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NEWSLETTER

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c/- School of Marine Studies, University of the South Pacific,
P.O. Box 1168, Suva, Fiji
Tel: (679) 323 2934 Fax: (679) 323 1526 Email: pimris@usp.ac.fj

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Editorial



Mark Twain famously remarked: "Everybody complains about the weather, but nobody does anything about it!"

Little did he realise how serious his comment would be taken a century later. Climate change, global warming and sea level rises have become controversial issues, with some arguing over whether or not the phenomena are even real. The consensus among scientists and official bodies such as the Intergovernmental Panel on Climate Change (IPCC) is that they are very real and that human activities, especially over the past 150 years, have affected their pace. Possible future ramifications appear to range from the merely alarming to the catastrophic (p.9).

The World Bank warns (p.3), that Pacific Island countries are particularly threatened by natural disasters and climate change. Careful planning to mitigate the effects of these are therefore very important, but policy must be based on sound advice. One response to rising sea levels might be to increase expenditure on coastal protection systems. Yet USP research has revealed many problems with engineered coastal structures and found that natural systems, such as mangroves, or structures similar to them, provide the most effective form of coastal protection (pp.4-8).

Also in the region, innovative marine conservation initiatives are being taken (p.10). Instead of continuing to argue over climate change and its consequences, the rest of the world would do better to follow these Pacific examples of action, optimism and affinity with the natural environment. Fakafetai,

Chris Nelson, PIMRIS Coordinator

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The Earth from space, above the Pacific



Directory

PIMRIS is a cooperative network of fisheries and marine resources libraries and information centres in the Pacific. Participants include ministerial libraries and the regional agencies listed below. For additional information contact the Coordination Unit or a specific agency.

Pacific Regional Environmental Programme (SPREP)

Satui Bentin
*Information Resource Centre
Manager and PEIN Coordinator*
satuib@sprep.org.ws
www.sprep.org.ws

Secretariat of the Pacific Community (SPC) / Secrétariat général de la Communauté du Pacifique

Jean-Paul Gaudechoux
*Fisheries Information Adviser
/Conseiller en information halieutique*
JeanPaulG@spc.int

&

Eleanor Kleiber
Librarian / Bibliothécaire
EleanorK@spc.int
www.spc.int

South Pacific Applied Geoscience Commission (SOPAC)

Dorene Naidu
Library Services Officer
Dorene@sopac.org
www.sopac.org

South Pacific Forum Fisheries Agency (FFA)

Ben Hall
Information Officer
Ben.Hall@ffa.int
www.ffa.int

University of the South Pacific (USP), PIMRIS Coordination Unit

Chris Nelson
Librarian/PIMRIS Coordinator
with
Frances Chute & Asenaca Valemei
Library Assistants
pimris@usp.ac.fj
www.usp.ac.fj/library/pimris.htm

New Faces, New Places



Ilaitia Tuisese (*right*) retained his portfolio as Minister for Fisheries and Forests in Fiji after elections in May. He started his career as a clerk in the same ministry before rising to managerial positions in the Native Lands Trust Board, Timbers Fiji Ltd. and Rewa Rice Ltd. Tuisese has also served as a Minister for Regional Development.

Two other Pacific nations have held elections recently. In Samoa, **Taua Tavaga Kitiona Seuala** is now the Minister for Agriculture (including responsibility for Fisheries) and in the Solomons the new Minister for Fisheries and Marine Resources is **Nollen Leni**.

Meanwhile, the former head of the Fisheries Division in Samoa, **Tanielu (Dan) Su'a** has been named as the next Director of the Forum Fisheries Agency based in Honiara. He will succeed **Feleti Teo** of Tuvalu when the latter's term of office expires in November. Other contenders for the FFA top job were nominated from the Marshall Islands, PNG, Australia & Vanuatu.

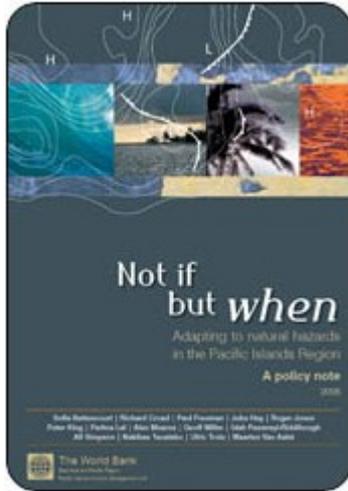
Rachele Oriente completed her contract with SPC as the Librarian/Bibliothécaire in Noumea in May. In this role she oversaw the conversion of the SPC Library's automated library system from DB\TextWorks to Koha, improved services to SPC staff and other patrons of the library, saw that SPC became a contributor to *Aquatic Sciences and Fisheries Abstracts (ASFA)* and strengthened the connections between the region and IAMS LIC (the International Association of Aquatic and Marine Science Libraries and Information Centres). Her successor, from June 6, will be **Eleanor Kleiber**. PIMRIS sends farewell thanks to Rachele and a warm welcome to Eleanor.



Joseph Baibuni has been appointed as Librarian/Records Manager at the National Fisheries Authority in Papua New Guinea. She joins National Fisheries College Librarian **Kinibo Ura** as a PIMRIS member and PIRG representative for PNG.

The Pacific Islands Regional Group of IAMS LIC (PIRG) has acquired three members from Australia in recent months: **Meredith Hepburn** (CSIRO Marine Laboratories), **Suzie Davies** (Great Barrier Reef Marine Park Authority) and **Mary Anne Temby** (Australian Institute of Marine Science).

World Bank Advises Pacific Islands on Climate Change



Pacific Island countries rank among the most vulnerable in the world to natural disasters. Since 1950, more than 3.4 million people in the region have been directly affected by natural disasters, with over 1700 killed (not including Papua New Guinea). In the 1990s alone, reported natural disasters cost the Pacific Islands region US\$2.8 billion.

Between 1950 and 2004, extreme natural disasters, such as cyclones, droughts and tsunamis, accounted for 65 percent of the total economic impact from disasters on the region's economies. Ten of the 15 most extreme events of the past half a century occurred in the last 15 years.

