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EMECS NEWSLETTER

A Letter from Hyogo

●Hyogo Prefectural Goverment, Japan●

No. 4

EMECS '93, Baltimore, Maryland, U.S.A.

Toward Effective Governance

The Second International Conference on the Environmental Management of Enclosed Coastal Seas (EMECS '93) will be held November 10 - 13, 1993 in Baltimore, Maryland, U.S.A. The conference is sponsored by the state of Maryland and the University of Maryland, together with the Environmental Protection Agency (EPA), the National Oceanic and Atmospheric Administration (NOAA), the states of Virginia and Pennsylvania and the District of Columbia, and the Chesapeake Bay commission, which are promoting efforts to preserve the environment of Chesapeake Bay, one of the most important enclosed coastal seas in North America.

As one of the main proponents of the EMECS conferences, and as head of the Governors' and Mayors' Conference on the Environmental Protection of the Seto Inland Sea (made up of 18 prefectures and cities bordering the Seto Inland Sea, the largest encloses coastal sea in Japan), Hyogo Prefecture has been cooperating with the state of Maryland and the University of Maryland to help make the next EMECS '93 conference a reality.

EMECS '93 will be held at the Baltimore Convention Center in Baltimore. Attendance is expected to exceed the 1200 participants who participated in the first EMECS conference.

Detailed information on the conference (conference program & registration information) was given in the 3rd Announcement published in August. The following is a brief summary of the pertinent information:

- Sessions

The presentations will be organized in six sessions (Track A - Track F), with the following themes.

(1) Philosophy and Policy
(2) Citizen Involvement
(3) Governance
(4) Science & Research
(5) Case studies
(6) Special Problems

- Plenary Session

The plenary session to be held following the conference opening on November 10 will feature a panel discussion on the topic"Joining Science, Governance and Citizen Involvement. "The discussion will be moderated by David Carroll, Secretary of the Maryland Department of the Environment, and the panel will consist of Carol Browner, Administrator of the U.S. Environmental Protection Agency, speaking on the need for preservation of coastal areas; Alicia Barceña, executive director of the World Council, speaking on community participation; Patrick M. Holligan, chair of LOICZ planning committee of Great Britain, speaking from an academic point of view, and from Japan, host country of the first EMECS conference, Takeshi Goda, professor emeritus of Kyoto University.

- Coastal Forum

On November 12, a forum will be held on the topic"Resolving Our Coastal Conflicts."It will feature an international panel of specialists in the area of preserving enclosed coastal seas, discussing a case study of a fictional area called the Madrigal Sea. Lively debate is expected on the dilemmas posed by this challenging case study by participants from around the world using real-life experiences from their own nations.

- International Bazaar

In addition to the poster and video sessions, the afternoon of November 11 will

Welcome from Governor Schaefer

William Donald Schaefer
Governor, State of Maryland, U.S.A.

For many years we have labored to protect and restore one of the world's great estuaries: the Chesapeake Bay. I believe that the progress we have made can serve as a model for other coastal bays and seas around the globe. But I know, too, that we can learn from what others have done in their regions - in Asia, Europe, Africa, South America, the Caribbean and elsewhere. By sharing what we have learned about environmental management, we can take another large step toward our final goal: the responsible stewardship of these very special places.

Please accept my personal invitation to join us in Baltimore, Maryland for EMECS '93. We are proud to continue a tradition which began in Kobe, Japan in 1990 at the first EMECS conference, and we look forward to showing you one of the world's great cities - Baltimore - and one of the world's great coastal seas - the enchanting Chesapeake Bay.

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Baltimore Convention Center

also feature an international bazaar. All delegates to EMECS '93 are asked to bring an article from their home with an environmental theme (i.e. a badge, coffee mug, T-shirt, picture, sculpture, poster, etc.) to donate to the International Bazaar. Proceeds from the sale of these items will go toward a travel scholarship to assist delegates to the next EMECS conference.

- Japan Day Reception

After the sessions end on November 12, the Japan Environment Agency and the Governors' and Mayors' Conference on the Environmental Protection of the Seto Inland Sea will invite all EMECS '93 delegates to come to the Stouffer Hotel near the conference site for a "Japan Day Reception" This will be a buffet-style reception aimed at facilitating exchanges between governmental representatives and researchers who have come from around the world for this conference. Speakers will include Jiro Kondo, chairman of the Science Cuncil of Japan, and representatives from the Environment Agency. Panel displays introducing efforts at environmental management in the Seto Inland Sea will also facilitate the exchange of information.

- Registration

Participants should send the registration form together with a check or money order in U. S. dollars payable to"University of Maryland, EMECS '93"to the conference secretariat. Fees are as follows;

Registration Fees

Delegate	$275.00
Student (3 days)	$150.00
Single Day Registration (delegate)	$92.00
Single Day Registration (student)	$50.00

Checks should be sent to:

EMECS 93
Sea Grant Program
Skinner Hall
University of Maryland
College Park, Maryland 20742-7640 U.S.A.
Tel: +1 (301) 405-6381
Fax: +1 (301) 314-9581

Delegates will receive abstracts of the presented papers, summary reports of the sessions and a delegate directory.

- Publication of Papers, etc.

"The Coastal Forum: Resolving Our Coastal Conflicts"video and a book of solicited conference papers will be offered for sale at a later date.

- The Conference Site: Baltimore

Baltimore, known as the "Pearl of Chesapeake Bay," is a port city rich in history and culture that combines the old with the new. A flourishing center of trade in olden days, it has been revitalized to a degree rare in today's world, until the present-day Baltimore is both a historical town and a modern city. Its proximity to Chesapeake Bay - one of the largest and most productive such bays in the world - rich in both economic and cultural assets, makes it the ideal site for EMECS '93.

Baltimore is also an exciting city with a culturally diverse population. It offers a world-class art museum and aquarium, among many other attractions. As one of the foremost cities in the United States, Baltimore fuses both history and commerce on the shores of Chesapeake Bay.

