

LOICZ NEWSLETTER

The Coast Is Clearing CO₂

*Helmut Thomas, Yann Bozec,
Khalid Elkalay & Hein J.W. deBaar*

The CO₂ removed from the atmosphere by coastal seas has been shown in earlier studies to be disproportionately high for the area these seas cover, but those studies were not based on measurements over all seasons. A yearlong campaign was conducted in the North Sea in order to assess and explain the air-sea flux of CO₂ there. On an annual scale the North Sea is a sink for atmospheric CO₂, with the northern region being a strong sink and the much smaller southern regional weak source (Fig. 1).

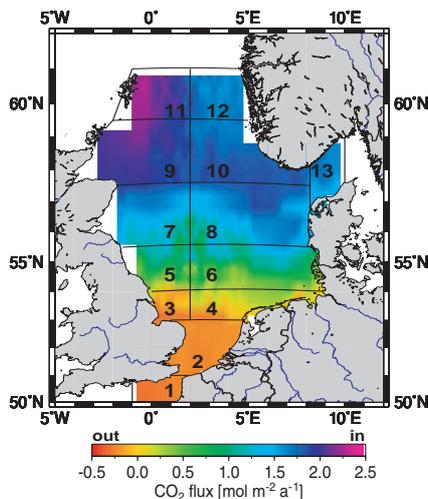


Figure 1: Annual CO₂ air-sea fluxes in the North Sea. The North Sea absorbs 1.38 mol C m⁻² per year (boxes 2-13).

The North Sea took up approximately three times more CO₂ per area unit than the ocean average, and is a remarkably efficient CO₂ pump that transported 95% of the absorbed CO₂ to the North Atlantic Ocean. Extrapolation of these data suggests that coastal seas worldwide remove 20% of the total CO₂ absorbed by the ocean.

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The LOICZ Newsletter is produced quarterly to provide news and information regarding LOICZ activities

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Si-WEBS, a European Network for the Study of Si Fluxes on Continental Margins.

Olivier Ragueneau

The C, N and P biogeochemical cycles have been major foci during LOICZ I and this will continue within LOICZ II. However, in the past 20 years, other elements have emerged as key controls of the functioning of coastal ecosystems, and these need to be taken into account in future studies. Silicon (Si) is one of these. In the following article, we first show the need to include the study of Si fluxes across Continental Margins (CM), and then describe the general approach of the Si-WEBS project, an EU Research Training Network recently funded to (i) improve our fundamental knowledge of Si transformations along the land-ocean continuum, and (ii) study the implications of an altered Si cycle on the ecology and socio-economics of the coastal zone and on the global Si and C biogeochemical cycles.

I. The need for a better quantification of Si fluxes across continental margins

1. Si and the C cycle on Continental Margins

Diatoms form the basis of some of the most productive food chains and play a fundamental role in the export of carbon towards higher trophic levels (Cushing, 1989) as well as towards the deep-sea (Goldman, 1993). They require the nutrient silicic acid (DSi) for growth. If DSi become limiting, it can cause shifts from diatoms to non-siliceous algae and are supposedly related to an increasing frequency of Harmful Algal Blooms (HABs) (review in Smayda, 1990). DSi becomes a limiting nutrient in coastal waters through several mechanisms. Diatoms consume Si/N/P in a 16/15/1 ratio. By increasing N and P inputs to the

coastal ocean or enhancing Si trapping through eutrophication and/or the construction of dams (Conley et al., 1993; Humborg et al., 2000), man has decreased the Si:N and Si:P ratios in many areas. The abundance of diatoms has declined and short-term consequences have already been observed with respect to resources and the functioning of coastal ecosystems (e.g. Turner et al., 1998). Long-term consequences are also expected with respect to CO₂ sequestration on the shelf and export to the ocean's interior (Dugdale et al., 1995).

2. Si and the C cycle in the open ocean

CMs play a filtering role with respect to Si inputs from land to the open ocean. Therefore, changing the Si cycle on CMs may affect temporal variations in DSi inventories in the open ocean. This is essential because DSi has been recognized as a limiting nutrient in several biogeochemical provinces of the ocean, with important consequences for the efficiency of the biological pump, be it in today's ocean or during the Last Glacial maximum (Smetacek, 1999; Ragueneau et al., 2000). On glacial/interglacial time scales, numerous hypotheses have been proposed to explain atmospheric pCO₂ variations. Biological pump and rain ratio scenarios imply changes in the stripping of available nutrients, or changes in the delivery of nutrients from the land-ocean interface. Mechanisms implying Si cycle have been proposed to explain changes in the past efficiency in the biological pump. Archer and Maier-Reimer (1994) and Heinze et al. (1999) made pCO₂ and CaCO₃ sensitive to the oceanic DSi concentration: increasing DSi would favour diatom production at the expense of CaCO₃ production, thus affecting global primary production, or at least its export. In addition, decreasing the alkalinity pump decreases pCO₂, and sediment compensation drives the ocean more basic to restore CaCO₃ burial to the weathering rate, further decreasing pCO₂ (Archer et al., 2000). Doubling the surface ocean DSi concentration via enhanced river input (Froelich et al., 1993) and/or atmospheric deposition (Harrison, 2000) could explain the glacial pCO₂ decrease. Thus, reconstructing past delivery of DSi from the continents becomes an important challenge.