There has been a substantial increase in the number of reported natural disasters in the region since the 1950s, with a growing human impact per event. While this may be due to improved reporting, higher populations and increasing environmental degradation, there is no doubt that disasters in the region are becoming more intense and probably more frequent. Certainly, the number of hurricane-strength cyclones has increased in the southwest Pacific in the past 50 years, with an average of four events now occurring each year. Significant wave heights of recent cyclones have exceeded even climate change model projections. With the climate trend for the Pacific pointing to more extreme conditions and increased climate variability in future, Pacific Island countries have little choice but to develop comprehensive risk management plans for the natural hazards they face.

A document released in February by the World Bank, *Not if but when: adapting to natural hazards in the Pacific Islands region*, aims to help Pacific Island countries plan ahead and act early to avert the impacts from climate change-related and other natural disasters. Countries that do so will fare better in the long term than those that wait for disasters to hit and then repair the damage.

One of the report's 14 international expert authors, Alfred Simpson – a former head of the South Pacific Applied Geoscience Commission (SOPAC) – said over the years many Pacific Island governments had opted to deal with natural disasters by relying on international donor support once the damage had been done. This approach had been reinforced by the willingness of donors to provide generous post-disaster funds. “While humanitarian interests are clearly paramount, donors need to also consider the incentives for countries to be more proactive in managing risks and less reliant on external support,” he said. “The Pacific Island countries which have faced up to the need to factor risk management efforts into their economic and investment planning are beginning to see the benefits.”

The policy note highlights the efforts of some governments, such as Samoa and Tonga, that have been proactive on risk management of natural hazards. And the Government of Kiribati has been a global leader in this since the mid-1990s; it decided it could not afford to wait for the effects of the changing climate to intensify. Adaptation measures are now being mainstreamed into national development plans, policies and budgets. “Environmental issues and in particular climate change and sea level rise constitute security issues for low-lying coral atoll countries such as Kiribati,” said Ms Teaa Tira, on behalf of the President of Kiribati. “It is an issue of security in the short to medium term and a question of survival in the long term,” she said.

Mr Zhu Xian, Country Director for the World Bank's Pacific Islands operations said the report was a timely reminder for governments, regional agencies and donors that an integrated approach to risk management across the region was urgently needed. “With commitment from the community and all levels of government, it's possible to put very practical measures in place that reduce risks, save lives and insulate the economy,” he said. “Governments and donors wanting to take immediate, practical steps now have this very useful report to guide them.”

Not if but When is available as a PDF from the World Bank website: www.worldbank.org/pi

Impacts of Climate Change on Coastal Protection Systems:

a summary of a presentation made on April 28, 2006, by

Dr Paulo Vanualailai

(Department of Geography, Faculty of Islands and Oceans, USP)

Introduction

The effects of global warming on coastal protection systems (CPSs) in the Pacific caused by sea-level rise and changes in climatic and oceanic conditions are serious. Approximately 80-90% of active CPSs are in the form of natural environmental features, primarily coral reefs, mangroves and coastal vegetation, while only 10-20% are man-made. The major artificial options in the South Pacific are the cheapest, locally manufactured structures, but expensive modern technology has been applied in some places to create coastal protection units, causeways, groins, and gabion baskets. However, an engineering study revealed that approximately 90% of artificial CPSs suffered from some form of structural breakdown for various reasons. Laboratory tests on a range of hard structures found that the least erosion and scouring occurred with structures emulating mangroves. The results of this study show that heavy engineering is not necessarily suitable to the coasts of Pacific island countries and careful development is necessary to obtain optimal coastal protection.

Global warming and sea level rise

In the Pacific, studies over the past decade have shown increased incidences of coastal inundation, flooding and erosion. Cyclones over the past century have occurred on average once per year, with a severe cyclone once every four years and both frequency and severity may be increasing. Incidences have been also reported of loss of mangroves, increased bleaching of coral reefs and melting of ice caps in the Atlantic and Greenland. According to the Intergovernmental Panel on Climate Change's Third Assessment Report (2001), global mean sea level for the full range of special report on emission scenarios (SRES) is projected to rise between 0.09 and 0.88m by the end of this century (Figure 1).

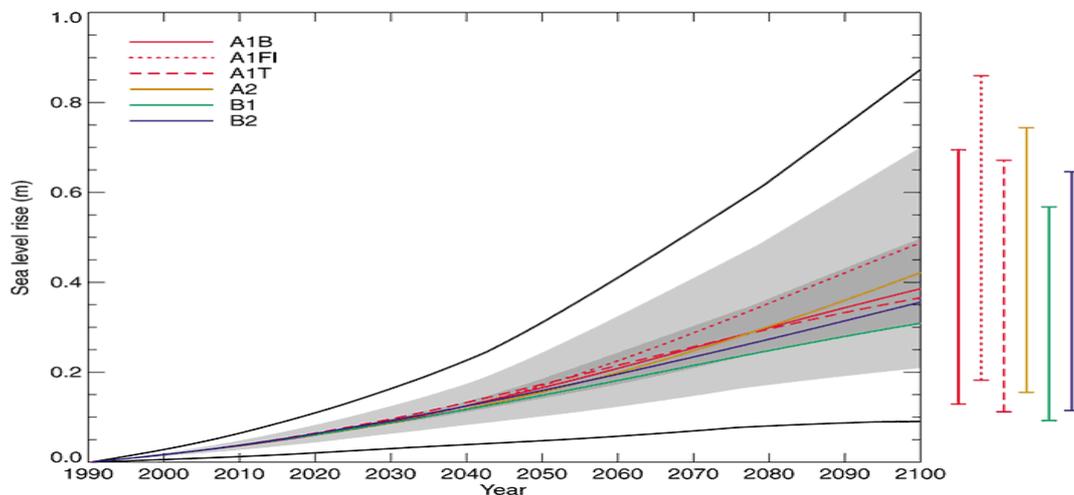


Figure 1: Global average sea level rise 1990 to 2100 for the SRES scenarios

The consequences for many low-lying Pacific communities may be profound. Already, most Pacific countries suffer from extensive coastal erosion, droughts, coral bleaching and salinity intrusion into agricultural land. Immediate and more significant impacts arising from the effects of global warming may be extreme flooding, tropical cyclones, storm surges, droughts and accelerated soil erosion. There will also be increasing pollution of freshwater resources from seawater intrusion and, finally, sea encroachment on low-lying coastal areas is increasing the vulnerabilities of low-lying areas for activities such as housing and agricultural developments.