EMECS '93 PROGRAM SCHEDULE

	REGISTRATION	THURSDAY 11 NOVEMBER 1993	FRIDAY 12 NOVEMBER 1993	SATURDAY 13 NOVEMBER 1993
AM	REGISTRATION	9:00-10:20 SESSIONS	9:00-10:20 SESSIONS	9:00-10:20 SESSIONS
		BREAK	BREAK	BREAK
		10:40-12:00 SESSIONS	10:40-12:30 THE COASTAL FORUM: RESOLVING OUR COASTAL CONFLICTS	10:40-12:00 SESSIONS
		LUNCH	LUNCH	12:00- LUNCH and CLOSING SESSION invited closing speaker Dr. James Baker NOAA Administrator
PM	13:00-14:45 WELCOMING SESSION & KEYNOTE ADDRESS Welcoming Remarks: Governor William Donald Schaefer, State of Maryland Governor Toshitami Kaihara, Hyogo Prefecture, Japan Invited Speakers: His Royal Highness, The Prince of Wales Vice President Albert Gone Carol Browner, Administrator, U.S. Environmental Protection Agency (EPA) Ronald Brown, Secretary, U.S. Department of Commerce 15:00-16:30 OPENING PANEL Major Themes: Joining Science, Governance & Citizen Involvement Chair: D. Carroll Panelists: ・EMECS Forum (Japan) ・Alicia Barcena, Executive Director, Earth Council ・Carol Browner, Administrator, EPA, U.S. ・Patrick M Holligan. Chair, LOICZ (Land-Ocean Interactions in the Coastal Zone) Planning Committee, Plymouth, UK	13:30-17:30 SESSIONS 17:00-19:00 POSTER & VIDEO SESSIONS and INTERNATIONAL BAZZAR	13:30-17:30 SESSIONS	
	18:30- RECEPTION FOR DELEGATES hosted by EMECS '93 (Maryland Science Center)	19:30- MARYLAND WITH PRIDE BANQUET hosted by GOVERNOR WILLIAMDONALD SCHAEFER, the STATE OF MARYLAND and MARYLAND BUSINE-SSES (B&O Railroad Museum)	19:00- THE JAPAN DAY RECEPTION hosted by ENVIRONMENT AGENCY OF JAPAN, and COVERNORS AND MAYORS' CONFERENCE FOR PROTECTION OF THE SETO INLAND SEA (Stouffer Hotel)	

Seto Inland Sea Research Forum in Kagawa

The Research Institute for the Seto Inland Sea is an academic research organization made up of scholars and researchers involved in the study of the Inland Sea. Since its establishment in March 1992, it has been active in a variety of research endeavors. The Institute held the first Seto Inland Sea Research Forum in 1992 in Hiroshima on the topic"Sustainable Development and Environmental Management of the Seto Inland Sea"(see EMECS Newsletter No. 3). Following the success of this forum, a second one will be held in the city of Takamatsu, Kagawa Prefecture, Japan on November 25 and 26, 1993. The main topic for the forum will be"The Principle of Environmental Preservation and Sustainable Development of the Seto Inland Sea."

The Forum will feature research presentations in four sessions:

(1) The Environment and the Propagation of Life in the Seto Inland Sea

(2) The Present Status and Future Potential of Fishing and Sea Farming.

(3) Interaction Between Land and sea Areas

(4) From the Sea of Kagawa: Ensuring a Cultural Heritage for Future Generations

There will also be a panel discussion on the topic"The Principle of Coastal Development and the Environment in the Seto Inland Sea Region."

The First International Workshop on LOICZ

Dr. Tetsuo Yanagi
Scientific Steering Committee Member of LOICZ

The first international workshop on the Land-Ocean Interactions in the Coastal Zone (LOICZ), one of the core projects of the International Geosphere-Biosphere Programme (IGBP), was held in Raleigh, North Carolina, U.S.A. from May 18, 1993 through May 21, 1993.

The objective of the research conducted by LOICZ is (a) to construct a model representing the delivery of materials in areas including the catchment basin on land to the ecosystem of the coastal zone; (b) to predict environmental fluctuations in the shoreline and coastal zone with respect to global environmental change for10 years or more, and (c) to predict the economic and social impacts of these fluctuations. The LOICZ Core Project Office is scheduled to be set up on the grounds of the Netherlands Institute of Sea Research, Texel sometime this year, and research will continue for at least the next 10 years.

This first meeting, which was not open to the public, included 80 participants:

- 10 members of the LOICZ steering committee (chaired by Dr. Patrick Hollgan of the UK)
- 8 invited speakers
- 40 representatives from various countries (including Dr. Nobuyuki Yonekura, professor of science of the University of Tokyo)
- 10 representatives from related international organizations
- 12 scientists from relevant areas (from Japan, Dr. Makio Honda of the Japan Marine Science and Technology Center, currently visiting the woods Hole Oceanographic Institution).

At the session, participants heard presentations from the invited speakers and held discussions in working groups devoted to specific regions (Europe, East and Southeast Asia, Central and South America, Africa, the east coast of North America, and the world as a whole) and topics (modelling, measurements, case studies, coastline fluctuations, social and economic ramifications). Based on the reports from the working groups, the participants discussed the direction that LOICZ should take in the future.

At the meeting held on the 22nd, the members of the committee narrowed down the main research topics for LOICZ in the near future to four topics, based on the results of this first session:

(1) Material fluxes between land, coast, and the open sea

(2) Coastal biogeomorphology and sea level rise

(3) Carbon, methane and dimethyl sulphide (DMS) fluxes

(4) Social and economic ramifications

It was confirmed that will be brought to the next steering committee meeting, scheduled to be held at Texel, the Netherlands in December 1993. International workshops on each of these topics will be held sometime in 1994.

If you would like to receive the relevant materials, please contact me at the following address:

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Fax:+81 899-27-5852

HELLENIC MARINE ENVIRONMENT PROTECTION ASSOCIATION (HELMEPA)

Organizations in the Field of Enclosed Coastal Seas -No. 3-

Dr. Dimitris Mitsatsos

Director General Hellenic Marine Environment Protection Association (HELMEPA)

For thousands of years man plies the oceans to the benefit of all humanity, in an often careless and indifferent way. The shipping industry is therefore by definition an international and transfrontier activity directly or indirectly affecting mankind.

For Greece, particular, shipping has always been and still is a lifegiving resource for a significant percentage of the population. To the inhabitants of a small country, mostly rocky, with an extensive coastline and thousands of islands--hence, with scarce natural resources--the sea represents a field to earn their living and to sustain them as a nation. It also satisfies the tendency to explore the unknown, the keen attitude in trade and the inquisitive mind illustrated by Ulysses.

In the meantime, man's negligence and ignorance became apparent in the degradation of our marine environment. The Mediterranean Sea, for instance, has reached the point of being regarded as a dying sea. Aeons of intense activity in this cradle of western civilization developed especially the coastal areas, but the price one has to pay for this development is already too high. Untreated sewage from 120 coastal cities and waste from 170 major industrial installations are added to the waste of over 1000 merchant vessels transversing the Mediterranean on a daily basis. In addition, there is a significant volume of garbage floating around, a very large proportion of which it is statistically documented that consists of plastic, with fatal effects to marine organisms.