3. Continental margins and the global Si cycle

Several past marine Si budgets (DeMaster, 1981; Tréguer et al., 1995)

attributed most of the global oceanic Biogenic Si (BSi) burial (6-7 Tmol Si yr⁻¹) to marine sediments surrounding Antarctica (4-5 Tmol Si yr⁻¹). The recent build up of Si budgets in various sectors of the Southern Ocean have led to a downward revision of the importance of the Antarctic opal belt in global BSi burial (Pondaven et al., 2000; DeMaster, 2002). If the oceans are in steady state balance, then there must be another sink for BSi. Employing marine Corg burial rates and typical BSi/Corg ratios in continental margin sediments, DeMaster (2002) suggested that BSi accumulation on continental margins could account for most, if not all, of this "missing" BSi burial, 1-2 Tmol Si yr⁻¹, which corresponds to 30-50% of the global oceanic BSi accumulation.

If true, then the Corg and BSi cycles are coupled to a greater extent than previously thought. More measurements of Si burial on CMs are to be performed to confirm this hypothesis. Importantly, this sink is to be searched, not only in the form of BSi, but also in the form of silicate minerals. Recently, the transformation of diatom-BSi to authigenic clay minerals in CM sediments was highlighted (Michalopoulos and Aller, 1995; Michalopoulos et al., 2000). On the Amazon shelf, these reverse weathering reactions represent some 20% of the riverine Si discharge, and such estimates are to be obtained for other CMs and on a global scale.

II. General approach for a global quantification of Si fluxes across CMs

Given the role of DSi in the functioning of marine (coastal and open ocean) ecosystems as well as in controlling the efficiency of the biological pump, and given the role that CMs play in the global Si cycle, both as a major filter and a potentially important repository for BSi, it becomes crucial to better understand, quantify and model Si fluxes across CMs. Reconstructing Si delivery and retention for past periods when climate was different and/or human influence lower, is extremely difficult since BSi accumulated on continental slopes and rises during glacial times, rather than on CMs due to a reduced shelf area resulting from low sea level conditions. Proxies of continental weathering, in addition, are difficult to develop. Thus, in parallel to the on-going

effort in developing reliable proxies of continental weathering, one needs to better understand and model the processes that control Si delivery to the hydrosphere, and retention along the Land-Ocean Continuum (LOC). Two complementary approaches can be undertaken: extending to Si the LOICZ CNP budgeting approach; and mechanistic modelling of Si transformations along the LOC.

1. Towards a LOICZ II, CNP-Si budgeting approach

During LOICZ I, some 200 budgets of N and P fluxes have been established around the world in order to characterize the C cycle on CMs, their contribution to carbon dioxide sequestration, and to determine horizontal fluxes of C, N and P (Smith et al., submitted). Almost no such budgets have been established for Si, although it is believed that for many of these sites, DSi data do exist (Smith, pers. Comm.). Estuaries remove between 0 and 100% of the river dissolved Si inputs, with an average close to 20% (DeMaster, 1981). However, most estimates of Si retention along the LOC are based on DSi-salinity relationships which ignore dissolution in bottom waters and surface sediments, and assume that river water and surface ocean water are the only two end members, with no further source of DSi. Actually, nutrient fluxes in the coastal ocean also depend on groundwater discharge, atmospheric inputs, benthic fluxes resulting from benthic fauna activity and early diagenetic processes, and transfer of deep-ocean water across the shelf break by upwelling or vertical mixing (Wollast, 2002). Any budgeting approach would take all these fluxes into consideration, something that has not been undertaken at a global scale for the element Si yet. Thus, the LOICZ CNP approach needs to be extended to Si, to derive as many budgets as possible for this element, such as that obtained at the Amazon river mouth by DeMaster and Aller (2001). Principle investigators in charge of the N and P budgets published on the LOICZ web site are being contacted to discuss the availability of the corresponding Si data.

2. Mechanistic understanding and modelling of Si transformations along the LOC

The natural processes that control DSi delivery to the hydrosphere, and its retention along the LOC are numerous

and their interactions complex. In addition, Man is decreasing the Si input to coastal waters, through eutrophication (Schelske and Stoermer, 1971) and river manipulation (Humborg et al., 1997). The coastal Si cycle is being modified by the proliferation of invasive species (Ragueneau et al., 2002; in revision) and anthropogenic additions of Si are suspected (van Dokkum et al., 2004). The basic knowledge to quantify this anthropogenic impact and deconvolute the natural and anthropogenic signals is yet insufficient, because all factors are strongly interdependent and non-linear. Thus, a simple budget approach is not sufficient; process studies are needed to better understand each controlling factor, and comprehensive modelling of Si transformations along the aquatic continuum through the coastal zone under several of the many pressures is required, to study all possible interactions between these controlling factors, and evaluate the ecological, biogeochemical and socio-economical impacts of these transformations.

Within the European FP-V, the Research Training Network Si-WEBS (natural and anthropogenic modifications of the Si cycle along the land-ocean continuum: Worldwide Ecological, Biogeochemical and Socio-economical consequences) will work towards four specific objectives; (i) to improve our fundamental knowledge of the (de)coupling between Si and C biogeochemical cycles in rivers, coastal zones and open oceans, first separately then during their interactions, (ii) to build quantitative modelling tools to describe Si transformations and the (de)coupling with C along the land-ocean continuum, (iii) to use these tools to evaluate the ecological, biogeochemical and socio-economical consequences of an altered Si cycle along the LOC, and (iv) to provide innovative tools (early warning indicators, a coupled river/coastal zone model) that will include Si as a key parameter for coastal ecosystem management.