In fact, the effects of this across the Pacific are likely to be uneven, according to a study of future sea levels at six island sites (Chuuk, Kirimati, Funafuti, Kwajelein, Rabaul and Majuro). Of the six sites, Rabaul is projected to see a decline in sea level due to land uplift, while at Kirimati the mean sea level will remain stable. For the rest, increase rates of 0.07mm to 02.9mm per year are projected. If global warming continues at its current pace, small island nations such as Samoa, Kiribati, Cook Islands, Tuvalu, Solomon Islands, the Federated States of Micronesia (FSM), Marshall and Tonga, with almost 90% or more of their vital social, economic, and political zones located in vulnerable low-lying coastal areas, will need to consider adaptation options to sea level rise as a very important issue.

Natural coastal protection systems

Clearly the predominance of mangroves and coral reefs as coastal protection systems makes their preservation important. These natural CPSs also have an advantage over engineered structures in that, as living systems, they can migrate as sea levels change – under certain circumstances. This depends upon how the rate of sea level change compares to the rate of change of the surface upon which the mangroves or corals grow, which itself relies upon environmental conditions. For example, elevation, salinity, frequency of inundation and other factors determine whether a mangrove community can persist at a particular location as sea levels vary (Figures 2 & 3).

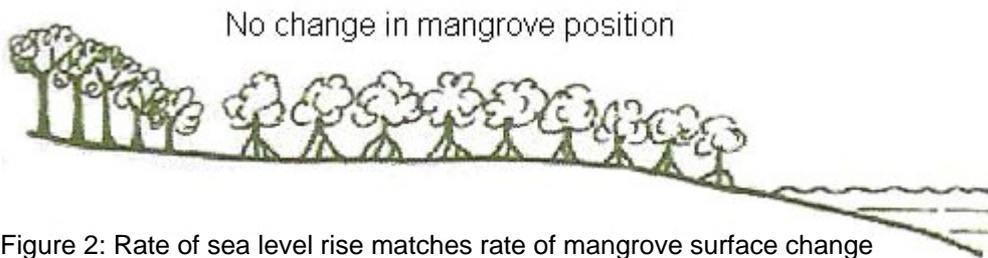


Figure 2: Rate of sea level rise matches rate of mangrove surface change

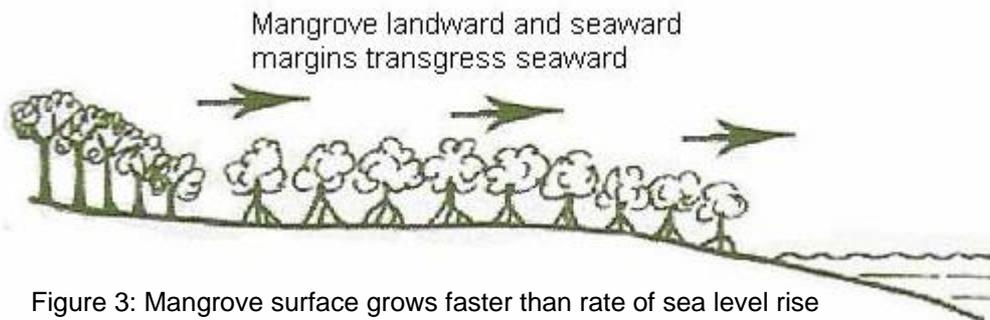


Figure 3: Mangrove surface grows faster than rate of sea level rise

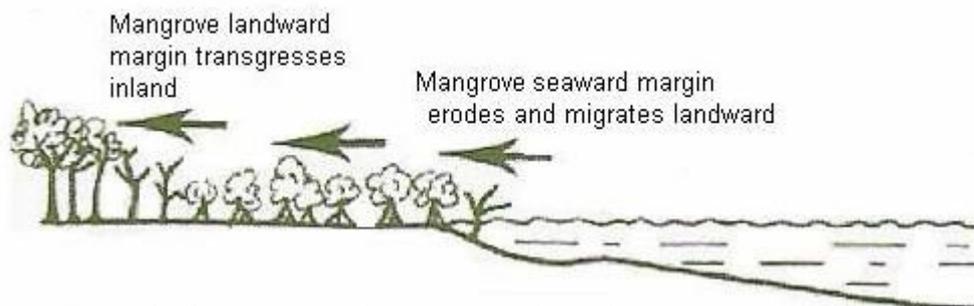


Figure 4: Sea level rises faster than surface of mangroves

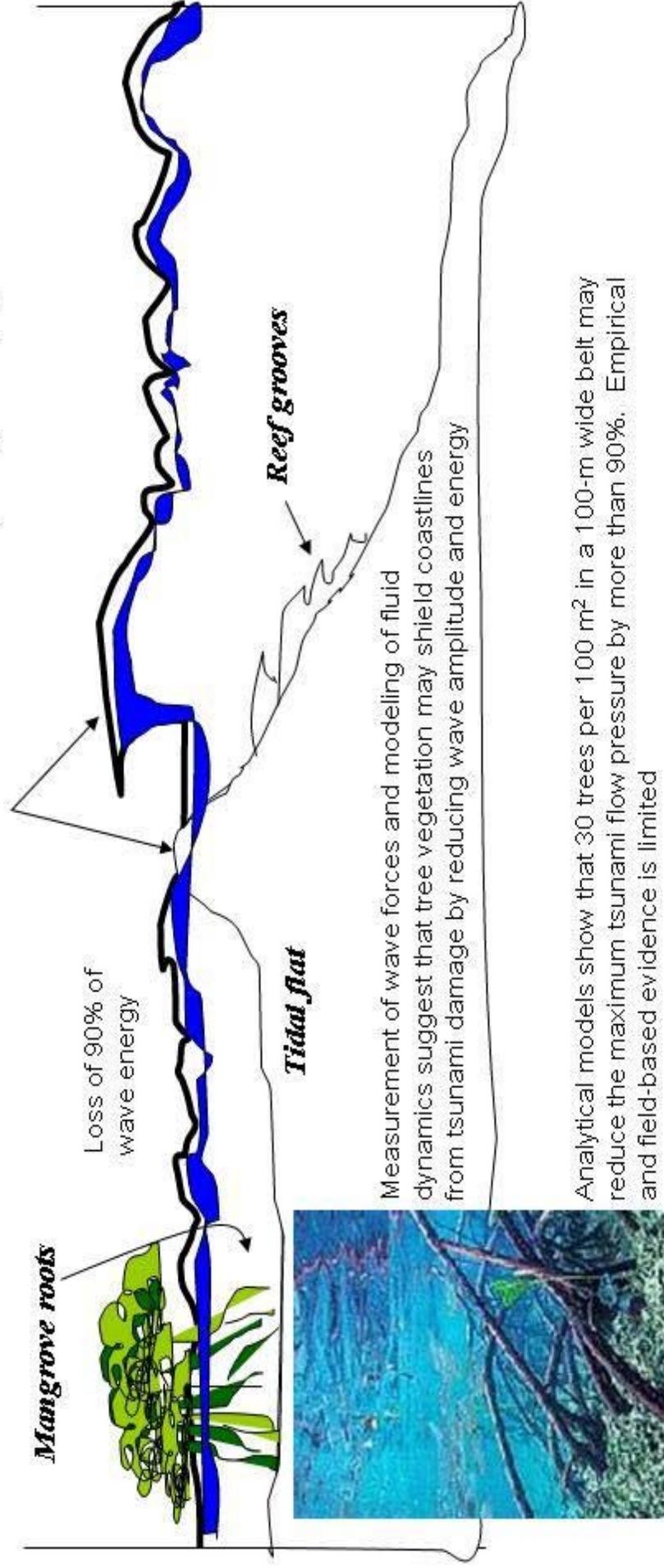
It has previously been suggested that mangroves of high islands (deltaic and estuarine mangroves) and continental coastlines, which have relatively large supplies of inorganic and organic sediment from inland sources deposited by rivers and longshore drift, could keep pace with a 4.5 mm/year relative sea-level rise rate. However, based on the 2001 IPCC projections of global sea-level rise and the predicted rates of mangrove accretion, mangroves could experience serious problems due to rising sea-level, and low island mangroves may already be under stress.