The Greek Maritime Community, controlling a large volume of world shipping, recognized their share of responsibility in shipgenerated pollution of the seas of our planet. Following the joint initiative of the Panhellenic Seamen's Federation and the Union of Greek Shipowners the Hellenic Marine Environment Protection Association - HELMEPA was inaugurated in June 1982, through the joint signing of their Declaration of Voluntary Commitment"TO SAVE THE SEAS"

The Association is a non governmental, non profit and of public interest organization today numbering 523 ocean-going greek vessels, 145 greek and foreign land-based enterprises and organizations, directly or indirectly linked with shipping, who sustain the Association through their $700 p.a. fees and contributions each. The Association operates totally on its own funds, without any subsidies from the government. 8,000 greek seafarer members participate in the commom effort at a symbolic 1 drachma per annum.

In spite of strict international legislation and an extensive network of controlling mechanisms operational and accidental pollution from ships continues. In most of the publicly known maritime incidents, it has been established that the human factor is responsible by almost 90%. This is why the aim of HELMEPA's unique initiative is to control and eliminate ship-generated pollution through proper information, education and motivation of the human factor from within the shipping industry--from

shipowner to the youngest sailor. In giving priority to the human factor, HELMEPA is a Pioneering initiative--it was in 1982, and still remains HELMEPA depends on man's free will and voluntary commitment to protect the marine environment.

Through specially designed voluntary Training programs conducted yearly ashore and on board, greek Merchant Marine Officers and members of Companies' Management become aware of the environmental problems they may create should indifference, neglect and improper handling of vessels prevail. International vessels' inspection statistics prove that HELMEPA Member vessels perform in a far safer and environmentally friendlier way, whereas Member seafarers take a personal pride in what they are trying to achieve.

The Association has expanded its educational activities/initiatives addressing the wider greek public and especially schoolchildren through special motivation material featuring the"Seagull", and Environmental Exhibitions. Between 1983 and 1993 these Exhibitions have been visited by more than 130,000 schoolchildren together with their instructors on HELMEPA-provided transportation.

Moreover, HELMEPA is engaged in environmental-awareness projects of the European Communities, financed on a 50%-50% basis under its MEDSPA program (Mediterranean Strategy and Action Plan) aiming at developing an environmental awareness in our everyday life. The HELMEPA-MEDSPA '89-'90 joint program was carried out by the Association under the title"Public Awareness Campaign to limit garbage pollution of the Greek seas and beaches"

The Association also continues its own regular activities related to the motivation of the wider public, schoolchildren,"HELMEPA Volunteers", i.e. pleasure craft owners and their crew, and others, on a yearly basis. The"Golden Starfish"project, a national award aiming at the adoption and protection of remote unspoiled beaches, was initiated by HELMEPA in 1990.

Cullently, we are engaged in two 3-year projects, also on a 50%-50% basis under the MEDSPA program of the European Commission:

(a) "On board-ashore Training of Seafarers", aiming at further developing and enhancing HELMEPA's Training Program for Seafarers, and

(b)"Uniform Mediterranean Action Program for the Environment", aiming at expanding the motivation and information of the general public on the voluntary protection of the seas and beaches from land-based pollution through a network of Mediterranean organizations similar to HELMEPA--the MEDMEPA.

Recent developments include the establishment of a Cyprus Marine Environment Protection Association - CYMEPA, and the announcement on May 24th 1993 by the shipping community of Turkey that a similar organization--a TURMAPA--is going to be formed.

At the same time, there are serious indications that Israel, where the HELMEPA "Seagull" motivational matetial has already been used in their 1993 environmental campaign, may follow. Similar interest has also indicated on the part of Egypt and Spain.

There is a tremendous and urgent need for a wider public awareness effort in the Mediterranean Coastal States, together with the establishment of Shore Reception Facilities to satisfy Annex V to MARPOL 73/78. As long as Coastal States do not provide the required Reception Facilities, IMO does not declare the Medeterrenean Sea an"Effective Special Area"

HELMEPA is trying to approach the issue through the only acceptable way: that of the need to motivate the human factor, if we all want to continue our existence in the ecological chain to which we participate. Time is running out and only through a total and concerted effort by all can we avoid the extinction of earth and humankind itself. HELMEPA represents a new approach to the problem. This initiative has been tested and justified, as international legislation and Heads of State have now started to realize the importance of the human factor.

Contact: 5, Pergamou Street, N. Smyrni 171 21 Athens, Greece

Management of Marine Areas for Sustainable Development Agenda 21 and the Role of the United Nations University

Juha I. Uitto, Ph. D. Academic Officer, United Nations University
Glen Paoletto Programme Associate, United Nations University

'The marine environment - including the oceans and all seas and adjacent coastal areas - forms an integrated whole that is an essential component of the global life-support system and a positive asset that presents opportunities for sustainable development,'So starts Chapter 17 of Agenda 21 entitled'Protection of Oceans, All kinds of Seas, Including Enclosed and Semi-Enclosed Seas, and Coastal Areas and the Protection, Rational Use and Development of Their Living Resources,'

As the major outcome of the united Nations Conference on Environment and Development (UNCED) organized in Rio de Janeiro, Brazil, in June 1992, Agenda 21 outlines the main issues, objectives and action required to achieve, or at least move towards, sustainable development as we approach the next century. Agenda 21 also provides guiding principles for the United Nations and its specialized agencies in devising their plans for follow-up to UNSED and in planning their future environmental programmers.

Oceans and coastal seas were long considered as inexhaustible sinks where waste and other pollutants could safely be dumped without any significant adverse effects. It is now well-founded that environmentally irresponsible actions and activities can cause potential public health hazards through exposure to contaminated food and water.

In recent years, another threat to the living marine resources has been identified - one resulting from global environmental change. Global warming is conceived to raise the temperature of the oceans around the equator with potentially catastrophic effects on, inter alia, the sensitive corals. The depletion of the atmospheric ozone layer is causing more ultraviolet radiation to reach the Earth's surface affecting the reproductive mechanisms of plankton in the oceans. However, these processes are still characterized by a high-degree of uncertainty, which makes rational decision-making difficult.


The United Nation University

UNU Mandate and Mode of Operation

The United Nations University (UNU) is an independent organization under the United Nations umbrella, established in 1975 to conduct research, training and dissemination of knowledge into the pressing global problems of human survival, development and welfare that are the concerns of the United Nations and its agencies. An international, but not an inter-governmental organization, the University is governed by a Council consisting of twenty-four internationally respected members, appointed by the Secretary General of the United Nations and the Director General of UNESCO, and serving in their individual capacities. UNU works through international networks of scholars with its headquarters located in Tokyo, Japan, as well as a number of Research and Training Centres and Programmes (RTC/P) located in various parts of the world working on research and training into specific topics and issues. The current network of five RTC/Ps is in the state of expansion and it is expected that more Centres will be opened in the years to come. In addition, UNU collaborates with many universities and research institutions around the world and its work benefits from bringing together the foremost experts and scholars in the world to work on the identified programmes.

