

The Pacific Tradewinds Quarterly

Pacific Islands Global Ocean Observing System: PI-GOOS

Helping to build our understanding of the Pacific marine environment

Monday, September 24, 2007

By Paul Eastwood

The Pacific Ocean is one of the most important oceans in the world. Covering almost 170 million km², a third of the Earth's surface, this vast sea region supports extensive coral reef ecosystems, globally important commercial fisheries, and significant mineral deposits. The waters of the Pacific are also a major driver of global climate processes. In order to better understand these processes, manage resources in a sustainable manner, and develop strategies for mitigating the threat of environmental hazards, routine and

comprehensive observations of the Pacific marine environment are needed.

Developing the observational capacity in Pacific marine waters poses some major logistical challenges, as most Pacific Island nations lack the resources and the human and technical infrastructure to implement robust and sustained observing systems. The need to improving observational capacity in the Pacific and other regions of the world is one of the main drivers behind the development of the Global Ocean Observing System (GOOS: www.ioc-goos.org). As a global programme, GOOS aims

Inside this issue:

Tonga Schools Get Share of New Zealand Grant	5/6
American Samoa Reefs Generate \$5 Million	6/7
Remote Marshalls Atoll to Get Solar Power	8
Overfishing Threatens Pacific Tuna	9
EU to Put \$2.3 Million into Solomon Schools	9
Organization Pushing Renewable Energy in the Pacific	10
Pacific Governments Urged to Push for More in Climate Change	10/11
\$17M Noumea Aquarium Opens	11
Marine Focus for Livelihood Return in Solomon Islands	12
Classroom Weather Focus	13
ENSO Update	14
Get to Know: Britton Rife	14

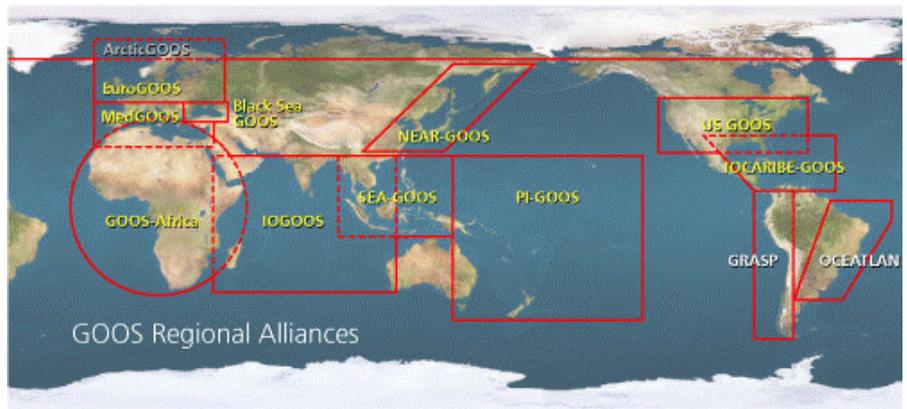


Figure 1

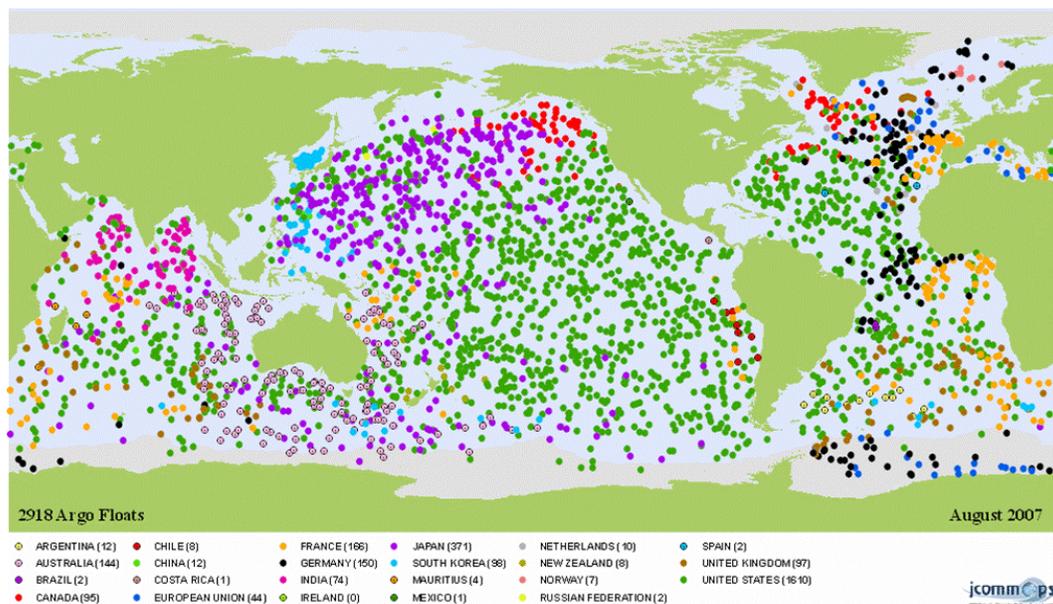
to develop a permanent system of observations, modelling and analysis of coastal and ocean variables. Within this broad scope, regional alliances have been set up to provide an effective mechanism for tailoring the GOOS programme to meet the specific needs of diverse communities from around the world.