Details on the training programme conducted within Si-WEBS, as well as on the research programme, in terms of experimental work, modeling and data management, can be found at www.pangaea.de/Projects/Si-WEBS.

For further details and contacts, especially concerning the build-up of the Si data base in coastal waters, contact O. Ragueneau, UMR 6539, Institut Universitaire Européen de la Mer,

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Letter of the Chairs of the IGBP SC; the IHDP SC and the LOICZ SSC

The past decade has seen a substantial shift in research conducted under the auspices of the IHDP and IGBP. Environmental concerns have been

dominated by the emerging awareness of how human activities are influencing those aspects of Earth system functioning upon which the welfare and future of human societies rely. These insights promoted a new generation of research on global environmental change, which focuses explicitly on coupled human-environment systems rather than exploring specific elements of socially or biophysically controlled domains as distinct subsystems.

The Earth's coastal zones are one of the study areas where changes in various components of the Earth system affecting and altering their role in global cycles have been observed. Coastal zones are relatively small but highly productive, dynamic and sensitive. They provide a significant proportion of the life support systems of most societies. The delivery of goods and services from these systems depends strongly on multiple trans-boundary interactions with the land, atmosphere, open sea and sea bottom. Hence, LOICZ in its first life cycle, when the project used to be a core project of the IGBP, focused its work mainly on the exploration of key biogeochemical features of these changes.

It has become clear, however, that irrespective of the improved understanding of coastal system metabolism, the understanding of the complex interactions between society and environment in coastal zones under global environmental pressures is still limited. Growing populations are accelerating the exploitation of coastal landscapes resources in some places, with potential increasing impacts on the natural processes. Many coastal areas are in turn subject to increasing risks to natural and man-induced hazards. A considerable body of work has provided insights into various related themes such as coastal communities under stress, the role of institutions in managing the commons, energy transfers across coastal zones and depletion of marine resources.

The new LOICZ has identified an understanding of the relevance of global change in coastal systems and feedbacks into the coupled natural and societal systems as essential for appropriate management of coastal zones. However, our understanding of regional and global changes that impact coastal systems is hampered by traditional disciplinary fragmentation. Consequently, with the new LOICZ a deliberate attempt has

been made to provide an integrated framework to address the primary issues of sustainable human use of coastal systems. This new work will differ from previous work in that it would examine to a much greater extent the linkages amongst various sectors and regimes in the coastal zone rather than viewing each sector and regime in isolation. Further, an important underlying principle of the new LOICZ framework is to continuously engage in a "science-policy-public" dialogue addressing scientific information needs as well as human development and implementation issues.

Following on earlier considerations about mutual agendas and potential for co-operation, the issue of support of IHDP was agreed on at the SC IHDP Meeting in 2004. The LOICZ SSC and the IGBP SC reinforced again the strong and serious interest in a close scientific co-operation with IHDP in this subject matter. The Science Plan of the new LOICZ saw considerable input in its final phase from representatives of all IHDP core projects. After approving the new LOICZ Science Plan in March 2004, the new LOICZ has now become a core project of both IGBP and IHDP. Formal governance of LOICZ will remain with IGBP, but both programmes will give scientific support and close interaction with IHDP will be aimed for. The partnership was affirmed by four IHDP representatives with close connections to the core projects having joined the LOICZ SSC, including Felino Lansigan as second vice-chair along with Jozef Pacyna.

The ultimate objective of the new LOICZ is to provide improved integrative and policy relevant scientific understanding of the coupled biogeochemical, physical and human dimensions of coastal change. The new LOICZ strategy will enhance the understanding of the biophysical process and link them to cultural and societal values and priorities for coastal zone management. IGBP and IHDP have entered this partnership to contribute to the sustainable human use of coastal systems and we all look very much forward to a fruitful and inspiring exchange of ideas and knowledge in this critical endeavour.

Signed:

Guy P. Brasser (IGBP SC Chair), Coleen H. Vogel (IHDP SC Chair) & Liana Talaue-McManus (LOICZ SSC Chair).

**15th LOICZ SSC and
1st Regional Nodes Meeting,
Singapore 4-6 June 2004
– where to go LOICZ II?**

Kindly hosted by the LOICZ Regional IPO Node in Singapore, the 15th SSC Meeting followed by the first Regional IPO Nodes Meeting took place at the Executive Centre of Nanyang Technological University. It was the first SSC meeting whose compliment reflected the joint scientific sponsorship of LOICZ by the IGBP and the IHDP reflecting the re-orientation of LOICZ to more wholly include human dimension elements of coastal zone change. The development of a distributed Project Office structure reflects the new orientation of LOICZ and will play an important role facilitating regional LOICZ activity as well as linking with other regional institutes and programmes.

LOICZ II will build upon the successful outcomes from LOICZ I and now has a clear vision of its niche within IGBP and the wider ESSP community that focuses upon four areas:

1. LOICZ is global.
2. LOICZ can provide a broader context for coastal zone change outside of traditional natural and social science boundaries.
3. LOICZ provides a synthesis across disciplines, geography and global, regional, national and local scales.
4. LOICZ can generate different outputs appropriate for communication beyond its immediate peer group.

The interdisciplinary character of the LOICZ II research requires each of the Themes to have leadership from both IGBP and IHDP communities. In response, the SSC decided to:

- a) install a second Vice Chair position and we are glad to announce that Felino (Ino) Lansigan duly accepted his nomination in recognition of his links with LUCC and experience of working in projects with joint affiliation, and
- b) to have joint Theme coordination drawn from IGBP and IHDP SSC members for each Theme with one designated as the main coordinator.

