, partners
• African stakeholders
• Circa 350 participants expected
4th IGBP Congress: Objectives
Cape Town, South Africa, 5 - 9 May 2008

• To develop ways for IGBP to apply Earth System science and improve IGBP relevance to civil society, the private sector and the policy community;
• To provide a forum for cross-project interaction and integration across the breadth of the programme;
• To identify where IGBP work is contributing to addressing mitigation and adaptation, large-scale pilot projects on sustainability science and institutional networking;
• To suggest pathways to sustainable solutions, including mitigation, innovation and adaptation;
• To address the challenges of Global Environmental Change and development in Africa (climate change as a stress factor to African development, water systems, etc)
<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Days 6-7</th>
</tr>
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<tbody>
<tr>
<td>Mon 5 May</td>
<td>Tue 6 May</td>
<td>Wed 7 May</td>
<td>Thur 8 May</td>
<td>Fri 9 May</td>
<td>10-11 May</td>
</tr>
<tr>
<td><strong>IGBP SSC Meetings (Closed)</strong></td>
<td><strong>IGBP SSC Meetings (Closed)</strong></td>
<td><strong>Plenary Symposium: Sustainable African Pathways in a Changing Earth System</strong>&lt;br&gt;1. The challenges&lt;br&gt;2. Pathways or solutions</td>
<td><strong>Parallel: IGBP Science and Beyond</strong>&lt;br&gt;WorkingGroup Session I (5-6) WorkingGroup Session II (5-6)</td>
<td><strong>Plenary: I. Open Advisory Panel</strong>&lt;br&gt;II: IGBP contribution to Applied Earth System Science&lt;br&gt;Formal closure</td>
<td><strong>2 day IGBP-SC meeting</strong></td>
</tr>
<tr>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
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<tr>
<td><strong>IGBP SSC Meetings / GEC Exhibitions (Closed)</strong></td>
<td><strong>SSC Meetings / GEC Exhibitions 1700: Public Poster Session for non-experts</strong>&lt;br&gt;3. Policy and Management Responses&lt;br&gt;4. Panel: ESS Science-stakeholders dialogue Posters (for experts) with drinks</td>
<td><strong>WorkingGroup Session III (5-6)</strong></td>
<td><strong>WorkingGroup Session IV (5-6)</strong> Free Afternoon: sightseeing and science tours Continue SSC Meetings</td>
<td></td>
<td>2 day IGBP-SC meeting</td>
</tr>
<tr>
<td><strong>Evening:</strong></td>
<td><strong>Public Lecture</strong></td>
<td><strong>Congress dinner Cape Town Declaration</strong></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**IGBP Congress 2008**
4th IGBP Congress: Working Group Proposals

- Climate Influences and Biological Controls in High Latitude Marine Ecosystems
- Palaeodimensions of Global Change
- Links between environmental stress and food security in Africa
- Research and observation priorities emerging from the IPCC WG I and II Assessment Reports
- Coordination of intercomparison of aspects of models of the land-surface under modern and palaeo-conditions.
- Fire in the Landscape
- Grand challenges for land systems and sustainability science; and Land System Change: Competing for food, energy and environmental services
- Modelling in coupled human-environmental systems. Integrative models for land change science and market based instruments for integrated modelling.
- Land System Change: Competing for food, energy and environmental services
- Vulnerability of coastal livelihoods and response strategies to changing earth system
- Social-Ecological Systems Analysis in a Changing Earth System
- Interface between biogeochemistry and ecosystems
4th IGBP Congress: Working Group Proposals II

- Oceanic Oxygen Minimum Zones
- Biogeochemistry and Food Interaction at Continental Margin: Toward the Feed-back of Carbon Cycle to Atmosphere and Open Ocean.
- End-to-end food webs in marine ecosystems
- Young African Scientists’ Session on GEC Research in Africa
- Coastal Impacts of Biofuel Production
- Interconnections between air pollution, climate change, energy and human impacts – science, technology and policy
- Nitrogen in the Earth System: from fundamental research to application
- Water cycle, water resources, floods and drought
- Regional knowledge systems for sustainable development
- Aerosol-cloud-precipitation-climate interactions
- Mega-cities (or Urbanization?) in a Changing Climate
- Methane in the Earth System: sources, sinks and concentrations
- Global Change in the Arctic
- Monsoon Systems: Interactions with and Implications for the Earth System
- Sea level change, ice sheet stability, and vulnerable coastlines
WHO SPEAKS FOR THE OCEANS, AND WHAT ARE THEY DOING ABOUT IT?
May 31, 2007, 7:30 pm,
Vancouver Aquarium, GoldCorp. Ocean Theatre,
845 Avison Way,
Stanley Park, Vancouver, BC

By John A. Fraser, PC, OC, OBC, CD, QC, LLD, former Speaker of the House of Commons, former Minister of Fisheries, and currently Chair of the Pacific Salmon Forum.