The Pacific Islands GOOS programme (PI-GOOS) is one of 12 regional alliances currently in operation (Figure 1). The central objective of PI-GOOS is to address the observational needs and unique capacity issues that exist among Pacific Island nations. Initiated in 1998, PI-GOOS is hosted by the Secretariat of the Pacific Islands Applied Geoscience Commission (SOPAC: www.sopac.org) from their offices in Suva, Fiji.

Given the scale and importance of the Pacific Ocean and the small size of many of the island nations scattered across the region, the drivers and needs for coastal and ocean observations in the Pacific Islands region are understandably

quite different from those of other regions, such as Europe and Africa. One of the major differences is in the way in which ocean observations are collected. The Pacific Ocean is a major driving force for global climate process and therefore has received considerable attention from oceanographers and marine meteorologists for many years. The number of observation and monitoring platforms that have been deployed in the Pacific is vast and growing, particularly through initiatives such as Argo (www.argo.net), a programme designed to increase global coverage of temperature and salinity measurements via systematic deployment of ~ 3000 profiling floats (Figure 2). Programmes such as Argo and ones similar are in all cases implemented by nations bordering the Pacific and farther a field. Involvement from Pacific Islands nations whose waters the observations are being collected in is invariably limited to providing official permission for instruments to be deployed within their Exclusive Economic Zones

Figure 2
Coverage of Argo floats as of August 2007. The color of each dot represents the country of origin.



(EEZ). The PI-GOOS programme therefore aims to bridge the divide between data collectors and Pacific Island nations in two ways. First, by helping to build national observational capacity where needed, such as for mariculture sites where data on water quality is critical to successful operations. Second, by ensuring that the data and products being generated by the large scale coastal and open ocean observation programmes are readily available, in accessible formats, and can be understood by a broad range of users from across the Pacific Islands region.

Currently PI-GOOS is undertaking a number of initiatives to help build capacity and bridge the data divide. One important initiative is the development of a catalogue of coastal and ocean observing systems and programmes operating in the Pacific Islands region. When completed the catalogue will be publishing on the web so that people can find out where

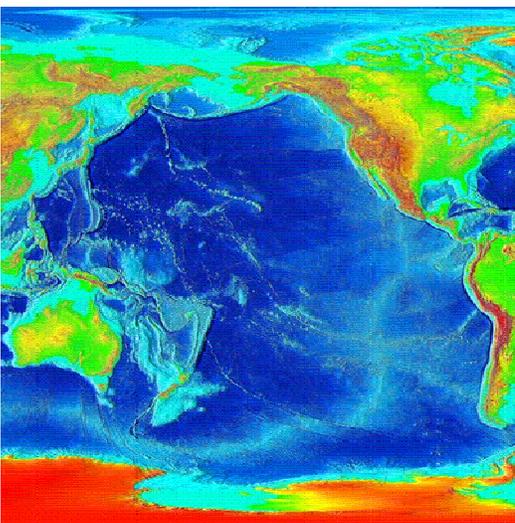


Figure 3

Elevation in the Pacific Ocean region.

and when data were collected and who to contact to get hold of the information. A second initiative is the development of a digital marine atlas of the Pacific Islands region, the first of its kind. The aim of the atlas is to simplify access to digital geospatial data for marine variables, such as temperature, salinity, chlorophyll, depth, current speed and direction, and nutrients (Figure 3). The atlas will initially contain regional level data layers, but over time will expand to include high resolution data for the coastal waters of Pacific Island nations.