The Impact of Sea Level Rise on Coastal Areas in the Pacific

Two natural defence mechanisms:

COASTAL VEGETATION (mainly MANGROVES) and CORAL REEFS

Long waves travelling in from the deep dissipate energy as they move toward the shallower tidal flat especially on fringing or barrier reefs



Similarly, the rate of carbonate deposition in coral reefs relative to the rate of sea level rise determines whether the reefs will keep pace with rising ocean levels by growing vertically, prograde seaward, backstep upon earlier inland growth, or drown. Reefs may also survive at deeper depths as they grow upward at a lower rate than the rise of sea-level, and catch up if and when the sea-level rise rate slows.

Reef accretion rates range from 1-10 mm/year, with 10 mm/year generally accepted as the maximum vertical accretion rate that a reef can sustain, though this might be exceeded for reefs growing in water depths of less than 20 m where there is abundant sunlight for photosynthesis. Given the median rate of global sea-level rise in the IPCC report of 4.3 mm/year, it seems likely that corals will still survive by vertical accretion. This is true even under the maximum projected rate of 8.0 mm per/year.

Engineered coastal protection systems

Civil engineering has allowed many Pacific nations to create artificial coastal protection systems, too (seawalls, ports, marinas and so on), to protect against sea level rises and natural disasters, but in the Pacific the majority of these structures have significant problems. A technology assessment of the present situation of artificial CPSs identified four main problem areas: lack of scientific qualitative background knowledge of coastal areas; material weaknesses; placement and misplacements, and design failures.

The lack of scientific knowledge in local communities regarding wave properties, wave forces on the structures, currents and sand movement, and the effect of high waves during hurricanes on coastal areas is reflected in the short life span of most of the CPSs in the South Pacific. For example, breakwaters built in areas that experience strong wave energy and current flow cause sand build-up or erosion immediately behind the breakwaters. This is also common for groins, since they disrupt and redirect natural flows of sand and sea currents. A locally made groin in Kiribati, for example, caused an accumulation of sand on the up-drift side and shoreline erosion on the downdrift side. Similar cases exist in the Cook Islands and Fiji.

Most of the materials used in the region to construct coastal protection systems are inadequate. For example, iron materials used in gabion nets and 44 gallon drums are easily corroded in salt water. This leads to their total breakdown, which causes quick and easy dispersion of fill materials. The type of cement used for matrix binding and concrete slabs is normally Portland cement type 1, the ordinary cement used for general construction on dry land. This accounts for almost 90% of the total CPSs in Fiji. Those that are located in shallow and deep waters easily corrode and breakdown. In other cases, crude materials such as discarded refrigerators, rotten woods, old electrical posts, old tires and even household garbage have been used as CPSs. These structures are vulnerable to lesser natural disasters such as high tides and flooding and also become eyesores on the coastal landscape.

Combining natural and artificial coastal protection systems can also be problematic. Where seawalls have been engineered near mangroves, for example, these can “trap” mangroves migrating as the sea level rises, leading to their extinction (figure 6).

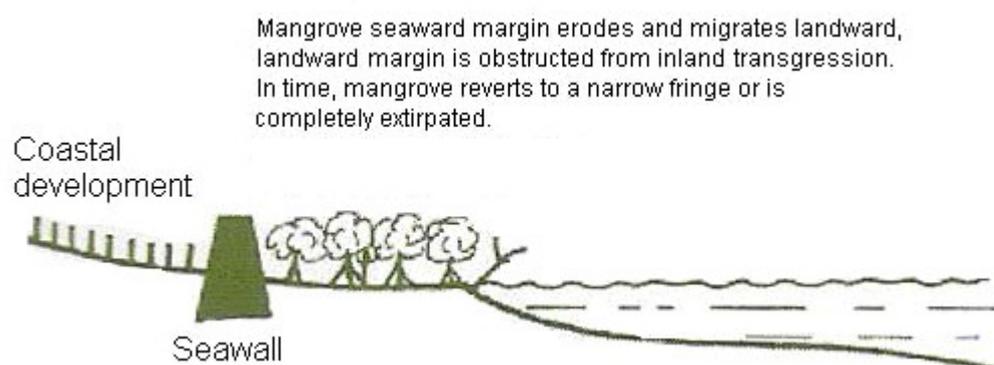


Figure 5: Landward mangrove migration stopped by seawall as sea level rises

Other placement problems include toe stones used in front of CPSs that, during strong wave attacks, wash back onto the structures, cracking and eventually causing them to break down. In Fiji vertical seawalls are built almost everywhere, despite many case studies having reported that their use in high-energy areas compound existing problems such as sand erosion in front of seawalls and scouring.