An important function of UNU is to disseminate and feed back its research results into the United Nations system so as to provide scientific and independent knowledge for drawing up policies and recommendations by the world community.

Sustaining Global Life-Support Systems

A central area of UNU's research and training activities focuses on environment and sustainable development. The programme area'Global Life-Support Systems'is one of the five fields of work identified in the University's present Medium-Term Plan.

Generally two different levels of global environmental change can be identified: global environmental changes encompassing those changes that are truly global and affect the Earth as a whole (e.g. the growing atmospheric hole in the ozone layer); and those environmental change that occur locally which relate to global phenomena through their cumulative effects (e.g.deforestation and soil erosion).

UNU's research and training programme attempts to cover both types of environmental change responding to the challenges posed by the rapid global environmental change, and seeks to offer policyrelevant advice to the international community on the actions to be taken. Marine pollution and the management of marine resources on a sustainable basis feature prominently within UNU's research programme.

Ocean Governance for Sustainable Development

The governance of ocean space requires international cooperation and mechanisms that supersede national jurisdiction. It was recognized at UNCED that the implementation of strategies and activities related to marine and coastal areas and seas would require effective institutional arrangements at national, sub-regional, regional and global levels.

There are a number of national and international institutions within and without the United Nations with competence in marine issues. There are also international conventions, notably the United Nations Convention on the Law of the Sea adopted in 1982, governing the unilization of ocean space and the global commons. However, the various international efforts remain largely uncoordinated, and inefficiently monitored and enforced.

For example, Agenda 21 identifies the difficulties in the management of high sea fisheries, including the adoption, monitoring and enforcement of effective conservation measures. Fishing fleets operating in international waters are utilizing inappropriate and indiscriminate fishing methods resulting in over-harvesting of living marine resources, frequently species, such as dolphins, that were not targeted. Similarly, monitoring and preventing marine pollution at high seas from sea-based sources, including dumping of hazardous wastes, is very difficult.

UNU has promoted ocean governance with a view to achieving sustainable utilization of marine space in international waters or that falls within the jurisdiction of more than one state.

It was emphasized in the'International Conference on the Sea of Japan: Transnational Ocean Resource Management Issues and

Options for Cooperation'co-organized by UNU and held in Niigata, Japan in 1988 that there was a need for both nations to heighten environmental awareness and incorporate environmental costs into economic calculations concerning the utilization of the sea. At international level, legislation must be harmonized and cooperative monitoring implemented, particularly in view of future industrial development. Particular focus should be placed on ocean dumping and the environmental hazards related to the development of nuclear energy.

The effect was replicated at the'International Conference on East Asian Seas: Cooperative Solutions to Transnational Issues'which was co-sponsored by UNU and the East-West Center and held in Seoul, Korea in September 1992. The meeting was designed so that it world reach tentative agreement in principle on specific cooperative mechanisms, and discuss their design and implementation. The conference recommended and made plans for the establishment of a regional institution to harmonize, standardize and integrate national policies, laws and actions concerning the management of the East Asian seas.

Marine and Coastal Pollution: Regional Sustainability

The methods and techniques required for research on and management of the land-sea interactions are distinctive because of the short-term geomorphological and ecological dynamics and the responses of coastal people to coastal changes.

Coastal zones are areas of population concentrations, major urban centres, as well as recreation and tourism. At the same time, they are used for various competing economic activities, such as mariculture and fishing, waste disposal, transportation and energy production. All this human activity places heavy environmental pressures on coastal zones and marine areas beyond.

The coastal areas of Southeast Asia have been particularly subjected to these pressures, which can be detected from the threatened status of some fisheries, as well as the more frequent occurrence of toxic algal blooms and red tide. A number of UNU projects have been concerned with the coastal ecosystems of this densely populated region undergoing rapid industrialization and urbanization. Projects have been concerned with the human interactions with the mangrove ecosystems and the coastal, inshore and marine problems as a part of a total picture of environmental change in the region.

Monitoring of coastal pollution is a high priority for the international community. The'International Mussel Watch'programme activities launched in Central and South America in 1991, and in a recent thrust to expand the programme to cover the Asia-Pacific region, UNU hosted an organizational meeting in Tokyo in January 1993. The goals of the programme are to ascertain and assess levels of selected chemicals in bivalves collected from coastal marine waters, and to develop a regular activity for observation and monitoring chemical contamination in especially susceptible regions of the world's oceans. UNU is especially interested in the field of training developing country scientists.

Marine Pollution and Human Health

The world's first major incidence of marine pollution with serious health effects to the local population residing in affected areas is the case of Minamata on the southwestern Japanese island of Kyushu. The Minamata Disease was identified in 1956 when patients who had consumed sea food caught in Minamata Bay developed severe neurological disorders frequently leading to death. Further investigations revealed that a large number of patients developed the disease as early as 1953. In 1959, a study group from Kumamoto University identified organic mercury as the cause of the disease, but this was officially recognized only in 1968. The mercury had entered the sea through the discharge of waste water by the Chisso Chemical plant. Chisso Ltd began waste treatment in 1959, but sporadic discharge and spills continued until 1968. The Minamata episode has affected the entire community for the past thirty-five years, which has suffered not only from the wide-spread disease, but also from serious social and economic disruption caused by the tragedy.

UNU has participated in efforts for the rehabilitation of the community as well as proper dissemination of research findings and the lessons learnt. In 1991, UNU co-oranized a conference on'Industry, the Environment and Human Health'which focused on heavy metal pollution from industrial sources, and its environmental and health effects. The concept was to bring together international authorities with the local experts specializing in the Minamata case to exchange information and learn from similar cases that have occurred in various parts of the world. The recommendations of the conference included (i) the establishment of a database on mercury and methylmercury pollution and poisoning; (ii) a database for toxic metals; (iii) the establishment of an ecological research programme for Minamata Bay and nearby coastal marine systems; (iv) a world-wide monitoring programme of toxic metals; (v) medical research into the effects of toxic metal poisoning; (vi) social science research into the causes of social breakdown following a major environmental disaster, and rehabilitation strategies; and (vii) development of effective risk assessment methodologies for industrial pollution hazards.

The recommendations of the conference have led to several follow-up activities within and around the framework of UNU research. International exchange of experiences and field visits between scholars from Japan and elsewhere, including Brazil, has been initiated. An international collaborative study supported by the UNU is underway on the'Effects of Exposure to Mercury in Children in Faroe Islands.'

A new related UNU project looks into community responses and rehabilitation strategies following a major environmental disaster from a social science point of view. The cases involving marine pollution that will be reported in a forthcoming book include, again, Minamata and the Exxon-Valdez oil spill in Alaska.

