PACON MYANMAR CHAPTER FORMED

The PACON Myanmar Chapter was officially formed on 26 August 2003 with the hard work of Dr. Kenji Hotta, President of PACON International and Professor Charlie Than, Myanmar Maritime University. More than 40 members and non-members attended the celebration of this opening meeting at the new Myanmar Maritime University in the city of Yangon. Dr. Hotta congratulated the chapter establishment and the new Chapter Chair, Professor U Thein Tun, welcomed the members and participants. The master of ceremonies was Professor Charlie Than.

PACON 2003 POSTPONED

The Sixth Regional Symposium, PACON 2003: Ocean Capital Year has been postponed to November 30-December 3, 2004 due to SARS. Please check our website www.hawaii.edu/pacon for all updated information on PACON 2003.

PACON 2003 TECHNICAL PROGRAM

Monday, December 1, KEYNOTE ADDRESS #1 by Ms. Hsiu-Lieu Lu, Vice President of Taiwan, “The Pacific Civilization”

Tuesday, December 2, KEYNOTE ADDRESS #2 by Mr. Timothy Keeney, Commerce for Oceans & Atmosphere, National Oceanic & Atmospheric Admin. (NOAA), USA, “NOAA’s Priorities for Future Investment in Understanding & Managing Our Marine Environment”

Tuesday, December 2, Luncheon Speech by Dr. Hans von Storch, GKSS Research Centre (Germany), “The Social Construction of the Coast: Conflicting Images and Perceptions of the Coast, and Their Implications for Coastal Science”

Tuesday, December 2, PACON Awards Banquet Speech by Dr. Ho-Shong Hou, National Policy Advisor, Office of the President (Taiwan), “Kaohsiung Hub Port and Her Fishery Industry”

Wednesday, December 3, General Lecture by Dr. Frederick L. W. Tang, National Cheng Kung University (Taiwan), “Ocean Engineering Research in Taiwan”

Master of Ceremonies: Ms. Sherry Yen (Taiwan)

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PACON 2003 TECHNICAL PROGRAM (CONTINUED)

OCEAN SCIENCE AND TECHNOLOGY (OST)
COORDINATOR: Norman Estabrook (USA)
CO-COORDINATOR: Hsien Hua Lee (Taiwan)

OST-1: Climate Change
Chair: Lorenz Magaard (USA)
Co-Chair: Kuang-Lung Fan (Taiwan)
Co-Chair: Yueh-Jiuan G. Hsu (Taiwan)

OST-2: Seafloor Mapping
Chair: Freddy Pohner (Norway)
Co-Chair: Chih-Chung Kao (Taiwan)
Co-Chair: Shiahn-Wern Shyue (Taiwan)

OST-3: Petroleum (***CANCELLED***)

OST-4: Marine Biotechnology
Chair: Mark Huntley (USA)
Co-Chair: Jyh-Horng Sheu (Taiwan)
Co-Chair: Chan-Shing Lin (Taiwan)

OST-5: Ocean Energy
Chair: Tomoki Ikoma (Japan)
Co-Chair: Nai-Kuang Liang (Taiwan)

OST-6: Fisheries Technology
Chair: Norman Woo (China)
Co-Chair: Mao-Sen Su (Taiwan)
Co-Chair: Hsing-Hua Hu (Taiwan)

OST-7: Remote Sensing (***COMBINED WITH OST-1***)

OST-8: Minerals Development (***CANCELLED***)

OST-9: Offshore Structures
Chair: Koichi Masuda (Japan)
Co-Chair: Chia-Chuen Kao (Taiwan)
Co-Chair: Chyan-Deng Jan (Taiwan)

OST-10: Advanced Vehicles
Chair: Ya-Jung Lee (Taiwan)
Co-Chair: Ming-Chung Fang (Taiwan)

OST-11: Ocean Science Applications
Co-Chair: Shi-ming Li (China)

OST-12: Sonar Applications (***COMBINED WITH OST-11***)

COASTAL SCIENCE AND TECHNOLOGY (CST)
COORDINATOR: Young C. Kim (USA)
CO-COORDINATOR: Tai-Wen Hsu (Taiwan)

CST-1: Hydrodynamics of Coastal Waters
Co-Chair: Yan-Yin Chen (Taiwan)
Co-Chair: Chung-Pan Lee (Taiwan)