Many CPSs designs in the Pacific lack fundamental civil engineering standards regarding foundations, drainage systems, appropriate shape and protective covers. Lack of monitoring has been reported as a cause of massive losses of seawalls, exacerbated by financial constraints and political issues.

Laboratory experiment

In order to determine the effects of sea level rises on coastal areas and coastal protection systems a laboratory experiment on beach protection was carried out. The aims of this were to identify a worse case wave scenario to use for experiments on CPSs similar to those found in Pacific Island countries; to compare the overall degree of erosion and scouring of CPSs; and to identify the most appropriate form of coastal protection.

Four types of materials were used to build hard structures in a wave-generating tank: concrete cubes, tetra-pads, sandbags and long rods dubbed “mangroves”. A control consisting of a sandy base with no hard structures was also included. Various configurations of these structures relative to the water line, under differing wave conditions, were examined. The main findings of this experiment were:

- An increase in sea level also increases erosion and scouring on beaches;
- Scoured and eroded sand is transported only onto the tidal wave area within the confines of the reef system and not beyond;
- The control (no hard structures) experienced greater erosion and scouring processes than the rest of the case studies;
- The “mangroves” proved to be the least scoured and eroded of the structures.

Conclusion

A review of the present situation of coastal protection systems revealed many engineering problems. These are indicative of the adverse effects of climate change on coastal infrastructures in PICs:

- Approximately 90% of CPSs suffered from some form of structural breakdown. Most local CPSs have no design standards, and short lifespans
- Approximately 80-90% of active CPSs are in the form of coral reefs, mangroves and coastal vegetation, while only 10-20 % are artificial. The major artificial options in the South Pacific are the cheapest, locally manufactured structures, while expensive modern technology are applied in some places including coastal protection units, causeways, groins, and gabion baskets.
- Local construction materials are more acceptable due to availability, low cost, and familiarity to the people. But rusted 44 gallon drums, gabion PVC and iron netting, local seawalls consisting of household garbage (hard or soft) are not effective, and often cause adverse environmental effects on the surrounding coasts.
- Mangroves proved to have the least scouring and erosion of a variety of CPS structures tested in laboratory experiments.

Since natural coastal protection, such as mangroves and coral reefs, prevail and heavy engineering is not necessarily suitable to the coasts of Pacific island countries, careful development is necessary to combine natural and artificial elements to obtain optimal coastal protection. The criteria for this are multi-faceted, including cost, environmental consideration, and people’s acceptance, in addition to the engineering necessities of function, durability and flexibility. This is a new challenge to the people in the South Pacific, where there has been no such development in coastal engineering.

Climate Change Controversies

A confidential draft of a high-level international report on the state of climate change has been posted on the internet by US officials months before it was due to be made public. The move to effectively publish the findings of the influential Intergovernmental Panel on Climate Change (IPCC) has surprised experts, who say it could undermine the final report when it is released in February 2007.

(The Guardian Weekly, May 12-18, p.8)

The IPCC was established by the United Nations in 1988 and consists of scientists from around the world who evaluate climate research and present their findings in reports. These are intended to provide an objective basis upon which governments can plan measures to deal with climate change; the first reports led to the Kyoto Protocol aimed at reducing greenhouse gas emissions. However, aspects of the IPCC reports have been challenged. A group of six nations, the Asia-Pacific Partnership on Clean Development and Climate, have proposed an alternative approach to Kyoto based upon greater investment in clean energy technologies. While the contentious debate on the causes of global warming continues, new sources of greenhouse gases are still being discovered:

Around 15% of today's global warming is due to methane gas and some of it may be bubbling up from deep-sea volcanoes. These were thought to be a negligible source of atmospheric methane because it was assumed the gas would oxidise before it reached the surface, but research in Germany has found bubbles protected by a skin of gas hydrate, allowing them to dissolve in surface waters. The number of undersea volcanoes and their level of activity is uncertain.

(New Scientist, March 4, 2006, p.11)

The ocean itself, however, may play a crucial role in climate change due to its thermal inertia:

Temperatures and sea levels will continue rising for another century or more because of a time lag in the oceans' response to atmospheric temperatures, say researchers. The time lag occurs because rising air temperatures take a long time to make themselves felt throughout the immense thermal mass of the oceans. And because water expands as it warms, this time lag in temperature will continue to push sea levels higher. Models predict that thermal expansion alone would make sea levels rise by about 11 centimetres over the next century, but the real rise would almost certainly be more once the effect of melting glaciers and icecaps is included.

(Science, March 18, 2005, pp.1769 – 1772)

And even this may be only a small part of the problem:

Evidence is growing that changes in global climate can and do affect the frequencies of earthquakes, volcanic eruptions and catastrophic sea-floor landslides. Not only has this happened several times throughout Earth's history, it may be starting to happen again. While no serious scientist is suggesting that the 2004 earthquake was triggered by global warming, there is a growing consensus that if climate change continues unchecked, we can expect a warmer and more geologically turbulent future.

The climate interacts with the Earth's crust via the changing mass of water and ice that is shifted around the planet. The pressure is considerable: 1 cubic metre of water weighs 1 tonne and the same volume of ice weighs only slightly less. So it shouldn't come as a surprise that the loading and unloading of the crust by ice or water can trigger seismic and volcanic activity and even landslides. As the balance changes between the stresses acting on the crust and the strains held within it, the result can be an increase in volcanic eruptions and earthquakes...

(New Scientist, May 27, 2006, pp.32-36)

Internet resources useful for further information on climate change include:

IPCC website	http://www.ipcc.ch/index.html
Fisheries and global climate change (UN)	http://www.oceansatlas.com/cds_static/en/fisheries_global_climate_change_en_13789_all_1.html
Asia-Pacific Ministerial Conference (2000)	http://www.unescap.org/mced2000/pacific/background/climate.htm
Asia-Pacific Partnership (APPCDC)	http://www.dfat.gov.au/environment/climate/ap6/
<i>New Scientist</i> climate change articles	http://www.newscientist.com/channel/earth/climate-change
The Pacific Assessment	http://www2.eastwestcenter.org/climate/assessment/
US Environmental Protection Agency	http://yosemite.epa.gov/oar/globalwarming.nsf/content/index.html
WWF Climate Change in the Pacific	http://www.wwfapacific.org/fj/what_we_do/climate_change/index.cfm

Other News from the Region

Giant Marine Reserve created in South Pacific

In April, the Republic of Kiribati designated an enormous swath of Pacific atolls, coral reefs, and ocean to become the third largest marine reserve in the world.