Conclusions

Agenda 21 identifies a number of key areas for the management and development of marine and coastal resources in the post-UNCED era, including topics ranging from promoting sustainable resource use, to addressing the critical uncertainties pertaining to the management of the marine environment during climate change, to strengthening international cooperation and coordination.

In recent years, mankind has been sensitized to the need for protection of the world's marine and coastal environments. Yet, much remains to be done to understand and manage complex marine ecosystems. Yet more is required to devise national, regional and global mechanisms for governance of oceans and coastal areas for sustainable development. Effective mechanisms are required for the establishment, enforcement and monitoring of shipping regulations, fisheries and international agreements, as well as international harmonization of policies and actions, together with the continuous monitoring of marine pollution and improved understanding of its effects, sources and socio-politico-economic causes. The research will have to be carried out taking into account the concerns and perspectives of both the Northern industrialized countries as well as those of developing countries in the South.

Contact: 53-70, Jingumae 5-chome, Shibuya-ku, Tokyo 150, Japan.

Coastal Conservation Education Network by the Society for Protection of Environment, Kenya

A typical mangrove forest in Kenya

The Society for Protection of Environment, was formed in Kenya in 1989 as a voluntary, charitable, non-profit and non-political conservation body. It has a countrywide mandate to undertake Environmental Conservation education activities at grass-root levels and hence bridging the gap between the scientists and the grassroots in Kenya.

For the last one year, SPEK has been conducting Ecological and Socio economic surveys in Mangrove Forests along the Kenya Coast.

This was our contribution to conservation awareness strategy for the coastal resources and specifically the wetlands. These surveys have given birth to what is now commonly known as the Coastal Integrated Conservation Education Network - COAST-NET.

The Kenya coastline extends some 874 km. from the border of Tanzania in the south to the boarder of Somalia in the north. The Coast is composed of a diversity of flora and fauna which makes it one of the most popular tourist sports in East Africa. Over 300,000 visitors are reported to visit the Kenya Coast annually as tourists who contribute more than half of Kenya's Foreign Exchange requirements.

Oil pollution caused by oil tanker incident at Kiperu Creek in Kenya

Recent trends in development activities to meet this demand of the influx of visitors to the coast has created pressure in our coastal beaches and the immediate environment. Many marine resources are being destroyed either to give way for new hotel construction or are victims of material collection for take away by the visitors. Pressure has also been reported in Mangrove forests and related ecosystem. Fish landing, bird counts, sea grass beds, oil pollution as witnessed recently in Kipevu creeks and the coastal erosion are clear indicators of human encroachment into these habitats. Our coral reefs are also being destroyed due to this encroachment into the ocean.

SPEK believes that this trend can be harmonised through an Integrated Conservation Education Programme that involves the school children, the local people, the industrial sector, the tourists and the government.

The objectives of the proposed coast Conservation Education Network are:

1. To establish the coast schools network in primary and secondary schools so as to create a younger generation with in built knowledge about marine flora and fauna.

2. To sensitive the resource users in order to make them contribute interms of knowledge, financial and material resources for conservation based programmes.

3. To educate the general public on the importance of marine resources and their sustainable use for rural development.

4. To educate the Mangrove licensees, cutters and the forest guards on matters pertaining to proper mangrove harvesting techniques.

5. To establish the coast integrated culture and traditional conservation troupe to convey coast resources conservation ideals to the Kenyan population through dance, drama and songs during national celebrations.

There are certain areas where we are seriously handicapped at the moment and SPEK will need external support in order to achieve our endeavors. These include:

1. Transportation of our coastal network members to study sites along the coast. A reasonable out board boat engine is needed. A vehicle is also needed to coordinate programmes on the ground.

2. A small secretariat to constantly supervise the programme. Here, we are thinking of a regular Conservation Education Programme Officer (CEPO).

3. Procurement of Education materials and equipment for school children for their use during the Educational tours and classroom practicals.

4. Adequate resources to organise user seminars and those licensed by authorities to extract mangrove products and their contractors commonly known as mangrove cutters. We will also need resources to print education materials, newsletters and other reading materials for the network.

5. Adequate resources for training of SPEK resources scientists.

From the above position, you can see that as an indigenous Environmental conservation Organisation we do not have adequate resources at our disposal. We are not able to meet our obligations unless we get help/assistance from our friends. We therefore, take this opportunity to request your organization to consider some support of any kind to SPEK. We will undertake to acknowledge your support and convey the same to the children and members of the public who will be the beneficiaries of the Coast integrated conservation education programme.

All the activity patterns captured through photography or in anyway and the periodic reports arising from the programme will be sent on regular basis to our friends and those whom we are collaborating with. This is expected to extend beyond our borders, the general perception of marine resources conservation by the people along East African Coast.

Dr. Macharia Gathuku
Coordinator
Society for Protection of Environment (SPEK)
P.O.Box 60125, Nairobi
Kenya

A REFLECTION ON THE PURITY OF WATER
～A Proposal for a New Environmental Age～

An international symposium on water, entitled International Symposium '93"A Reflection on the Purity of Water: A Proposal for a New Environmental Age"was held on March 20, 1993 in Okayama.

This symposium was the second international symposium on environmental issues sponsored by Okayama Broadcasting Co. Ltd., as part of an environmental campaign with the theme "Reconsidering the Earth Around Us. "This year, to commemorate the establishment of"water Day"by the United Nations, four panelists used visual aids to discuss the relationship between water and civilization, pointing out water pollution problems in various parts of the world, and speculating on the future of water.

One of the panelists was Dr. Kazutoshi Nagasawa, professor of Waseda University. Using the fall of the civilizations in Mesopotamia and Rouran in China as examples, he pointed out that human civilization begins with success in controlling water, but a mistake can mean the destruction of that civilization. He warned that mankind must learn from history and be more humble in its relations with water and the earth.

Another panelist was Dr. Saburo Matsui, professor of Kyoto University. He discussed the worsening water quality in Lake Biwa in Japan ant Lake Laguna in the Philippines, caused by rapid urbanization and industrialization, and asserted that a common attitude has led to water pollution in Asia, namely, that the abundance of water in Asian countries has led to an insufficient appreciation of the importance of water resources and that this has led to a deterioration in the quality of water.

Ms. Linda King, executive director of the Environmental Health Network in the United States, used the high incidence of cancer in the digestive system of people living in the highly polluted lower reaches of the Mississippi River to point out the relationship between the chemicals used at water purification plants and the incidence of cancer, and called for increased safety of purification systems.