The SSC also decided that Theme coordinators should be supported by a

wider task group from the SSC. Each Theme will aim to:

- Provide a scientific framework for the project lifetime;
- Provide an enabling platform for assessment and synthesis;
- Provide a focus for a flexible agenda of research topics that inform across the scales of the Earth System questions as well as national and local management needs;
- Operate as an integration and synthesis mechanism;
- Provide a home for a flexible group of scientists and disciplines.

A further mechanism to achieve the LOICZ II goals is to ensure that there are strong collaborative links with, not only the human dimension community, but also with the broader IGBP/ESSP projects with designated members of the SSC fulfilling liaison roles.

LOICZ II will implement a revised structure to its SSC that allows for an optimal and effective implementation of the project and captures appropriately experienced and representative scientists. As well as the “normal” SSC complement, to involve both more experienced senior individuals and also young active scientists contributing science to LOICZ, as well as their Organisations, institutional backing and regional networks, a category of “Corresponding Membership” will be designated. In order to expedite continuity in LOICZ, and keep earlier SSC members and their invaluable contributions to LOICZ involved, a second category will be established – the “Ex-Officio Member”.

The SSC also addressed the legacy of LOICZ I and its implications for the second phase. LOICZ II currently has the difficult position of maintaining and further developing outputs from LOICZ I, in particular the coastal typology and its supporting visualisation and clustering tools and budget datasets. As a consequence, further development of the typology is seen to be a key cross-cutting activity that needs to be promoted and support mechanisms identified. LOICZ will hold a workshop on the future direction and development for data management and typology needs to include representation from a variety of existing data management and typology projects as well as the expertise from within LOICZ.

LOICZ continues to attract support from sponsoring organisations but the funding base needs to be enlarged and diversified focussed on the science needs in each Themes. Sourcing funding will be a critical role for the distributed Nodes since many funders only fund at a regional level.

In the same context the SSC addressed the need to relocate the Central IPO post 2005 after termination of the generous 13 years of Dutch funding.

During the following first Regional IPO Nodes Meeting it was reaffirmed that there is a need for these Nodes to be able to facilitate the greatest buy-in to LOICZ II in their region, both from a funding as well as science perspective, and that ToR need to be established to enable this to take place. However, although research is the bread and butter of LOICZ, and therefore the most important activity, addressing Regional and National interests will also be important to ensure that LOICZ has the widest support. One major advantage of these Nodes as compared to, for instance, regional projects was seen in the fact that their operations within the regions won't be limited to usual project lifetimes and cycles.

The operation of Regional IPO Nodes should offer an opportunity for LOICZ to more effectively engage a broader and wider community of scientists with LOICZ and each other regionally. It will be critical to highlight that affiliation to LOICZ can add value to existing and future activity by regional scientists with benefits flowing both to them individually as well as to LOICZ. To achieve this it is going to be important for LOICZ to determine a Regional Implementation Strategy that is based on a close association between Regional IPO Nodes and their ‘local’ SSC members so that networking is not confined to the immediate funded project base. The Nodes Meeting agreed on a task list for Regional IPO Nodes that included

- *Synthesis* of patterns of change and trajectories in the region's coast and implications to policy and management (Mandate of the Regional Node). This provides a context for articulating a regional implementation based on the scientific framework provided by the Science Plan.
- Maintenance of a directory and database of existing, planned and needed projects (part of the LOICZ database),
- Establishment of a directory of coastal scientists,

- Provision of regionalised training and education materials.
- Promote inter Node interaction (e.g., North-South, South-South exchanges).
- Expectations to network among relevant national, regional activities in and beyond the IGBP:

This includes;

 - Establishing linkages with regional and national committees,
 - Providing value added services to scientists (scientific and aiming to reduce individual search costs),
 - Identifying thematic regional experts to support Themes (also the inaugural meeting of LOICZ II),
 - Linking with other regional GC projects,
 - Linking with regional funding agencies including, for example, approaching GEF,
 - Encourage regional/national LOICZ activities.

Finally the SSC resolved to adopt the recommendation that the Inaugural meeting of the LOICZ II be held in the Netherlands between 27 June and 1 July 2005 associated with the 16th SSC Meeting. This congress is expected to take stock and point to the future directions of LOICZ II.

The Chair and IPO thanked the local hosts, Jasmine Foo and Lawrence Koe for their excellent support and the warm hospitality which made this complex meeting a splendid experience to all of us and a success for LOICZ in its challenging transition.

Global learning in Ocean Science – summary of IOI workshop

At an International Ocean Institute (IOI) workshop entitled “Global Learning in Ocean Science” held in Bremen, Germany, Jeremy Hills (Envision Partners LLP) represented LOICZ. This international workshop brought together many individuals involved in courses for training and outreach in ocean science. The workshop heard presentations from academics involved in postgraduate and short-course provision as well as from experts in distance learning and credit transfer. Represented at the workshop were a variety of academic institutions, as well as the International Oceanographic Commission (IOC), and a donor agency. Following these presentations

the workshop divided into thematic groups to try to formulate a framework for developing ocean science training and education within the IOI network; this was followed by an internal IOI meeting which consolidated the outputs from the workshop. It is envisaged that IOI will be externalising its Learning in Ocean Science strategy over the coming months, informed by this workshop.