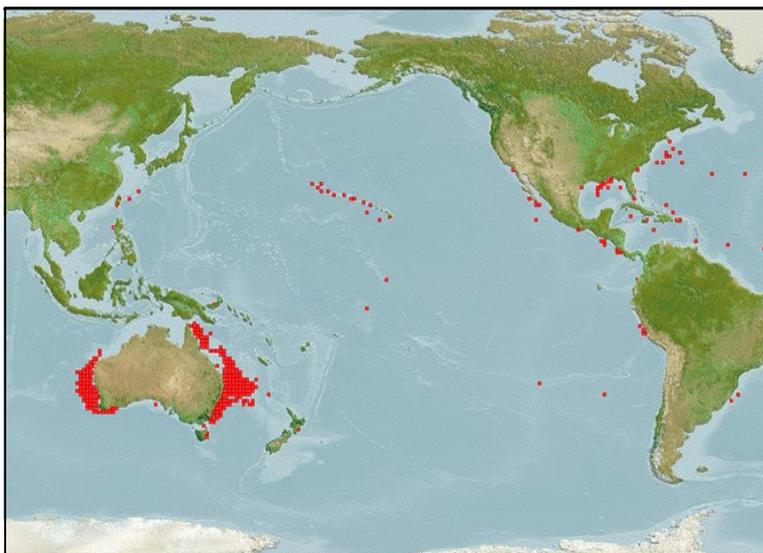
PI-GOOS is not only concerned with oceanographic data but acts to strengthen existing data collection programmes where they exist to help improve our understanding of a wide array of coastal and marine issues. Biological diversity is an important component of any marine system and not least in the Pacific Ocean. Understanding the distribution and diversity of marine organisms allows better decisions to be made at the national and regional level regarding the management of human activities such as commercial fishing and coastal developments. While there are a number of biological data collection programmes in operation in the region, better coordination is needed to ensure that the data can be integrated across programmes and used to build our understanding of patterns of species distributions at national and regional scales. Increased access to more geographically comprehensive species observations will help to reduce bias in mapped

overviews of species distributions from patchily distributed data (Figure 4).

PI-GOOS works in conjunction with two other observing programmes: the Pacific Islands Global Climate Observing System (PI-GCOS) and the Pacific Hydrological Cycle Observing System (Pacific HYCOS). In combination, these three observing systems tackle all of the major components of the hydrological cycle: from oceans and climate to surface and ground water. By integrating the data, information, and products from all three programmes, our understanding of a number of critical environmental processes affecting the lives of Pacific Island communities will be significantly enhanced. The combined data and information will also help strengthen regional and national capacity for sound plan-

ning and decision making and thus help to build more sustainable livelihoods across the Pacific Islands region. The long term vision for the Pacific is for countries to have the capacity to undertake the necessary observation programmes, to not only understand their climate, coasts, and water systems, but to use the information to guide sustainable development and mitigate against environmental hazards and threats. Until such time, programmes such as PI-GOOS have a vital role to play in building observational capacity throughout the region. Their successful implementation will ensure that some of the most vulnerable nations on Earth are better equipped to serve their communities at the local level and also tackle the challenges and threats posed by global scale process such as climate change.

Figure 4
Distributions of observations of yellowfin tuna from Fishbase (www.fishbase.org)



Current PI-GOOS partners

Tonga Schools Get Share of New Zealand Grant

Tuesday, August 28th, 2007

NUKUALOFA, Tonga – Tonga's Ministry of Education made out a Grant Payment of over \$900,000 pa'anga [US\$441,000] to schools under the Tonga Education Support Program in June.

Dr Uiliami Fukofuka the Chief Executive Officer of the Ministry of Education said on August 3 that payments were made under the School Grants Program of the Tonga Education Support Program (TESP).

He said that the official payment of grants to schools under this program would not start until next year but this was just piloting the process to see how it would work.

TESP is a US\$14 million funded program launched in November 2005, financed by New Zealand and the World Bank for five years.

Schools Grants

The School Grants for selected primary, middle and secondary schools will finance their overall development needs with an estimated US\$2.8 million made available beginning this year for the whole term.

Uiliami said that the payment of grants to schools on June 28-29 was made out in one lump sum to each eligible school.

The payments were made out to all Government and Non-Government Primary Schools. Then all Non-Government Middle

and Secondary Schools throughout Tonga for the Form 1-2 level. This is except for Mormon Church Schools who did not want the grant.