CST-2: Coastal Water Level Fluctuations
Chair: Byung Ho Choi (Korea)
Co-Chair: Jea Tzyy Juang (Taiwan)
Co-Chair: See Whan Kang (Korea)
Co-Chair: Ching-Piao Tsai (Taiwan)

CST-3: Harbor Resonance
Chair: Kazuki Oda (Japan)
Co-Chair: Chung-Ren Choung (Taiwan)
Co-Chair: Jaw-Fang Lee (Taiwan)

CST-4: Coastal Structures
Co-Chair: Ming-Chung Lin (Taiwan)
Co-Chair: Yung-Fang Chiu (Taiwan)
Co-Chair: Jang-Ho Jay Kim (Korea)

CST-5: Ports and Harbors
Chair: Ho-Shong Hou (Taiwan)
Co-Chair: Chong Kun Pyun (Korea)
Co-Chair: Jang Won Chae (Korea)
Co-Chair: Chen Tao Liu (Taiwan)

CST-6: Coastal Sediment Problems
Chair: Ki-Dai Yum (Korea)
Co-Chair: Tai-Wen Hsu (Taiwan)
Co-Chair: Kwang-Soon Park (Korea)

CST-7: Shoreline Changes (***CANCELLED***)

CST-8: Coastal Environmental Problems
Chair: Richard J. Podgorny (USA)
Co-Chair: Juu-En Chang (Taiwan)
Co-Chair: Chon-Lin Lee (Taiwan)
Co-Chair: Sami Maalouf (USA)
PACON 2003 TECHNICAL PROGRAM (CONTINUED)

CST-9: Sustainable Coastal Development
Chair: Mitsuo Takezawa (Japan)
Co-Chair: Jing-San Hwang (Taiwan)
Co-Chair: Hideo Kondo (Japan)
Co-Chair: Jian-Chian Shern (Taiwan)

CST-10: Coastal Disasters
Chair: Hwung-Hweng Hwung (Taiwan)
Co-Chair: Donghoon Yoo (Korea)
Co-Chair: Sheng-Wen Twu (Taiwan)

MARINE RESOURCE MANAGEMENT AND DEVELOPMENT (MRMD)
COORDINATOR: Albert Kuo (Taiwan)

MRMD-1: Marine Policy, Law, and Government (***COMBINED WITH MRMD-5***)

MRMD-2: Coastal Zone Management
Chair: Ting-Kuei Tsai (Taiwan)
Co-Chair: Hsiang-Tang Ko (Taiwan)

MRMD-3: Coral Reef Science and Management
Chair: Lee-Shing Fang (Taiwan)

MRMD-4: International Marine Science Cooperation (***CANCELLED***)

MRMD-5: Marine Fishery
Chair: Chong Kim Wong (China)
Co-Chair: Wei-Cheng Su (Taiwan)

MRMD-6: Harmful Algal Bloom
Chair: Kin Chung Ho (China)
Co-Chair: Hong-Nong Chou (Taiwan)
Co-Chair: I-Ming Chen (Taiwan)

MRMD-7: Marine Recreation and Tourism
Chair: Wen-Yan Chiau (Taiwan)
Co-Chair: Chang-Hung Chou (Taiwan)

MRMD-8: Marine Debris
Chair: Ju-Chin Chen (Taiwan)
Co-Chair: Wen-Miin Tian (Taiwan)

MRMD-9: Deep Ocean Water Applications
Chair: Clark C. K. Liu (USA)
Co-Chair: Elliot Hsiao-Hua Chen (Taiwan)

WORKSHOPS (WKSP)
COORDINATOR: Che-Tsung Chen (Taiwan)

WKSP-1: Education in Marine Science and Technology (***CANCELLED***)

WKSP-2: Women in Marine Science, Technology, and Policy
Co-Chair: Elizabeth Corbin (USA)
Co-Chair: Lee-In Chen (Taiwan)
Co-Chair: Bonnie Sun Pan (Taiwan)
Co-Chair: Li-Lian Liu (Taiwan)

WKSP-3: Oil Spill Technology
Chair: Nobuhiro Sawano (Japan)
Co-Chair: Shien-Jung Cheng (Taiwan)

FORUM
COORDINATOR: Kenji Hotta (Japan)

FORUM-1: ICZM & Resource Management Issues
Convenor: Nick Holmes (Australia)

FORUM-2: The Spratley Islands and International Marine Science Cooperation
Convenor: To be announced