The protected area at the Phoenix Islands, located half way between Fiji and Hawaii, spans some 73,800 sq. miles and includes eight virtually uninhabited coral atolls. It is home to a panoply of marine life, including over 120 coral species and more than 500 types of fish, some of which are found nowhere else. Seabirds and turtles also frequent the region, which lies along key migration routes. The park includes deep-ocean habitat found in no other marine reserve and protection extends even to seamounts on the ocean floor. This is all part of the global effort to preserve biodiversity.



Anemonefish swim along a reef near the Phoenix Is.

The initiative was announced by Martin Puta Tofinga, Kiribati's Minister of Environment, Lands and Agricultural Development, at the Eighth UN Conference on the Convention on Biological Diversity held in Curitiba, Brazil. "If the coral and reefs are protected, then the fish will thrive and bring us benefit," said Kiribatian President Anote Tong. The President also announced that Kiribati, FSM and the Republic of the Marshall Islands would work to protect 30% of the near shore marine areas and 20% of land resources on islands by 2020. In total, this would cover 6.7 million sq. kilometers or roughly 5% of the Pacific Ocean.

The New England Aquarium and the nonprofit Conservation International joined Kiribati authorities in establishing the reserve. Since the new park will require the closure of a commercial fishery that is one of the poor nation's economic mainstays, Kiribati's international partners have established a fund to help replace that lost revenue. This fund would also pay for the park's management costs.

Tony LaCasse, New England Aquarium spokesperson notes that the plan is similar to others enacted by Conservation International in Central American rainforests but the Phoenix Islands Protected Area will be conservation on a rare scale.

"This is a major milestone for marine conservation efforts in the Pacific and for island biodiversity," said Russell A. Mittermeier, president of Conservation International.

(Source: Article by Brian Handwerk for *National Geographic News*, March 29, 2006; photo by Paul Nicklen/NGS http://news.nationalgeographic.com/news/2006/03/0329_060329_reef_reserve.html)

War chant used to spur marine conservation

A Fijian war chant with a blood-thirsty message was used by the Roko Tui Macuata to persuade villagers to support an award-winning plan to protect the area's marine life. The chant means "Let's paint the day red" with blood and was historically used to unite allies in battle, Ratu Aisea Katonivere told reporters. He was in Washington along with Fijian Prime Minister, Laisenia Qarase, to receive the Global Ocean Conservation Award for the plan as part of events marking World Ocean Day on June 8th. He used the war cry to encourage other chiefs and villagers to set up a 23 sq. mile protected aquatic zone in a traditional fishing area.

"I became passionate about it because for us the sea is life," said Katonivere. "I went about digging through our roots to the old folks in the villages and trying to mobilize society by using an old war cry that I used to hear from my grandfather." He hoped that by using the ancient chant, he would tie the islands' traditions to conservation, which had been untried there.

"Using this war cry, all the neighboring chiefs came to the meeting that I'd called. They came to realize that creating marine protected areas is the only way forward because you preserve the fish not only for our generation, but also for the next. At first, Fijians resisted the plan, since it barred fishing in some traditional areas but, they were convinced after the plan was put into effect and more fish started coming closer to the shore," Katonivere said.

(Source: Article by Deborah Zabarenko for *Reuters*, June 7, 2006 <http://www.alertnet.org/thenews/newsdesk/N07195325.htm>)

New Publications

Ruddle, K. & Ishige, N. 2006, *Fermented Fish Products in East Asia*. (IRMI Research Study, no. 1) IRMI, Hong Kong. 236 p., 97 figures, 21 tables and 100 colour photographs. E-text available for download for \$5.99; on CD for \$30.00; or combined print with CD copies for \$100. The IRMI website is <http://www.intresmanins.com/>



IRMI, the International Resources Management Institute, is a research and consulting organization based in Hong Kong. IRMI focuses on development problems in coastal-marine communities and environments in the Asia-Pacific region. Via their website they intend to make available electronically and at low cost reports, reprints and photographs by the institute and its staff. This is done on a cost recovery basis, so publications are provided at a nominal cost to cover website expenses, all communication is by email and all payments must be made using PayPal. This is their first publication.

Although fermented fish products are of major importance in East Asia, and particularly in Southeast Asia, studies of them remain few, limited, fragmented, and often highly specialized. Most contributions deal with chemical analyses of these products, a description of the processing, the chemical changes that occur during processing, and fermentation within the general context of fish processing.

In contrast, this comprehensive and highly detailed study is based on a 6-month field survey conducted jointly by Kenneth Ruddle and Naomichi Ishige on the entire range of the fermented fish industry, from the catching of the raw materials, through processing, to the culinary use and cultural-ecological context. The survey was conducted in Bangladesh, Cambodia, China, India, Indonesia, Japan, Korea, Malaysia, Myanmar, the Philippines, Taiwan, Thailand, and Vietnam.

(The next item to be uploaded will be a compilation of selected works on traditional marine resources management and knowledge, mostly in the Pacific Islands, by the late Robert E. Johannes – Ed.)

Guidelines for designing data collection and sharing systems for co-managed fisheries. Part 1: Practical guide (FAO Fisheries Technical Paper No. 494/1) 50 pp. ISBN 92-5-105409-6. *Part 2: Technical guidelines* (FAO Fisheries Technical Paper No.494/2) 120 pp. ISBN 92-5-105410-X.

The increasing shift towards co-management has prompted managers to reflect upon their new roles and reconsider information requirements. This technical paper, in two parts, is aimed to meet the growing need among co-managers for guidelines to help design and implement appropriate and cost-effective data collection programmes or systems. Part 2: Technical guidelines provides more technical detail on each of the sections in the Practical guide, including examples of the types of data that might be of interest to different stakeholders, data collection methods and sources, the design of sampling programmes, and guidance on data analysis and interpretation. Part 2 is aimed particularly at Department of Fisheries and extension staff, research agencies and academic institutions, but can also provide field practitioners with an additional resource that can be referenced when necessary.

Overcoming factors of unsustainability and overexploitation in fisheries: selected papers on issues and approaches. International Workshop on the Implementation of International Fisheries Instruments and Factors of Unsustainability and Overexploitation. Siem Reap, Cambodia, 13-16 September 2004. (FAO Fisheries Report No. 732) Rome, 2005, 358 pp. ISBN 92-5-105449-5.