In the Primary Schools payments of grants were of \$500 pa'anga [US\$245] per school plus \$30 pa'anga [US\$14.70] per head. For Form 1-2, all Non Government Middle and Secondary Schools each received \$2,000 pa'anga [US\$980] per school and \$100 pa'anga [US\$49] per head.

Uiliami clarified that in the non-government school recipients included the Ocean of Light and 'Atenisi Form 1-2 level.

These grants were made in two parts, to buy school materials for teachers and learning materials for students as well as funding the improvement of a better school environment, which included fixing of classrooms, bathrooms and other much needed repairs.

The CEO added that the grant was put into each school account at the Westpac Bank of Tonga and the Ministry will conduct an end of year inspection of each school recipient and level to see whether the quality of education has improved.

Financing

The CEO added that the funding of TESP is made in three parts: which is a loan from the World Bank of TOP \$2 million pa'anga [US\$980,000], an NZAID funded

"...the official payment of grants to schools under this program would not start until next year..."
says Dr. Uiliami Fukofuka, Chief Executive Officer of the Ministry of Education.

“...the coral reefs of American Samoa have provided benefits ‘on the order of US \$5.1 million a year’...” Tina Mata’afa.

Trust Fund of TOP\$8 million [US\$39. million] managed by the World Bank and a NZAID direct grant of TOP \$12 million[US\$5.9 million].

The two partners NZAID and the World Bank have agreed that New Zealand would put a significant portion of these funds through the bank in a Trust Fund.

The Trust Fund supports the schools grants payments. And the second and larger part of NZAID funding will be used to support reforms in teacher education, curriculum reform and student assessment according to the Tonga Education Policy Framework and using the Government of Tonga systems.

This includes the curriculum reform program that was signed earlier in February to develop a new school curriculum for Tonga. The three-year contract was

signed between the Ministry of Education and the UniQuest Pty Ltd of the University of Queensland.

Three components

The CEO also clarified that TESP has three components, which is to improve equitable access to universal quality education for all children in Tonga up to the Form Two level, to improve access and quality of post basic education and to improve the administration of education so that the quality of educational performance is improved.

He added that the official payment of grants to schools in 2008 would be made in two payments and will continue every year until 2010.

Matangi Tonga Magazine

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<http://pidp.eastwestcenter.org/pireport/2007/August/08-28-20.htm>

American Samoa Reefs Generate \$5 Million

Monday, August 27th, 2007

By Tina Mata'afa

PAGO PAGO, American Samoa - As of 2004, the coral reefs of American Samoa have provided benefits "on the order of US\$5.1 million a year" and accounts for 1.2 percent of the American Samoa Gross Domestic Product (GDP), according to data released by the Department of Commerce for discussion during the 18th U.S. Coral Reef Task Force Meeting.

The information is listed in a fact

sheet titled: "economic valuation of coral reefs and adjacent habitats in American Samoa."

Economic valuation, or the dollar benefit coral reefs provide to a country's economy, was discussed Tuesday during the USCRTF meeting that will continue throughout the week at the Governor H. Rex Lee Auditorium in Utulei.

The DOC report was initiated to aid reef management practices and the information was gathered through village discussions and a

survey or questionnaires.

DOC said the questionnaires were designed to "determine the use and importance of coral reefs and mangroves as well the dollar amount people were willing to pay for continued access to and benefits from these resources."

"As of 2004, the coral reefs of American Samoa provide benefits on the order of US\$5.1 million/year and the territory's mangroves add an additional US\$0.75 million/year," the report states. "These critical natural resources combine to account for 1.2 percent of the American Samoa Gross Domestic Product (GDP)."

A breakdown of these natural resources and their contribution to the local economy puts benefits due to coral reef fisheries at the top of the list with US\$722,000 per year. Benefits resulting from recreational uses are US\$73,000 per year and from bottom fishing, US\$70,000 per year. Benefits relating to shoreline protection provided by the reefs is US\$447,000 annually.

DOC says if "extensive" measures are not taken to protect American Samoa's natural resources, the economic benefit is just one of the things "we stand to lose."

An additional gain of US \$2,753,000 per year in direct benefits could be realized through the complete and effective implementation of proposed mitigation and enhancement measures, as well as management initiatives such as fisheries regulations and controlling coastal development, the report added.