Dr. Peter J. H. Reijnders, marine ecologist of the Institute for Forestry and Nature Research in the Netherlands, talked about the deformation and decimation of seals in the North Sea, pointing out the great effect of PCBs and other chemical substances on the hormone cycles and immune systems of living organisms. He cautioned developing countries not to make the same error. In his presentation, Dr. Matsui also called for the establishment of technologies to recover and process PCB and other harmful substances, to prevent any further occurrence of calamities such as Minamata Disease, the worlds first illness caused by marine pollution, and the Kanemi Yusho*, which first called the world's attention to the dangers of PCBs.

In the final presentation, the symposium coordinator, Dr. Kyozo Chiba, professor of Okayama University, proposed a"Declaration of Okayama"calling for increased respect, love and praise for the beauty of water, the mother of life on earth.

Kanemi Yusho

Kanemi Yusho was the first case of PCB poisoning discovered in 1968 among people who are food cooked with rice bran oil produced by Kanemi Warehouse Co. of Kitakyushu, Japan.

The 5th Meeting of the Conference of the Ramsar Contracting Parties

The meeting of the Ramsar Contracting Parties regarding the preservation of waterfowl and wetlands was held in Kushiro, Hokkaido, Japan from June 9 through 16,1993. The Ramsar Convention, officially known as the "Convention on Wetlands of International Importance Especially as Waterfowl Habitat, "was adopted in Ramsar, Iran in 1971. The convention requires registered wetlands to be adequately preserved and monitored. Cullently, 610 areas, such as lakes and marshes, tidal flats and riverbanks, in 77 countries, are registered in the convention. Prior to the conference, Japan had already registered four areas: the Kushiro swamp, Lake Kushiro and Lake Utonai in Hokkaido, and the Izunuma-Uchinuma marshes in Miyagi Prefecture. After the conference, Japan registered five additional areas: Lake Biwa (Shiga Prefecture), the Yatsu tidal flat (Chiba Prefecture), the Kiritappu swamp (Hokkaido), the Katano-kamo-ike pond (Ishikawa Prefecture), and Lake Akkeshi and the Bekanbe swamp (Hokkaido). Thus, a total of nine places in Japan are cullently registered.

The conference attracted 1,231 registered participants from 95 countries that we signatories to the Ramsar Convention (of which 23 countries were observers), 7 international organizations, 36 international NGOs and 68 domestic NGOs. In addition, the general public was also allowed to participate in the conference as"one-day participants. "It was significant that some 70 local governments in Japan, including those which have no registered swamps, participated in the conference. Moreover, in addition to participants from industrialized European countries and the United States, many developing countries from Asia and Latin America participated in the conference as member or observer countries. The conference gave the impression that the Ramsar Convention is changing from a convention to protect waterfowl mainly supported by European countries and the United States to a convention to protect the global ecosystems in wetlands.

The point emphasized throughout the entire conference was that in order to make progress in the protection of wetlands, the entire watershed area must be preserved, rather than taking measures within designated areas. The Kushiro swamp was taken as an example of this. To achieve such preservation requires a place for establishing agreement by gathering an extensive number of relevant people, including developers and specialists of water quality and water quantity. However, the impression was that this subject would be too much for the current Ramsar Convention, which consists mainly of wildlife specialists.

On the third and fourth days of the conference, workshops were held which focused on four themes: Preservation of Registered Wetlands; the Wise Use of Wetlands; the Establishment of Wetland Sanctuaries; and International Cooperation for Wetland Preservation. The idea of"wise use"attracted wide attention at the conference. As the number of developing countries joining the Ramsar Convention has now increased, in addition to conventional protection methods to restrain human activities by establishing sanctuaries, there is a pressing need for a balance between man's economic activities and the preservation of wetlands. This means utilizing wetlands within a sustainable range for the benefit of the human race, while maintaining the natural characteristics of the ecosystem. Although the Ramsar Wise Use Committee has carried out case studies regarding this matter over the past three years, no report was submitted to the conference, probably because of a shortage of time. Thus, it has become clear that a common understanding has not yet been obtained regarding the specific means by which to proceed with the idea of wise use. The guidelines for wise use in the Ramsar Convention require each country to set up a policy for wetlands. However, only Canada and Uganda announced such policies at the convention.

Another important subject to be discussed was the securing of funds. The Ramsar Convention has established the Wetland Preservation Fund to promote the preservation of wetlands in developing countries. However, the size of the fund is very small. In addition, there was some confrontation during the discussion on the distribution of funds with regard to whether former socialist countries should be included among the recipient countries or not. Regarding this point, a decision was reached to include a request in the resolution of the conference to appropriate more GEF funds (a financing system for global environment preservation projects by the World Bank, the United Nations Development Programme and the United Nations Environment Programme) to wetland preservation through the Bio-Diversity Convention.

On the last day of the conference, the resolution and the recommendation were adopted unanimously. It was further agreed to hold the next conference in Australia in 1996.

Dr. Motokazu Ando
International Lake Environmental Committee Foundation (ILEC)

Macronutrients in Tolo Harbour and their Relations to Red Tides

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SIGNFICANCE OF RED TIDE IN HONG KONG

Hong Kong is a subtropical country (113-114° E, 22° N) with a population of some six million. Since the early seventies, it has suffered from increases in the frequency and duration of red tide. Tolo Harbour, a semi-enclosed embayment in the northeastern waters, is most affected by the events. In parallel with the increases in population, and thus in nutrient load, red tide in Tole Harbour (Fig.1). Ho and Hodgkiss (1991) suggested that Tolo Harbour could be of particular importance in red tide research because both the landlocked geometry of the embayment and the dramatic changes of environmental conditions as a results of rapid economic growth are of special significance for studying the mechanisms of red tide formation. The interactions of nutrients and subtropical climate in a more-or-less estuarine environment are grey areas which have seldom been touched upon by marine biologists and management officials.

Red tides in inner Tolo peak in March to May annually (Fig. 2). This relates to replenishment of bottom nutrients into surface water due to climatic changes during this period (Lam and Ho 1989). According to monitoring results, the increasing number of red tide occurrences is accompanied by an increase in the variety of species and a change in population dominance with dinoflagellates gradually replacing diatoms. In 1988, for example, a red tide caused by *Gonyaulax polygramma* persisted there for more than three months. The maximum concentration of *G. polygramma* reached 23,000 cells per ml and several fishskills due to deoxygenation during night hours were recorded. The event resulted in a loss of 35 tonnes cultured fishes valued at HK$0.7 million. In recent years, low levels of paralytic shellfish poisoning (PSP) ranging from a trace to 600 mouse units per kilogram tissue of green lipped mussel were also detected in Hong Kong waters (Lam et al. 1989). The risk of toxic red tide and PSP poisoning should not, thus, be overlooked and should be closely monitored.