LOICZ, in collaboration with Envision Partners LLP (UK), Centre for Maritime Research (Univ. of Amsterdam, The Netherlands) and the Centre for Academic Development (Univ. of Newcastle, UK) gave a presentation entitled “Training needs for cross-sectoral environmental management in contested space”. This presentation considered the differences between capacity and capability as well as multi-disciplinarity and cross-disciplinarity. It then used this concept as a backdrop to explore the development of curricula which develop capacity in a cross-disciplinarily way to address the complexity of coastal and marine management. It showed examples from the Tropical Coastal Management MSc at the University of Newcastle and a donor-funded project for the Ministry of Environment and Forests in India, in which the complexity of the management context has been effectively taught to both the scientific and non-scientific sector. The development of capacity in cross-disciplinary science is a core requirement for the achievement LOICZ II outreach and dissemination goals as outlined in the Science Plan.

Reflecting on the workshop the wide range and diversity of provision in ocean science was encouraging. Developments such as the Nippon Foundation’s International Ocean Governance Framework (presented by Prof. Robin South), the Capacity Building Strategy of IOC (presented by Dr Ehrlich Desa) as well as the developing strategy of IOI, suggest that some of the sectoral discipline “myopia” of the last decades may be in the future less of a barrier to management of the earths oceans and marine resources.

Crisis in Global Governance

LOICZ was represented by Russell Arthurton at the one-day conference *Crisis in Global Governance* held in London in June. The conference was held by the Stakeholder Forum (<http://www.stakeholderforum.org/>)

with the aim of assessing progress in achieving the development goals set out four years ago in the United Nations Millennium Declaration. Keynote speakers included Margaret Beckett, UK Secretary of State for Environment, Masood Ahmed, Director General of the UK’s Department for International Development (DfID) and representatives of UNEP and UNDP.

The meeting reported there had been slippage in achieving the goals and there was an urgent need to ‘get back on track’. The importance of addressing the environmental dimensions of the goals was stressed alongside poverty reduction strategies. The UK’s two priorities were Africa and Climate Change. Climate change was considered the single most significant factor affecting progress, especially in Africa, with the strong linkage accepted between development and climate change. There was a need for developing countries to lead their own national efforts through initiatives such as NePAD (New Partnership for African Development), with ownership and space to determine their own needs. Some national strategies still failed through poor governance to reflect real environmental concerns and poverty needs on the ground, and the need for changes in donor provision, e.g. by the harmonisation and rationalisation of the efforts of large numbers of donors, was recognised. There was a need for good governance at all levels – local to global.

Ecological pre-conditions are necessary for success in achieving the goals. Climatic disruption, freshwater shortage, the collapse of fisheries, soil erosion, the degradation of biodiversity were all risks in the achievement of progress, along with resource pressure conflicts, migrations and famines. Institutional quality was seen as fundamental to development, especially at national level. The political will to attain the goals was vital but to be effective this had to be driven by Civil Society.

Workshop sessions at the conference reviewed the present position and challenges of poverty eradication followed by the compilation of proposed solutions and recommendations that would help to achieve the M.D. goals. Topics included environmental sustainability with a focus on biodiversity and climate change. A conference report will appear at www.stakeholderforum.org.

IPO NOTES

The LOICZ SSC has welcomed four additional new members identified by the IHDP who will be introduced here below:



Alison Gilbert

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received her Masters degree in Environmental Studies at the Macquarie University in Australia. Alison Gilbert works as a Senior Research associate at the Institute for Environmental Studies at the Free University in Amsterdam, the Netherlands.

Early work and academic experience focused on coastal zone management, in particular the environmental impacts and benefits of the alternative management strategies for a coastal lagoon in metropolitan Sydney. Over the last 20 years her work has focused on the development of techniques to assist in the analysis of interactions between economic activities and ecological processes. The concept of sustainable development has figured in much of this work. The techniques include simulation modelling (including mixed input-output modelling), natural resource accounting, indicators for sustainable development and performance indicators for comparing management options. The focus has always been on the support which the use of these techniques could provide to environmental management and policy development.

This is illustrated by several recent projects. The value of a mangrove ecosystem in the Philip-pines was assessed under alternative management strategies. The project also estimated the costs of unsustainability should management alternatives fail to be sustainable, as well evaluating alternatives on the basis of equity and environmental quality as well as economic efficiency. The approach taken in this project has been extended in

three additional projects dealing with trans-boundary rivers, wetland restoration, and catchment-coast interactions. Management alternatives are being compared in terms of changes to the topology of the complex networks which map interactions between socio-economic actors and members of ecological communities.

Alison is currently coordinating the Eutrophication Work Package within the ELME project (European Lifestyles and the Marine Environment) and is a member of ELME's core group. This research activity will relate trends in eutrophication in European seas (Baltic, Black, Mediterranean, and NE Atlantic) to trends in European lifestyles, with a view to assessing future states of these seas.

She has been an editor of the Journal for Environmental Management for a number of years and recently took up the position of Managing Editor of a new journal, Environmental Sciences.



Dr Elena Andreeva

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is a Chief of the Laboratory of Regional Studies in the Institute for System Analysis, Russian Academy of Sciences (RAS). She is also a leading researcher in the P.P. Shirshov Institute of Oceanology, RUS, Shelf Department. She received her PhD on social and economic geography in 1981. Her main subject of studies was the anthropogenic impact of oil and gas activity in the northern regions on ecological and social systems. After that her interests were focused on the resource use and resource management in the arctic and northern areas, changes in social environment as a result of natural processes and economic transformations after the break-up of the USSR.