Four U.S. island states and territories - American Samoa, Guam,

Commonwealth of the Northern Marianas Islands (CNMI) and Hawaii - have completed coastal resource economic valuation studies while two others are in the process of developing such studies, the report said. Key findings of the four reports were shared and local participants discussed the potential for applying measures, tools and approaches used in other jurisdictions to American Samoa.

Workshops to address coral bleaching are being hosted this week. Coral reef managers are participating in a joint four-day "Bleaching Tools Workshop" conducted by several instructors from National Oceanic and Atmospheric Administration (NOAA) and Australia's Great Barrier Reef Marine Park Authority (GBRMPA). Participants will learn how to anticipate and respond to coral bleaching events and how to help coral reefs survive bleaching, which refers to loss of color of corals due to stress from a number of causes including global climate change.

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Pacific Island Report

<http://pidp.eastwestcenter.org/pireport/2007/August/08-27-16.htm>



Coral Reefs, American Samoa

<http://www.voanews.com/english/images/wobsamoa-tourism-reef.gif>

"These critical natural resources combine to account for 1.2 percent of the American Samoa Gross Domestic Product (GDP),"

Remote Marshalls Atoll To Get Solar Power

Monday, August 27th, 2007

By Giff Johnson

MAJURO, Marshall Islands — European Union funding will provide solar power to 400 homes on a remote atoll in the Marshall Islands, providing electricity for the first time.

The Marshall Islands is the first of five Pacific countries that have been negotiating solar aid packages with the EU to actually get to the contract signing phase after six years, according to EU and Marshall Islands officials.

Marshall Islands Finance Minister Brenson Wase and Fiji-based CBS Power Solutions' Avinesh Naidu signed the \$1.5 million contract for the delivery of 440 home solar units earlier this week.

Most will go into Ailinglaplap, a remote atoll with five main islands, a population of about 2,000 people and no power source.

"This project is another step toward bringing solar power to all inhabited outer islands in the Marshall Islands," said Resources and Development Minister John

Silk.

In the past two years, the government has installed solar units in the homes on four other remote islands in the country with funding provided by Taiwan, France and Australia.

While Ailinglaplap will soon be seeing installation of solar units, other Pacific islands still have some time to wait.

EU officials indicated that the solar projects in Palau and Kosrae are expected to be put out for bid by the end of August, while the Pohnpei, Chuuk, Yap, Nauru and Niue projects are expected to go out for bid in September.

Most of these islands will be getting home solar equipment similar to the Marshall Islands. But both in Yap and in Niue, solar systems will be connected to the existing diesel-powered electric distribution grids to reduce use of high-cost imported fuel.

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Pacific Island Report

<http://pidp.eastwestcenter.org/pireport/2007/August/08-27-05.htm>

"Most will go into Ailinglaplap, a remote atoll with five main islands, a population of about 2,000 people and no power source," Giff Johnson.



A House in the Marshall Islands

Left
<http://www.flickr.com/photos/curoninja/440768997/>

Right
http://www.sydhav.no/Marshall/marshall_ailin-ailinglaplap_gutter.jpg



Kids from the Marshall Islands

Overfishing Threatens Pacific Tuna

Monday, August 28, 2007

WELLINGTON, New Zealand – The scientific committee of the Western and Central Pacific Fisheries Commission says if Pacific yellow fin tuna continues to be caught at current rates, the supply could drop as much as 25 percent in five years.

The Honolulu Star-Bulletin says a panel of scientists from 30 countries advises the commission, an international body that is trying to ensure that the Pacific tuna-fishing nations do not overexploit the resource.

The panel made the announcement on the final day of a two week meeting at the Hawaii Convention Centre.

A year ago the scientists urged the commission to require its participating nations to reduce catches of yellow fin tuna by 10 percent, due to concerns of overfishing.

The scientists also urged that Pacific fishing nations cut landings of big-eye tuna by 25 percent.

But the Western and Central Pacific Fisheries Commission - which includes China, Japan and Taiwan - did not comply and the scientific committee is likely to recommend the same reductions again this year.

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Pacific Island Report

<http://pidp.eastwestcenter.org/pireport/2007/August/08-27-08.htm>

“The program mainly targets rehabilitation and construction of priority new secondary schools in the Solomon Islands,” Pacific Island Report.