FORUM-3: Coastal & Offshore Engineering
Convenors: Young C. Kim (USA), Ho-Shong Hou (Taiwan)

FORUM-4: PACON Chapters Forum (Roundtable Discussion of Chapter Issues)
Convenors: Ho-Shong Hou (Taiwan), Elizabeth Corbin (USA)
MERMAID – Automated Water Quality Monitoring in the Brantas River Estuary, East Java, Indonesia

by Friedhelm Schroeder and Hans-Diethard Knauth
GKSS Research Centre, Geesthacht, Germany

Demand for Clean Water
Increasing human activities in the catchments of Asian rivers in the past decades altered the quality, biogeochemistry, and ecology of rivers and the receiving coastal water bodies, often resulting in the deterioration of their high ecological and economic potential. Whereas in Europe, large efforts from USA and Australia monitor rivers and coastal areas, in many cases even by continuously operating automated equipment; there is a lack of technology for monitoring critical polluted areas in developing countries, e.g., Indonesia. The demand for clean water in the region is escalating (fresh water and clean marine/brackish water for aquaculture) at an alarming rate while, at the same time, the water quality is coming under increasing pressure from industry, agriculture, and urbanization.

A new Indonesian-German project in East Java has the aim to introduce modern automatic monitoring technology and to apply this technology for the assessment of water quality in the second largest river in Java and the adjacent coastal waters (Figure 1).

Indonesia: The Brantas River Basin and its Problems
The Brantas River basin is the most urbanized region in Indonesia. About 16 million people are living in the Brantas catchment area and depend on its resources. It contains most of East Java’s water reservoir capacity and produces about ten per cent of the nation’s rice crop. The Brantas River with a total length of 320 km and a catchment area of 11,050 km² is the second largest river of Java. It functions as the most important source of water supply in the East Java Province. Rainfall is about 1860 mm per year with about 25 mm per month in the dry season peaking to 350mm per month during January and February.

Currently, almost all the water of the Brantas River in the dry season is utilized and some measures for enhancing water supply are indispensable to meet the increasing water demand. Meanwhile, the quality of river water has been deteriorating recently due to the growth of urbanization and industrialization. The city of Surabaya with about 3 million inhabitants is wholly dependent on the resources catchment area and depend on its resources. It contains most of East Java’s water reservoir capacity and produces of the Brantas.

Pollution of the Brantas River occurs from both point and non-point sources. Its water quality is poor and ecological health endangered especially in its lower reaches. The number of indigenous fish has decreased over the last twenty years and severe eutrophication problems exist particularly in the reservoirs.

About 720 industrial firms are registered in the Brantas basin, with 459 of these assessed as potential polluters of the river. The total domestic load of organics is estimated to be about 380 t BOD d⁻¹ and the organic load from monitored industries is about 2,000 t BOD d⁻¹. Other human activities such as sand removal and agricultural pollution have also impacted the river. In the coastal zone a lot of aquaculture enterprises had to close due to the impaired water quality. In order to control the water quality, an automatic monitoring system is needed.
MERMAID – Automated Water Quality Monitoring in the Brantas River Estuary, East Java, Indonesia (Continued)

Successful Monitoring: The Automatic Water Quality Monitoring System “MERMAID”

Conventional ship-borne pollution monitoring is expensive. As a result, it is relatively infrequently performed, which means that pollution ‘hot spots’, caused by tidal fluctuations or heavy rainfall washing nutrients from newly fertilized fields into rivers and estuaries, can be missed completely. In order to overcome these limitations in Europe the “MERMAID” system (acronym: marine, environmental remote-controlled monitoring and integrated detection) had been developed. The modular monitoring system, which can be mounted on a buoy, platform, pile or ferry, has numerous sensors and instruments which can be programmed to measure, analyze, and take samples of toxic substances at any time. It is also capable of responding to different weather and tidal conditions, any of which could influence pollution levels.

State-of-the-art data management and communications software process and feed the highly accurate information back to a land-based station via radio, cellular phone or satellite link, enabling scientists to remotely observe conditions as they happen and take measures to reduce concentrations of pollutants.

Such a system, which is used within the national German coastal monitoring network, had been modified for containerized use in a tropical estuary. The main challenge for this modification was to develop an effective anti-fouling system for application in tropical waters.