Being a senior researcher of the Institute of Geography, RAS, Dr. Andreeva has been working since 1989 as an expert of Interagency Arctic Commission, expert of the Ministry of Natural Resources and Protection of Environment of Russian

Federation, participating in the work of State Expert Commissions regarding Final Environmental Impact Assessments of many industrial projects. During this period she devoted much time to investigations of the interactions of federal and local authorities in the field of protection of rights of indigenous peoples, resource use of renewable and non-renewable resources, reasons and mitigation of regional conflicts that appear during these processes under the new political and economic situation in Russia. One of the most important issues of her studies was analysis of the current legislation that should control the activity of large industrial companies and other stakeholders involved in resource use, support of interests of local population. The results of her studies were implemented by the State Committee on northern affairs and local administrations of the northern regions. Over the last 9 years she has worked as a Chief of Laboratory in the Institute for System Analysis and is involved in many international projects. These include; principal investigator of the Russian-Canadian project "Arctic Bridge" that developed the model of cooperation between Murmansk region and Manitoba province on the base of natural and social resources including renovation and expansion of port facilities; Norwegian-Japanese-Russian Project on the Northern Sea Route (INSROP). She investigated its impact on regional development of coastal zone in Nenets Region. In the IASC project "Land-Ocean Interaction in the Russian Arctic" (LOIRA) she chaired the special human dimension focus – social and economic changes in arctic coastal zone.

She was a member of the SSC of the international project "Institutional Dimension of Global Environmental Change" in the framework of the International Human Dimension Program in 1999-2001, participating in the flagship activity "Performance of Exclusive Economic Zone". Simultaneously her links with the LOICZ project became closer after involvement in the LOICZ Synthesis and Future Meeting "Coastal Change and the Anthropocene", that was held in Miami, 2002. There she participated as a member of theme "River Basins and Human development" and as a co-author of LOICZ R&S issue on Russian Arctic River Basins and coastal zone.

Since 1998 she is a member of the national research team that is working out conceptual and methodological

aspects of the coastal zone development in the Russian Federation in the Federal Program "World Ocean". Her recent studies are connected with assessment of social efficiency of use of space and natural resources in coastal zone, mechanisms of coordination of efforts of different resource users in these areas and interaction of federal and local authorities in resource management and regional planning.



Prof. Eva Roth
(er@sam.sdu.dk)

has joined the LOICZ Scientific Committee in her capacity as an environmental economist. She was originally educated at University of Copenhagen (1974-1981) and has been based in Esbjerg, Denmark for most of her career – only interrupted by 2 years as DANIDA expert in Zambia in Southern Africa (1989-1991). Today she holds the position as Associate professor at Department of Environmental and Business Economics at University of Southern Denmark, campus Esbjerg.

Eva Roth's research interests focus especially on resource economics and the conflict areas between economics on one side and policy/management issues as well as the natural sciences on the other. The object of the studies has been fish in the freshwater, coastal and marine environment in its broadest sense and especially the interaction between the resources and the society. Fisheries management, sustainability, aquaculture, recreational fishery, food safety, globalisation and international fish trade has had her interest. The methodologies engaged has most often been descriptive economics, marked survey techniques and non-market valuations

Eva Roth teaches environmental and resource economics to both economists and biologists, as well as descriptive economics. She is elected County Councillor at County of Soenderjylland and does a few private consultancies for both national and international institutions each year.



Dr Felino P. Lansigan
(fpl@instat.uplb.edu.ph)

is a Professor of Environmental Statistics at the University of the Philippines Los Baños (UPLB). He is also serving as affiliate Professor of Land and Water Resources at the UPLB College of Engineering and Agro-industrial Technology, and also Affiliate Professor of Environmental Science at the UPLB School of Environmental Science and Management.

Since obtaining his PhD in hydrology and water resources from Colorado State University in 1982, he has been involved in research on environmental statistics, hydrology and water resources development and management, and on the use of systems modeling and other systems research tools in agro-ecosystem and natural resources management. His current recent research work includes vulnerability assessment and risk analysis of agro-ecosystems and coastal areas due to global changes as well as analysis of appropriate strategies and measures for mitigation and adaptation.

Felino earlier served as research coordinator of a collaborative research cum training project on the use of systems analysis and simulation modeling tools in agricultural research and development in Asia from the mid 1980s until the early 1990s. This research network (1986-1995) involved more than 150 multidisciplinary scientists from 12 participating national agricultural research systems (NARS) in Asia and the Netherlands.

He was Coordinator for the Philippines of the GCTE Impacts Center for Southeast Asia (IC-SEA), and also served as trainer in its training program on impact assessment studies of global environmental change. He was also Team Leader for the Philippines of the research project on Systems Research Network for Ecoregional Land Use Planning in Tropical Asia (SysNet).

Ino spent his sabbatical from 2001-2002

at the International Water Management Institute (IWMI) in Bangkok, Thailand where he researched on exploratory analysis and simulation modeling for multiple use options in land and water resources management.

He also actively participated in scoping activities of earlier as well as more recent global change research initiatives such as the Climate Variability and Agricultural Productivity (CLIMAG), the Global Environmental Change and Food Systems (GECAFS), the Land-Ocean Interactions in the Coastal Zone (LOICZ)-Phase II, and the Global Water Systems Project (GWSP).