EU to put \$2.3 Million into Solomon Schools

Tuesday, August 28, 2007

HONIARA, Solomon Islands – The European Union is committed to assisting the Solomon Islands government provide better education with its "School infrastructure program".

Under EU's STABEX 99 current work program, some SB\$16 million [US\$2.3 million] has been allocated to cover School Infrastructure projects until 2009.

The program mainly targets rehabilitation and construction of priority new secondary schools in Solomon Islands.

Under the first phase of the Secondary School Infrastructure program, 28 secondary schools have been assisted with a total of SB\$7.6 million [US\$1 million] under the supervision of a local private firm, the Pro-Solutions.

The remaining 116 secondary schools in Solomon islands are catered for, under the major and minor capital works component of the program's second phase.

Solomon Islands Broadcasting Corp.:

www.sibconline.com.sb

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Pacific Island Report

<http://pidp.eastwestcenter.org/pireport/2007/August/08-28-06.htm>

Organization Pushing Renewable Energy in Pacific

Wednesday, August 29, 2007

WELLINGTON, New Zealand – The Renewable Energy & Energy Efficiency Partnership or REEEP says donor countries need to become more involved in efforts to develop renewable energy in the Pacific.

REEEP is an active, global public-private partnership that structures policy and regulatory initiatives for clean energy, and facilitates financing for energy projects around the globe.

[PIR editor's note: The Vienna, Austria-based international organization REEEP promotes and helps finance renewable energy projects

around the world.]

Its officials are this week meeting in New Zealand, determining what strategies to adopt to promote renewable energy in the Pacific over the next year.

REEEP's Finance Advisor Mike Allen says they are encouraged by the political will shown by Pacific energy ministers to work together for renewable and sustainable energy. But he says donor countries in the region now need to also be coordinated into these efforts.

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Pacific Island Report: <http://pidp.eastwestcenter.org/pireport/2007/August/08-29-13.htm>

"...are encouraged by the political will shown by Pacific energy ministers to work together for renewable and sustainable energy," REEEP's Finance Advisor Mike Allen.

Pacific Governments Urged to Push for More in Climate Change

Wednesday September 5, 2007

Governments negotiating a new global deal on climate change accepted a safe range for emission reductions of harmful climate pollution, WWF said today.

The talks in Vienna were designed to prepare for the UN's ministerial conference on climate change in Bali in December. The 100 countries meeting in the Austrian capital were to agree the level of emissions cuts that are needed from industrialized countries, to keep climate change well below dangerous levels.

The current emissions reductions targets agreed under the Kyoto

Protocol end in 2012. In Bali, environment ministers need to formally launch the negotiations that will conclude in 2009 with an agreement on new binding deeper cuts in heat trapping climate pollution.

Governments reluctantly accepted scientific findings that reductions in climate changing gases must be in the range of 25 to 40 per cent below 1990 levels by 2020. In Bali, they will have to formally adopt this.

"At the UN meeting in Bali in December, Pacific Island governments, through the Alliance of Small Island States (AOSIS), must continue to push for the

"...climate changing gases must be in the range of 25 to 40 percent below 1990 levels by 2020," Pacific Magazine.

high emissions reductions targets. As countries that are highly vulnerable to the impacts of climate change, it is their responsibility to lobby the unwilling nations, to accept high emissions reductions targets. Australia, being a Pacific neighbour must ratify the Kyoto Protocol," said Ashvini Fernando, WWF South Pacific Regional Climate Programme Coordinator.

The representatives of Canada, Japan, New Zealand, Australia, South Korea and Switzerland opposed the target of 25-40 per cent reduction and as such hindered progress in Vienna.

"In 2007 we have seen a surge in public support globally for po-

litical action against climate change," says Hans Verolme, Director of WWF's Global Climate Change Programme. "Smart politicians will translate this tremendous public support for a clean energy future into action today."

"At the upcoming UN Summit in New York on 24 September, Presidents and prime ministers will have to open the starting gate for serious, formal negotiations to get the emissions down," said Hans Verolme. "The UN is the right place where countries agree joint strategies to deal with the climate problem."

Pacific Magazine: <http://www.pacificmagazine.net/news/2007/09/05/pacific-governments-urged-to-push-for-more-in-climate-change-talks>

"The UN is the right place where countries agree joint strategies to deal with the climate problem,"
Hans Verolme,
Director of
WWF's Global
Climate Change

\$17M Noumea Aquarium Opens

Monday, September 3, 2007

New Caledonia's multi-million-dollar Nouméa aquarium, which received significant funding from the European Union, officially opened late last week after a three-year delay.