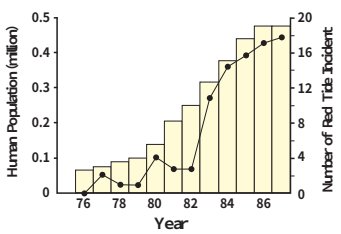

Fig.1 Rising human population and corresponding increase of red tides in the 1970s-80s

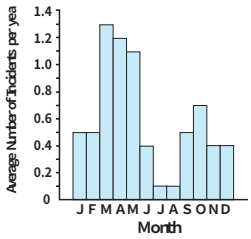

Fig.2 Seasonal pattern of red tide occurrences in Tolo Harbour

MACRONUTRIENTS AND RED TIDE EVENTS

The raw field data collected by the Hong Kong Environmental Protection Department showed that there was a continuous increase of inorganic nitrogen and inorganic phosphorus within the water column of inner Tolo Harbour for the period from 1982-1989 (Fig.3). It is however noteworthy in the figure that the rate of annual increase in soluble total nitrogen (TN) concentration was slightly lower than that of soluble total phosphorus (TP). Thus, there was a gradual decrease in the N:P ratio in inner Tolo Harbour. The inorganic N:P ratio (atomic) recorded by the Environmental Protection Department was 20.3 in 1983 but gradually decreased to 11.05 in 1989 (Fig.4). This decrease in the N:P ratio can be attributed to the various pollution control measures instituted by the government under the"Tolo Harbour Action Plan", in which the nitrogen load was the prime factor to be reduced.

The growth of most of the causive organisms of red tide (Table 1) were however optimized in a low N:P (atomic) ratio of between 6-15, as indicated by bottle bioassay in the laboratory. Whilst the primary objective of the Tole Harbour Action Plan is to tackle eutrophication problems caused by diatoms, the increased prominence of dinoflagellates and small flagellates may well be a result of neglecting phosphorus control in the Tolo Harbour Action Plan. As shown in Fig.4, there was a negative correlationship between red tide occurrences and the seawater N:P (atomic) ratios, which was significant at the $P < 0.05$ level. Increasingly, whenever there was a drop in the annual seawater N:P ratio, the annual red tide occurrence correspondingly increased. The results provided strong evidence that phosphorus was the primary limiting factor for a major portion of the red tide causative organisms in Tolo Harbour.

Causative Species	Optimal N:P Ratio for Growth
Ceratium furca	12-22
Gonyaulax polygramma	4-8
Gymnodinium nagasakiense	11-16
Noctiluca scintillans	8-14
Prorocentrum dentatum	6-13
Prorocentrum minimum	4-13
Prorocentrum sigmoides	4-15
Prorocentrum triestinum	8-15
Scrippsiella trochoidea	6-13
Cryptomonas spp.	12-20
Prymnesium spp.	6-12
Olisthodiscus sp.	4-15
Skeletonema costatum	15-30
Alexandrium catenella	15-30
Mesodinium rubrum	No significant response to N:P ratio

(Table 1) Optimal N:P (atomic) rations for the growth of the various red tide causative organisms.

The changes in the radio of the nitrogen to phosphorus contents suggested that a relatively low N:P ratio is usually optimal for the outbreaks of red tide.

Several reports on the problems of red tide in the South China Sea also recognized that phosphorus was the primary limiting factor for dinoflagellate blooms (Cheong et al. 1988; Huang 1989; Wu et al. 1989). Thus, it can generally be concluded that the nontoxic red tides occurring in coastal and estuarine environments of the West Pacific Subtropical Region are principally limited by nutrient enrichment and, in particular, phosphorus.

Bellinger (1979) proposed that if inorganic nitrogen was greater than 0.1 mg L-1 and phosphate greater than 0.02 mg L-1, the water body (mainly freshwater) would be subjected to ill effects from eutrophication. In Tolo Harbour, when dissolved nitrogen was greater than 0.1 mg L-1 and dissolved phosphorus greater than 0.02 mg L-1, the occurrence of red tides was highly possible (Fig.5). This is thus a special nutritional requirement for coastal, non-toxic red rides in the territorial waters of Hong Kong waters, and possibly may be the general criterion for red tides in other subtropical estuarine environments.

IMPLICATIONS

Has there been a global expansion of red tide? Is pollution the major cause of increased subtropical red tide? These questions, according to the declarations made by The Fourth International Conference on Toxic Phytoplankton Blooms held in Lunds, Sweden in 1989, are still not conclusively answered (Smayda and White 1990). Nevertheless, there is enough evidence to suggest that red tide is closely correlated with the increase in pollution in coastal, particularly sheltered, situations.

The results obtained in Hong Kong are of particular significance since the red tide incidents have increased year after year since the late seventies in relation to a rapidly urbanizing environment. As revealed by the present studies, red tide is initiated by the replenishment of nutrients from the already polluted sediments long accumulated in the seabed of Tolo Harbour, and phosphorus is more important than nitrogenous enrichment in regulating the blooms of dinoflagellates. In this regard it is suggested that the management strategy in Tolo Harbour should be revised and concentrated on phosphorus removal. The succession of the whole phytoplankton community, covering diatoms as well as dinoflagellates, should be re-evaluated before a meaningful control of the deteriorating ecosystem can be mounted.

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Lam, C. W. Y. and Ho, K. C. 1989. Red tides in Tolo Harbour, Hong Kong. In Red Tides Biology, Environmental Sciences and Toxicology. [Eds. Okaichi, T.; Anderson, D. M. and Nemoto, T.]. Elsevier Publishing Co. Inc., pp. 49-52.

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Smayda, T. J. and White, A. W. 1990. Has there been a global expansion of algal blooms? If so, is there a connection with human activities? In Toxic Marine Phytoplankton. [Eds. Graneli, E., Sundstrom, B., Edler, L. and Anderson, D. M.].Elsevier, New York, pp. 516-7.

Wu, Y. D., Zeng, Z. Y. Zeng, Z. H. and Luo, X. H. 1989. Fertility of domestic sewage and eutrophication in estuarine harbour. In Pollution in the Urban Environment - POLMET 88. [Eds. Hills, P., Keen, R., Lam, K. C., Leung, C. T., Oswell, M. A., Stokes, M. and Turner, E.]. Vincent Blue Copy Co.Ltd., Volume Ⅱ pp.646-51.