The “MERMAID-Brantas-System” consists of a fully automated flow-through system with different sensors and automatic analyzers. It is located inside a container at the banks of the Brantas estuary. Water is pumped from the river into an internal water loop in which the water is circulated with a constant velocity of about 1 m/s. This already decreases the tendency for building bacterial slimes on sensors and tube surfaces. A ribbon-type filter for automatic nutrient analysis filters a small part of the water. Figure 2 shows a schematic drawing of the system. The system contains motor valves and control sensors, e.g., pressure and flow, for automatic operation.

For a reliable unmanned operation, the system is supervised by an industrial programmable logic control which can shut-off the system in case of very severe errors and operates automatic cleaning cycles. Data acquisition, data storage and data transfer to shore is controlled by an industrial standard PC (Pentium II). Data can be transferred to a land-based station in the office and the system can be remotely operated by telephone or mobile phone.

Cleaning of the sensors with tap water, rinsing with acidified water and by chlorination prevents biofouling.

The whole system has been completely assembled in Germany inside a 10-foot container and was shipped to Indonesia at the end of 2002. After only two days of installation the system was operating. In Figure 3, a photo of the measuring station is shown; Figure 4 shows the inside of the container (Figures 3 and 4 shown on next page).

The automatic station already operates successfully for nine months. Until now, no problems have occurred due to biofouling or clogging (sediments, debris, etc.).
One of the main characteristics of the Brantas river system are the big differences in water quality during the wet season (November to April) and dry season (June to October). However, the data show quite a complex behavior due to several dams in the course of the river, which are regulated manually. An example of online measurements for dissolved oxygen is depicted in Figure 5. During the wet season the oxygen concentrations are about 4-5 mg/l. The concentrations drop from mid-May to very small values of 0.2 -2 mg/l. The fluctuations are mainly caused by the river flow, which is regulated by the dams.

Solution: Integrated Water Quality Monitoring
For a comprehensive assessment of the water quality of the Brantas estuary and its adjacent coastal waters, more than one monitoring station is needed. Only the combination of automatic monitoring stations with numerical models and remote sensing, an overview on water quality and distribution of sediments and phytoplankton over space and time is possible. Such an “integrated approach” which ideally also involves ferryboats or ships-of-opportunity will be a cost-effective monitoring strategy and can be applied in many regions of the world.

PACON 2004 (20th Anniversary)

The Eleventh Pacific Congress on Marine Science and Technology, PACON 2004 (20th Anniversary): New Technologies, New Opportunities will be held at the Waikiki Beach Marriott Resort in Honolulu, Hawaii on May 30-June 4, 2004. PACON 2004 celebrates our 20th Anniversary with the first PACON conference was held in Honolulu in 1984. The Technical Program Committee invites you to present a paper at PACON 2004 New Technologies, New Opportunities in the sessions outlined below. Presentations on new developments in the industry are also invited. Papers and presentations on topics outside the areas listed will be considered. All interested presenters must submit an abstract.
Chapter News

PACON has spanned the globe with chapters in Europe, the U.S., Asia and the Pacific. In order to keep pace with happenings in our diverse community, we would like to encourage members to submit announcements of upcoming events, conferences, Chapter activities, and articles of interest to our membership.

Mail to: Chapter News, PACON International, POB 11568, Honolulu, HI 96828-0568, USA

Submittals:
Email to: pacon@hawaii.edu
If sending email transmittal, please send as MS Word Attachment. Photos should be sent via email as jpeg files or by mail.

Technical Papers

Technical papers are welcome for publication in the Voice of the Pacific. Please send electronic file - MS Word document via email or on disk by mail. Papers should be 2-3 pages in length and be of interest to the PACON community and others in the marine science world.
PACON International
P.O. Box 11568
Honolulu, HI 96828-0568

PACON International (Pacific Congress on Marine Science and Technology, International) was created following two successful marine science and technology Congresses held in Honolulu: PACON 84 and PACON 86. Since then, PACON has held major Congresses in Hawaii, Australia, Japan, and Korea. The next major Congress, PACON 2004, will be held in Honolulu, Hawaii. Regional Symposia have been held in Hawaii, Beijing, Hong Kong, Russia, and California; PACON 2003 Regional Symposium will be held in Kaohsiung, Taiwan.

PACON International Mission Statement:

PACON International is an international non-profit professional marine science and technology society dedicated to the sharing of scientific and technical information among those interested in the future of the world's oceans with a Pacific focus.

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