The aquarium project, perceived to be a major boost to the French Pacific territory's capital, was scheduled to officially open late 2004, then the date was rescheduled several times, due to technical, design and logistical problems encountered last year and earlier this year.

Problems included a parasite larvae contamination of the water, which forced project managers to completely re-filter and purify the waters contained in the huge 400,000-litre main tank. Additional costs incurred were taken care of by New Caledonia's terri-

torial and provincial authorities.

The new 3,000-square-metre Nouméa aquarium project received some US\$6.2 million from Brussels as part of the EDF (European Development Fund).

The French Pacific territories benefit from the European Union's Development Fund under the EU's OCT (Overseas Countries and Territories) status.

Speaking on Thursday last week during the official opening ceremony, French High Commissioner Michel Mathieu also paid a vibrant homage to late Jean-Pierre Piérard, who was the Nouméa-based European Commission's representative for French Pacific OCTs and who died on August 9 in the crash of an Air Moorea Twin Otter airliner.

Pacific Magazine: <http://wwwnews/2007/09/03/17m-noumea-aquarium-finally-opensw.pacificmagazine.net/>



Exotic species from local coral reefs will be living in the aquarium.

<http://www.flickr.com/photos/okigen/188090565/>

Marine Focus for Livelihood Return in Solomon Islands

Friday, August 31, 2007

WWF and WorldFish Center are working in partnership to support livelihoods recovery for communities affected by the large earthquake and tsunami in Solomon Islands in April this year.

Rapid marine assessments and surveys of reefs and communities in affected areas have shown that the type and scale of damage from the magnitude 8.1 earthquake varies widely, but that most has occurred in the shallow coastal zone. In the most extreme case the island of Ranongga has been uplifted by as much as 3 meters, stranding coral reefs and mangroves.

Coral reefs have suffered not only from wave damage and land level change, but also from earthquake damage and underwater landslides, though different types of coral have been affected in different ways. It is not yet clear the extent to which damage has affected the availability of reef fish; in the immediate weeks following the disaster some villagers reported that fishing was better than before the disaster, others that it was harder.

As many communities are subsistence-based, the question is, what kind of intervention, holds the best outlook for restoring the environment and the coastal communities to "normality".

"WWF and WorldFish Center are considering options which have the dual goals of marine conservation and fisheries recovery,"

said Jackie Thomas, Interim Country Manager - WWF Solomon Islands.

"These include reef restoration trials, supporting the effort of villagers currently replanting mangroves, and the assessment of suitability for, and if appropriate, deployment of Fish Aggregating Devices (FADS) in key locations where traditional fishing grounds have been uplifted," said Thomas. The further development of these initiatives will be in consultation with the Solomon Islands Ministry of Fisheries and Marine Resources.

According to WorldFish Center scientist Dr Anne-Maree Schwarz, "The rapid assessment has enabled us to identify some disaster-related effects where a technical response may be needed for the longer term until the environment is recovered sufficiently to meet the needs of the people. These include earthquake damaged and uplifted reefs and the associated stranding of mangroves."

"For this reason we propose a linked rehabilitation package which enables WWF-SI and WorldFish Center to contribute their respective skills and to mesh the rehabilitation package with ongoing work in some of the communities," said Schwarz.

The activities are expected to be carried out over the next 2 years.

Pacific Magazine: <http://www.pacificmagazine.net/news/2007/08/31/marine-focus-for-livelihood-recovery-in-solomon-islands>



Sorting giant clam brood stock on World Fish Center jetty. Gizo, Solomon Islands

Pacific Magazine:

<http://www.pacificmagazine.net/news/2007/08/31/marine-focus-for-livelihood-recovery-in-solomon-islands>

Classroom Weather Focus

Avalanche and Landslides

OBJECTIVES:

1. Friction between snow or rocks and the underlying ground holds the snow or rocks in place on a slope, preventing avalanches and landslides.
2. In order for an avalanche or landslide to occur, friction must be overcome.