A legendary advocate of ocean conservation in Canada will give a talk in celebration of Oceans Day 2007 drawing on his unique experience as both government insider and policy critic. His lecture will describe the insights into ocean issues arising from new global sources of information and environmental awareness. In this light, Mr Fraser will give a critical review of how Canada, as a signatory of the UN Convention on Law of the Sea, is performing on its international and national commitments to action and also speak to the implementation of Canada's Oceans Act. Finally he will show how leadership is being displayed in community-based coastal initiatives, with special attention to British Columbia.

This lecture is free and open to the public. As seating is limited, reservations are required. To reserve a seat email (coastals@sfu.ca) or telephone 604.291.4893 and provide the name and telephone number for each reservation.
### 3.6 SSC Members 2007

<table>
<thead>
<tr>
<th>Serving Member / Function</th>
<th>Last name</th>
<th>First name</th>
<th>Country of Employment</th>
<th>Gender</th>
<th>Years appointed</th>
<th>Total possible period of membership</th>
<th>Years in SSC incl. 2007</th>
<th>Area and focus in terms of parenthood program</th>
<th>PT/CCA Focus</th>
<th>ST Focus</th>
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</thead>
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<td>SSC Chair</td>
<td>Pacyna</td>
<td>Daniel</td>
<td>USA</td>
<td>M</td>
<td>2002-2006</td>
<td>8’</td>
<td>2002-2007</td>
<td>Coastal ecology, rivers, science dissemination</td>
<td>2 &amp; 3</td>
<td>4, 5</td>
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<tr>
<td>Vice Chair</td>
<td>Lamsignan</td>
<td>Elena</td>
<td>Germany</td>
<td>F</td>
<td>2004-2009</td>
<td>4</td>
<td>2004-2009</td>
<td>Environmental sciences (also SSC GWSP) (IHDP)</td>
<td>1 &amp; 3</td>
<td>1, 5</td>
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<tr>
<td>ST 2 Coordinator</td>
<td>Forbes</td>
<td>Anthony</td>
<td>South Africa</td>
<td>M</td>
<td>2003-2008</td>
<td>5</td>
<td>2003-2008</td>
<td>Ecological economics and integration, trace gases and sea-air exchange (IGBP)</td>
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<td>3, 4</td>
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<td>ST 3 Coordinator</td>
<td>Restrepo</td>
<td>Juan</td>
<td>Colombia</td>
<td>M</td>
<td>2004-2009</td>
<td>4</td>
<td>2004-2009</td>
<td>River-coast coupling, sediments, hydrology (IGBP)</td>
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<td>3, 4</td>
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<td>ST 4 Coordinator</td>
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<td>John</td>
<td>Australia</td>
<td>M</td>
<td>2003-2008</td>
<td>5</td>
<td>2003-2008</td>
<td>Systems Models, biogeochemistry, water continuum (IGBP)</td>
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<td>ST 5 Coordinator</td>
<td>Roth</td>
<td>Eva</td>
<td>Denmark</td>
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<td>2004-2009</td>
<td>4</td>
<td>2004-2009</td>
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<td>Biogeochemistry and typology, hydrology, databases (IGBP)</td>
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<td>Wikramanayake</td>
<td>Nalin</td>
<td>Sri Lanka</td>
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<td>M</td>
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<td>Typology, Data (cross cutting)</td>
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<td>UK</td>
<td>M</td>
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<td>Management &amp; Engineering (IHDP)</td>
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<td>Laura</td>
<td>Philippines</td>
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<td>Luiz Drude</td>
<td>Brazil</td>
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<td>Trace Metals, River Coast Interaction (IGBP)</td>
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<td>Shu</td>
<td>China</td>
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<td>Nicholas</td>
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<td>Sea level rise, Coastal Geography (IGBP/IHDP)</td>
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