Dr Lansigan is currently a member of the scientific steering committee of the Land Use and Cover Change Program (LUCC), and is National Coordinator of the International Human Dimensions of Global Environmental Change Program (IHDP), and the Philippine contact person of the International Geosphere-Biosphere Programme (IGBP).

Changing Global Coasts – a Society's Edge

**Seeking a new home for
the LOICZ II Central
International Project Office,
IPO**

The International Project Office (IPO) has been hosted by the Royal Netherlands Institute for Sea Research (Royal NIOZ) at Texel, the Netherlands since 1993 with generous funding from the Dutch Government. From January 2006 LOICZ will need to relocate its central IPO and is looking for a new hosting institution and National funding. The requirements of the LOICZ IPO office are:

- Funding for up to 3 positions – Executive and Deputy Executive Officers and an Office Manager.
- Office space and running costs – (this provision can be in-kind support).
- Travel costs – this supports planning, technical and regional workshops, conferences and overall promotion of the LOICZ project.
- Scientific synthesis – the project office plays a key role in synthesizing and disseminating LOICZ science outputs.

Within a distributed IPO structure of the LOICZ II this central IPO – Node will overlook and facilitate the operations of the other regional IPO Nodes and with them collectively implement the SSC

decisions. The tasks of the LOICZ IPO as determined in the Science Plan and Implementation Strategy include:

- Management of the project on a day to day basis.
- Coordination of national, regional and international research efforts.
- Provision of project advocacy and promoting wide international participation.
- Ensuring effective co-ordination with other components of the IGBP, IHDP, and other relevant international research programmes.
- Network building and communications
- Dissemination of information including research results and advocacy
- Securing support for the operation of the IPO as a whole

There are substantial benefits to the hosting institution and country from hosting the LOICZ IPO that include:

- Recognition as a key player in fundamental and applied coastal research.
- immediate global outreach and involvement into an active global network of currently 2500 scientists and institutions
- Attracting significant Regional and International funding.
- Opportunity for local scientists to participate in regional and international programmes

More information will be posted on the website or you can contact the LOICZ IPO.

HAVE YOU SEEN

As of 1 September 2004 **Professor Kevin J. Noone** will take on the position of Executive Director of IGBP. The LOICZ SSC and IPO staff welcome Kevin and look forward to working with him.

The Center of Ecology, Fisheries and Oceanography of the Gulf of Mexico and the School of Chemical and Biological Sciences of the Universidad Autónoma de Campeche, Mexico opened its masters programme in Integrated management of Coasts and Oceans.

For information please visit: <http://etzna.uacam.mx/epomex/maestria.html> or e-mail: epomexmaster@uacam.mx

Call for research grant applications from developing country researchers at the International Foundation for Science (IFS). Go to: www.ifs.se

New Centre for Marine and Atmospheric Sciences (ZMAW) in Hamburg, Germany. More information and the complete press release can be found at: www.alderbaran.org/zmaw_presse

20 September- 1 October 2004, Lalonde-Les Maures, France: A GODAE Summer School: **An integrated view of oceanography: Ocean Weather Forecasting in the 21st century. For information visit:** http://oceanmodeling.rsmas.miami.edu.godae_school and www.cnes.fr/colloque/ or e-mail **Josiane Brasseur** at meom@hmg.inpg.fr

WHAT'S ON THE WWWEB

The LOICZ IPO has launched a new web-site please update your links to the LOICZ web-site with the new url: www.loicz.org

The report "Living with Coastal Erosion in Europe: Sediment and Space for Sustainability", commissioned by the European Commission is available at: www.euroasion.org/reports-online/reports.html

The report "Five Years of Regional Progress Towards Sustainable Development", submitted by Baltic 21 to the Prime Ministers of the Baltic Sea States is available at: www.baltic21.org/?monitoringsd#2004

APN Coastal Fluxes Project- Final report available at: www.nsf.ac.lk/slaas/cfweb

New website of The Global Runoff Data Centre (GRDC) at <http://grdc.bafg.de>

Web-site of International Center on Research El Niño: www.ciifen-int.org

IGBP/SCOR Ocean Vision. To download the Ocean Vision and also a summary article please go to www.igbp.kva.se/ocean/ the articles can be downloaded from the bottom of the page.

LOICZ/IGBP/IHDP CALENDER

For a complete list of future meetings and regular updates visit our web-site at www.loicz.org and click on 'Calendar'

27 September- 8 October 2004, Mexico City, Mexico: The Inter-American Institute for Global Change (IAI) and the National Institute of Ecology of Mexico (INE) will jointly hold an Institute on Urbanisation and Global Environmental Change in Latin-America. An additional collaborator is the International Human Dimensions Programme (IHDP). Application deadline: **6 August 2004**. For more information please visit: www.institutes.iai.int/2004UGEC.htm

13-16 October 2004, Halifax, Canada: SOLAS Open Science Meeting. Register at: www.uea.ac.uk/env/solas/ss04

24 October-6 November 2004, Nicoya, Costa Rica: IHDP-IAI Global Environmental Change Institute on Globalisation and Food Systems. Scientific Workshop and Science-Policy Forum. For application procedures please visit: www.ihdp.org (form under "news" section) or e-mail Ms. Maarit Thiem at thiem.ihdp@uni-bonn.de

28-30 October 2004, Amsterdam, the Netherlands: First call-Joint Land Use and Cover Change (LUCC) and the European Forum on Integrated Environmental Assessment (EFIEA) international workshop on Integrated assessment of the land system: The future of land use. www.lucc.nl

15-18 November 2004, Moscow, Russia: FIRST ANNOUNCEMENT 7th International Workshop "Land-Ocean Interactions in the Russian Arctic" (LOIRA). For registration, abstracts and information please contact Dr. Vyacheslav Gordeev (gordeev@geo.sio.rssi.ru or fax: +7-095-1245983) or Dr I. Nemirovskaya (nemir@geo.sio.rssi.ru). Deadline for registration: 15 September 2004.