MATERIALS:

Old textbook, half-meter piece of wood 30cm wide, meter stick, sand, mud, pebbles and water

PROCEDURE:

1. Ask your students if they can define the terms avalanche and landslide. Ask them what they think might cause these phenomenon to occur. Finally, discuss the dangers involved with both.
2. Divide the class into four groups giving one group the sand, another group the mud, another pebbles and the last group water.
3. Place the half-meter piece of wood flat on the floor (it might be good to put some paper below the wood to catch the mud, water and such). Stand the meter stick with the zero facing down on one side of the wood. Place the book flat on the wood near the end with the meter stick.
4. Now raise the end of the wood where the stick is until the book slides down the wood. Write down where on the meter stick the piece of wood was when the book slipped.
5. Send each group back to their desks. Ask them to write down what height they think the book will slip once they put their material between the wood and book. This will help the students become use to creating a hypothesis.
6. Once they are finished, call up each group one at a time to test their hypothesis. Have one student slowly lift the board while another records when the book slips on the meter stick (it would be best to have the water group go second to last with the mud group going last).
7. Compare results between the groups and see who was the closest.
8. Additional Activity: Combine everyone's materials in a bowl and put it between the wood and the book. Ask each group to guess at what height the book will slip.

DISCUSSION QUESTIONS:

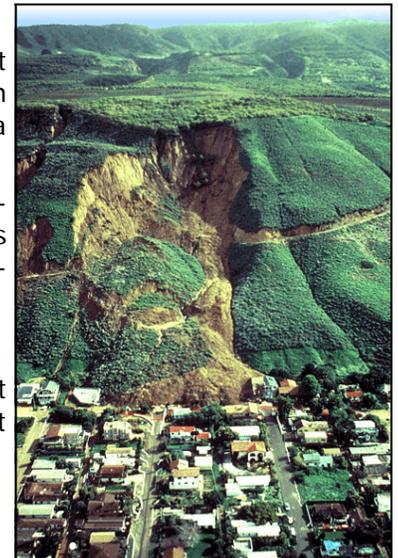
1. Ask each group why they guessed the numbers they did.
2. Discuss the reasons why each material cause the book to slip at different heights.
3. Discuss ways towns and cities can protect themselves from avalanches and landslides.
4. Ask students what they would do in the event of a landslide.

Frank Weisel, Science Teacher, Tilden Middle School, Rockville, Maryland, USA

Discovery Education: <http://school.discoveryeducation.com/lessonplans/programs/ragingplanet-avalanche/>



Avalanche on Mount Everest. Avalanche safety is very important to backcountry sportsmen.
http://away.com/features/telemark-skiing_overview_4.html



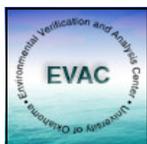
Landslides can be very devastating to a community.

http://www.uwsp.edu/geo/faculty/ritter/images/lithosphere/mass_wasting_erosion/landslide_La-Conchita_CA_USGS_slide21.jpg

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ENSO Diagnostic Discussion

Synopsis: La Niña conditions will further develop during the next 3 months. Nearly all of the dynamical ENSO models forecast the continuing development of La Niña during the next couple of months, and several of the statistical models also indicate the continuation of La Niña conditions through the end of the year. Therefore, current atmospheric conditions (stronger than average easterlies over the west-central Pacific) and observed oceanic trends indicate that La Niña conditions will further develop and possibly strengthen during the next 3 months.

Based on current conditions in the tropical Pacific, the most recent model outlooks, and on results from historical studies on the effects of cold episodes, wetter than normal conditions are expected over Indonesia and drier than normal conditions are anticipated over the central equatorial Pacific during September - November. During this period, potential impacts over the contiguous United States include wetter than normal conditions over the Pacific Northwest and drier than normal conditions over the southwestern states.

NOAA Climate Prediction Center

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.html



Britton and her boyfriend Josh



Sunset in the Wichita Mountains, Southwest Oklahoma, USA

Get to Know: Britton Rife

Tuesday September 18, 2007

Hello, my name is Britton Rife and I am a student assistant for the Oklahoma Wind Power Initiative at the University of Oklahoma. I am a junior pursuing a degree in Environmental Studies and Spanish. I became interested in environmental issues when I took an introductory course for the Interdisciplinary Perspectives on the Environment program. I am particularly interested in conservation and renewable energy and hope to work in either field.

I am from Norman, Oklahoma and have lived here all twenty years of my life. In my free time



Britton (left) and her sister Lindsey

I enjoy spending time with family and friends, being outdoors, going to concerts and playing with my cats. I am also a member of OUR Earth, OU's environmental club, and the Chi Omega sorority.

-Britton Rife

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