This international workshop was organized in order to identify factors of unsustainability and over exploitation in fisheries and review major issues in the implementation of international fisheries instruments. The Workshop was based on a review of discussion papers that took into account the outcomes of the previous workshops on these issues. It addressed the following thematic issues: governance and fisheries management; causes or solutions for unsustainability; access and fishing rights; fishery management and sustainability dimensions; and small scale issues and developing country perspective. This document contains the report of the Workshop and eighteen discussion papers submitted by participants.

PIRG Meeting Held in New Caledonia

Eight regional librarians met April 6-7 at the Secretariat of the Pacific Community headquarters in Noumea, New Caledonia, for a meeting of the Pacific Islands Regional Group (PIRG) of IAMSLIC. It was hosted jointly by SPC and PIMRIS to coincide with the 5th SPC Heads of Fisheries Meeting.

This was the first PIRG meeting held independent of the PIMRIS Steering Committee meetings and discussed various issues aimed at revitalizing the Group. After introductions and overviews of the libraries represented and their common challenges and aims, Satui Bentin was introduced as the new PIRG Chair. The group arrived at the following decisions for action:

- To expand PIRG by inviting members from all Pacific Islands, Australia and New Zealand;
- To consider a change of name (and acronym) for the group more appropriate to this membership;
- For all PIRG members to encourage their national governments to join the IOC;
- For PIRG to request IAMSLIC to host a regional list-serv in order to facilitate communication

Suzie Davies explained the history, organizational structure and functions of IOC's ODINs (Ocean Data and Information Networks) before the group discussed the viability of a Pacific ODIN. It was resolved that a Pacific ODIN could enhance and extend PIMRIS and would best be managed under its auspices. Suzie and Chris are to take this up with the IOC.

On Thursday afternoon several of the PIRG attendees made presentations to the Heads of Fisheries delegates on the topic "Regional cooperation in marine resources information capacity building" to demonstrate how cooperation was already occurring and how this could be expanded in future. All of the presentations to the Heads of Fisheries Meeting were conducted in French or English depending on the presenter, with simultaneously translation into the other language by SPC interpreters.

The second day, 7 April, was spent in detailed discussion of the 2008 IAMSLIC Annual Conference, to be held in Suva. After lively debate, it was agreed that the theme to be proposed to the conference committee was "Sharing traditional knowledge in a world of digital divides". The meeting felt that the Pacific region has unique challenges, but that this theme also has global appeal to anyone working in indigenous or traditional knowledge management. Various sub-themes and logistical preparations for the conference were also proposed before the meeting concluded.



Present were (top, L to R): Satui Bentin (SPREP); Rachele Oriente and Anne Gibert (SPC); Isabelle Perin (IRD) and (bottom, L to R): Suzy Davies (Great Barrier Reef Marine Park Authority); Clare Ame (National Fisheries Authority, PNG); Chris Nelson (PIMRIS Coordinator); and Daisy Dalisay (WorldFish Centre, Philippines).

Agency News

Tuna Fishery Management Scheme Approved

The annual meeting of the Pacific Islands Forum Fisheries Committee has endorsed a new approach to tuna fishery management. Meeting in Nadi, Fiji on 15 May 2006, the FFC endorsed an Ecosystem Approach to Fishery Management (EAFM).



FFA Director-General, Feleti Teo stated, "the EAFM requires a range of factors to be taken into account when planning for sustainable use of our Pacific tuna resources. As well as the biological information about the fishery, the framework takes into account social and economic factors influencing the fishery".

FFA's Director of Fisheries Management, Dan Su'a introduced the framework to the FFC for their endorsement. Dan said "we have conducted extensive regional consultation whilst developing this framework. Some of the challenges we face now are to roll this out across the region, and to ensure a consistent approach is adopted by the new tuna Commission in Pohnpei". The new Ecosystem Approach to Fisheries Management will be progressively implemented over the next three years.

FFA media release (<http://www.ffa.int/node/734>)

Inaugural Tsunami Exercise & Tsunami Awareness Kit

A mock tsunami scenario was held on 10 May 2006 to test communication systems up to the step just prior to public notification. The purpose of this Pacific-wide exercise was to increase preparedness, evaluate response capabilities in each country and improve coordination throughout the region.



Timing was fortuitous as the exercise closely followed the 4 May scare from Tonga's big earthquake. The exercise was strongly supported amongst Pacific island nations with the Cook Islands, Fiji, the Marshall Islands, Niue, Papua New Guinea, Samoa, Solomon Island and Tonga actively participating. This exercise has allowed NDMOs and other key national stakeholders to assess their capability for a coordinated tsunami response. Currently no Pacific island nation has a tsunami specific national response plan.

Meanwhile, a Tsunami Awareness workshop for Fiji is scheduled for July. The main objective of the workshop is to raise awareness on tsunami hazards and the needs of users of tsunami information. A sample TAK has been developed for Fiji as an initial template. After a trial implementation other kits will be developed and tailored for each specific country.

Late last year the Community Risk Programme of SOPAC managed the development of a Tsunami Awareness Kit (TAK), a multi-module resource kit on tsunamis aimed at government officials, technical people, response agencies, the educational system, communities and the private sector. The TAK is a collection of resources intended to form the basis of a public awareness program aimed at strengthening mechanisms for sharing information, knowledge, experiences and sound practices. The kit provides information that communities can use to respond to tsunamis and to reduce their vulnerability.

The TAK is a result of a joint initiative between the Pacific Disaster Center (PDC) and SOPAC with support from the Intergovernmental Oceanographic Commission's International Coordination Group for the Tsunami Warning System in the Pacific (ICG/ITSU). Countries that plan to run tsunami awareness exercises this year are urged to contact Noud Leenders at SOPAC on the use of this kit.

(SOPAC Snapshots, May 2006)

World Ocean Day



Today, around the world, people come together to celebrate our world ocean, reflect on the ocean's importance in our lives, and take time to do something good for our blue planet.

This is especially relevant for us here in the Pacific Islands, the "Large Ocean Islands"

Globally, most of the major ocean fisheries are in decline, important coastal habitats are disappearing at an alarming pace, and climate change and pollution are harming coral ecosystems at an unprecedented rate.

While the picture is not so grim in the Pacific, all of us, individuals and governments have a role to play to preserve our ocean for generations to come.