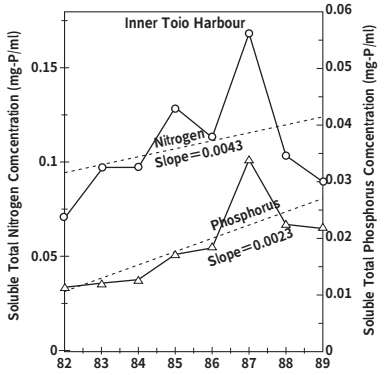

Fig.3 The variations of the annual mean concentrations of inorganic N and P in inner Tolo Harbour (Regression lines show the trend)

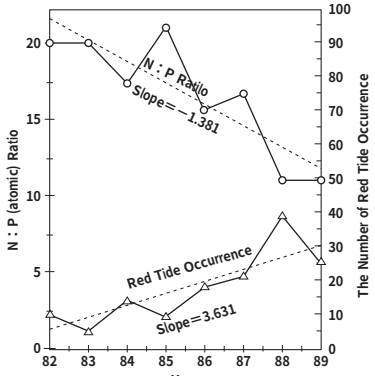

Fig.4 Variations in the inorganic N:P ratio and in the number of red tide occurrences in inner Tolo Harbour

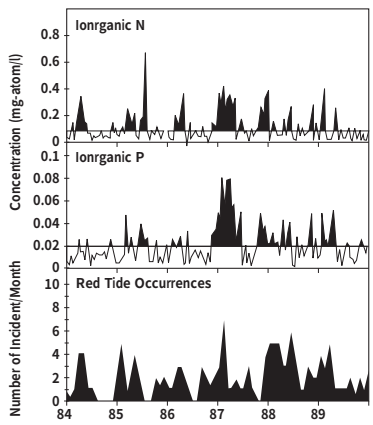

Fig.5 Variations in surface inorganic N, surface inorganic P and red tide occurrences in inner Tolo Harbour from 1984-89

Forthcoming Conferences

(1993)
Nov. 10-13
2nd Int. Conf. on Environmental Management of Enclosed Coastal Seas '93 (EMECS '93)
Baltimore, U.S.A.
Contact:H. Tenner, Executive Director
EMECS '93 Secretariat
Address:c/o Univ. of Maryland CEPP
P.O.Box 775, Cambridge
MD 21613, U.S.A.
Tel: +1-410-974-5047
Fax: +1-410-974-3158

Nov. 14-18
12th Biennial Int. Estuarine Research Conf. (ERF '93)
Hilton Head, Sorth Carolina, U.S.A.
Contact:Rick DeVoe
Address:S. C. Sea Grant Consortium 287 Meeting St., Charleston
SC 29401, U.S.A.
Tel: +1-803-727-2078
Fax: +1-803-727-2080

Dec. 5-8
6th Int. Sympo.on the Interactions Between Sediments & Water
Santa Barbara, CA, U.S.A.
Contact:E. D. Ongley
River Research Branch, NWRI
Canada Center for Inland Waters
Address:867 Lakeshore Rd.
P.O.Box 5050 Burlington, Ontario
L7R 4A6, Canada
Tel: +1-416-336-6439

Dec. 7-10
Int. Sympo. & Exbn. on Environmental Technology (New Earth '93)
Osaka, Japan
* Sympo.
Contact:Research Institute of Innovative Technology for the Earth (RITE)
Address:9-2, Kizugawadai, Kizu-cho Souraku-gun, Kyoto 619-02, Japan
Tel: +81-7747-5-2300
Fax: +81-7747-5-2314
* Exbn.
Contact:Osaka Trade Fair Committee
Address:5-102, Nankoukita 1-chome Suminoe-ku, Osaka 559, Japan
Tel: +81-6-612-3883
Fax: +81-6-612-8585

(1994)
Jan. 23-27
7th Int. Sympo.on Anaerobic Digestion
Cape Town, South Africa
Contact:Secretariat, IAWQ
Address:AD-94, P.O.Box 3132
Tygerpark
7536, South Africa

Jan. 31 - Feb. 2
2nd Thematic Conf. for Remote Sensing of Marine & Coastal Environments
New Orleans, U.S.A.
Contact:Bob Rogers
Gulf of Mexico Program
Tel: +1 313 994-1200 Ext. 3234

Mar. 21-25
GLOBE '94
Vancouver, Canada
Contact:GLOBE '94 Secretariat
Address:c/o Asia Pacific Fundation of Canada, 504-999, Canada Place
Vancouver, V6C 3E1, Canada
Fax: +1 6O4 666-8123

April 12-15
HYDROTOP '94
Marseille, France
Contact:Paul-Henri Roux
Association S. I. E. M.
Address:314 Ave., du Prado 13008 Marseilles, France
Tel: +33 91 22 72 72
Fax: +33 91 22 71 71

April 26-28
Flotation Processes in Water and Sludge Treatment
Orlando, Florida, U.S.A.
Contact:K. Jlves
Address:IAWQ, 1 Queen Anne' Gate
London, W1H 9BT, England

May 15-18
The Sewer as a Physical, Chemical and Biological Reactor
Aalborg, Denmark
Contact:Kirsten Andersen, Environmental Eng.Laboratry, Aalborg Univ.
Address:Sohngaardsholmsvej 57
DK-9000
Aalborg, Denmark

Jul. 24-30
IAWQ 17th Biennial Cof. & Exhibition (Water Quality Int.'94)
Budapest, Hungary
Contact:G. Botond
Hungarian Organizing Committee
Address:c/o VITUK Invest Ltd.
H-1095 Budapest, Kvassay út 1 Hungary
Fax: +36-1-114-4444

Aug. 21～23
Modelling & Control of Activated Sludge Processes
Copenhagen, Denmark
Contact:Mia Clausen, Conf.Secretariat
Address:c/o Dept.of Environmental Eng., Technical Unv. of Denmark
DK-2800 Lyngby, Denmark

Sep. 20-23
Coastal Zone Canada '94
Halifax, Nova Scotia, Canada
Contact:Bedford Institute of Oceanography
Address:P.O.Box 1006, Dartmouth
N.S., B2Y 4A2, Canada
Tel: +1-902-429-9497
Fax: +1-902-429-9491

Oct. 23-28
24th Int. Conf.on Coastal Eng. (ICCE '94)
Kobe, Japan
Contact:Secretariat
Address:c/o Inter Group, Shiroguchi Bldg. 2-15, Kakutacho, Kita-ku, Osaka 530
Japan
Fax: +81-6-372-6127

Nov. 3～4
Pollution of the Mediterranean Sea Nicosia, Cyprus
Contact:M. Nicolaou
Address:WTSAC, PO BOX 1735
Limassol Cyprus

(1995)
Oct. 23-27
6th Int. Conf. on the Conservation & Management of Lakes (Kasumigaura '95)
Tsuchiura & Tsukuda, Japan
Contact:Secretariat
Address:c/o Ibaraki Pref.Gov.
1-5-38, Sannomaru, Mito 310, Japan
Fax: +81-292-33-2351

Call for articles

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Your contributions would be greatly appreciated.

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