CHANGE OF DATE: 15-18 November 2004, Portoroz, Slovenia: European Conference on Coastal Zone Research: an **ELOISE** Approach. For more information and registration please visit: www.nilu.no/projects/eloise

3-4 December 2004, Berlin, Germany: IT (Industrial Transformation) endorsed "Greening of policies-Interlinkages and Policy Integration" 2004 Berlin Conference on the Human Dimensions of Global Environmental Change. Call for papers-deadline: **15 August 2004**. More information at www.fu-berlin.de/ffu/akumwelt/bc2004/index.htm

OTHER MEETINGS

28 August- 3 September 2004, Rome and Ponza Island, Italy: 4th Annual Conference - International Geological Correlation Program Project No. 464 - Continental Shelves During the Last Glacial Cycle: Knowledge and Applications. For details please go to: <http://tetide.geo.uniroma1.it/IGCP464/>

12-15 September 2004, Seattle, USA: 2nd National Conference on Coastal and Estuarine Habitat Restoration – Weaving Restoration into the Tapestry of Coastal Life. For detailed conference information visit: www.estuaries.org

23-24 September 2004, Venice, Italy: SCOR Meeting on Coordination of International Marine Research Projects. For meeting information go to: www.jhu.edu/scor/ProjCoord.htm

4-8 October 2004, Merida, Yucatan, Mexico: Coastfish Conference-Coastal Fisheries in Latin America and the Caribbean “ Assessing, Managing and Balancing Actions”. For information please visit: www.mda.cinvestav.mx/eventos/Coastfish/ or e-mail coastfish@mda.cinvestav.mx

13-16 October 2004, Montreal, Canada: 5th workshop of the IASC-IPA project Arctic Coastal Dynamics (ACD). For information go to: www.acd2004.mcgill.ca

25-29 October 2004, Monte-Carlo, Monaco: Within the framework of the International Conference on Isotopes in Environmental Studies-Aquatic Forum 2004, the Commission on Groundwater-Seawater Interactions (CGSI) is organizing a special session on Groundwater-Seawater Interactions in Coastal Zones. For more information please go to: <http://www-pub.iaea.org/MTCD/meetings/Announcements.asp?ConfID=118>

23-25 February 2005, Bonn, Germany: International Conference on Integrated Assessment of Water Resources and Global Change: A North-South Analysis organized by GWSP/GLOWA/HELP. Deadline for submission of abstracts: **30 September 2004.** Visit: www.zef.de/watershed2005

1-3 March 2005, Bac Lieu Province, Mekong River Delta, Vietnam: International Conference on Effective land-water interface management for solving agriculture-fishery-aquaculture conflicts in coastal areas. Please visit: www.iwmi.cgiar.org/Assessment/files/SWIM2_conference_2005_announcement2.htm

5-8 April 2005, Havana, Cuba: 1st Cuban Convention of Earth Sciences-Exhibition of New Technologies and Services: “Coastal Transformation and Global Change. Present, Past and Future”. For circulars go to www.scg.cu

11-13 April 2005, Algarve, Portugal: Water Resources Management 2005- 3rd International Conference on Water Resources Management. Please visit: www.wessex.ac.uk/conferences/2005/waterresources2005/cfp.html

20-22 April 2005, Barcelona, Spain: 4th International Conference on Maritime Engineering, Ports and Waterways. For details about the conference objectives, topics and submission requirements: www.wessex.ac.uk/conferences/2005/ports2005/cfp.html

9-13 May 2005, Hong Kong SAR, China: International Workshop on Sub-aerially exposed continental shelves since the Middle Pleistocene climatic transition. For information please contact Dr Wyss Yim by e-mail: wssyim@hku.hk.

11-13 May 2005, Santiago de Cuba city: CariCostas 2005: 2nd International Conference on Integrated Coastal Zone Management. For information please e-mail: PhD Pedro Beaton Boler at pbeaton@rect.uo.edu.cu or pbeaton@pbs.uo.edu.cu or PhD Liliana Gomez Luna at lilimagl@yahoo.com

4-6 July 2005, Utrecht, the Netherlands: 4th International Symposium on Non-CO2 Greenhouse Gases (NCGG-4) Science, Control, Policy and Implementation. More information at: www.ncgg4.nl

6-9 September 2005, Bologna, Italy: 3rd International Conference River Basin Management. For details about the conference objectives, topics and submission requirements please visit:

www.wessex.ac.uk/conferences/2005/rm2005/cfp.html

19-21 September 2005, La Coruña, Spain: 3rd International Conference on Fluid Structure Interaction. Call for papers. For more information and submission of abstracts go to: www.wessex.ac.uk/conferences/2005/fsi2005/cfp.html

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- B. I only want to receive the newsletter electronically by receiving an e-mail with the newsletter as PDF file attached, and no longer as hard copy.
- C. I want to receive the newsletter as a hard copy as I do now, but also as by either 1. Alert or 2. PDF file attached.

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