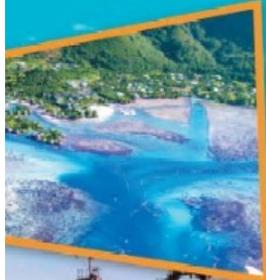
Why Should I Care About the Ocean?

The ocean:

- Provides most of our food
- Generates most of the oxygen we breathe;
- Regulates our climate;
- Cleans the water we drink;
- Transports us;
- Offers us potential tourism opportunities;
- Offers us potential medicines; and
- Provides limitless inspiration!

Yet for too long, humans have:

- Treated the ocean as a garbage dump;
- Decimated fish populations;
- Destroyed critical habitat, especially coral reefs;
- Interrupted the fundamental reproductive capacity of life in the ocean; and
- Taken the ocean for granted.



LET'S CELEBRATE WORLD OCEAN DAY

The world's ocean and its rich diversity of life belong to all of us and a healthy ocean is essential to human health and well-being.

World Ocean Day allows us to...

Celebrate, Reflect and ACT!!

Almost all of us in the Pacific live on the coast; take the time to think about how the ocean affects you, and how you affect the ocean.

It's up to each of us to ensure that our ocean is protected and conserved for future generations.

What kind of ocean do we want to leave for our grandchildren?

Now we can give back! Get involved!

You can make a big difference by volunteering some of your time or joining a conservation organization to help protect our blue planet.

Contact your local NGO today to see how you can start taking action to protect our ocean.

Remember World Ocean Day this year and help protect our ocean for the future!

Did you know that...?

- The ocean covers 72% of the Earth's surface?
- The Pacific Region is 98% ocean?
- From space, the Pacific Ocean is the largest feature on the Earth's surface?
- More than 90% of the Planet's living biomass is found in the ocean?
- Half of the world's population, i.e. 3 billion people, live less than 80 kilometres from the coast. In 30 years, 6 billion people or 3/4 of the world's estimated population in 2035 will live near the water?

8TH JUNE



Find out more at: <http://www.theoceanproject.org/wod/about.php>

Announcements

HAMILTON SHIRLEY AMERASINGHE FELLOWSHIP ON THE LAW OF THE SEA



This fellowship was established in 1981 in memory of the late Hamilton Shirley Amerasinghe, the first President of the Third United Nations Conference on the Law of the Sea (1973-1980), in recognition of his contribution to the development of the law of the sea.

Ambassador Amerasinghe, of Sri Lanka, had been Chairman of the Ad hoc Committee to Study the Peaceful Uses of the Sea-Bed and Ocean Floor from 1967 to 1970 and subsequently, of the Standing Committee for the Peaceful Uses of the Sea-Bed and Ocean Floor beyond the Limits of National Jurisdiction, from 1970 to 1973. The UN Assembly invited Governments, universities, philanthropic foundations and other interested institutions and organizations to contribute to the endowment of the fellowship and it has grown from that time.

Purpose of the Fellowship: The fellowship is intended, primarily, for Government officials as well as research fellows or lecturers who are involved in ocean law or maritime affairs, or related disciplines, either in Governments or agencies or educational institutions. Its purpose is to assist candidates to acquire additional knowledge of the United Nations Convention on the Law of the Sea, in order to promote its wider appreciation and application, and to enhance specialized experience in those fields.

Selected fellows are provided with the facilities to undertake research and further study at one of the participating institutions for a minimum of three to six months and a further one to three months of internship with the UN Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs. Special consideration is given to persons who may not have the means or facilities for further studies, training or experience in their own or other countries. The fellowship is intended to further the selected fellows in their vocations and thus to benefit their countries.

Participating Institutions: Sixteen educational institutions in eight countries across the world are associated with the fellowship programme and have offered facilities for selected fellows to carry out specialized research for varying periods.

Selection of Candidates and Award of Fellowship: Fellowships are awarded annually. Twenty, as well as five special fellowships, have been awarded since the commencement of the programme. The funds for three of these special fellowships have been donated by the Government of the United Kingdom and one by the Government of Germany. The annual award is made on the recommendation of an Advisory Panel comprising eminent international personalities associated with the law of the sea and related matters. On the basis of the Guidelines and Rules of the fellowship, the Division for Ocean Affairs and the Law of the Sea, with the assistance of the Codification Division of the Office of Legal Affairs, carries out the first review and pre-selection of the candidates. The Advisory Panel evaluates the final candidates and advises the Under-Secretary-General for Legal Affairs, the Legal Counsel, in the award of the fellowship.

Applications: Application forms and Guidelines and Rules are circulated globally, *inter alia*, through UNDP offices, UN Information Centres and the Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, Room DC2-0434, 2 United Nations Plaza, New York, N.Y. 10017. They may also be accessed via the Fellowship website below. The closing date for applications this year is 15 September 2006.

The Fellowship website address is:

http://www.un.org/depts/los/technical_assistance/hsa_fellowship/amerasinghe_fellowship.htm

Conference & Workshop Notices

2006

- June 18-24 1st Asia-Pacific Coral Reef Symposium, Hong Kong, China
Theme: *Coral reefs: Cooperation and collaboration for better conservation*
<http://www.cuhk.edu.hk/bio/APCRS/index.htm>
- June 26-29 International Conference on Coastal Ecosystems (ICCE), Campeche, Mexico
Theme: *Towards an Integrated Knowledge for an Ecosystem Approach for Fisheries* <http://etzna.uacam.mx/epomex/icce/icce.html>
- July 11-14 13th Biennial Conference of the International Institute of Fisheries Economics and Trade (IIFET 2006), Portsmouth, UK
<http://www.port.ac.uk/special/iifet2006/>
- July 12-14 30th Virginia Law of the Sea Conference: Law, Science & Ocean Management
National University of Ireland, Galway
<http://mri.nuigalway.ie/marinelaw/microsite/index.html>
- July 24-27 Third International Conference on Climate Impacts Assessment (TICCIA),
Cairns, Queensland, Australia
<http://www.anu.edu.au/anuie/iccia/index.html>
- Oct 30 – Nov 4 Coral Reef Ecosystems Biodiversity Forum, Noumea, New Caledonia
<http://www.ird.nc/biodec/>

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PIMRIS Coordination Unit
c/- School of Marine Studies
University of the South Pacific
PO Box 1168
Suva, FIJI