AIMS@JCU NEWSLETTER

VOLUME 7, ISSUE 4 December 2011

ACRS 2011

Report by AIMS@JCU Student Member Yui Sato

The 86th Annual Conference of the Australian Coral Reef Society was held 26 - 28 August 2011 in the Novotel Twin Waters Resort, located right across from a beautiful beach on the Sunshine Coast. Researchers, students and management agent delegates from Australia-wide institutes, as well as international delegates, gathered together to share the recent progress of coral reef science and management. The size of the crowd was enough to fill two or three concurrent session rooms, offering a relaxed atmosphere for speakers and great opportunities to mingle with researchers between and after talks.

A total of 80 talks and posters covered a wide field of reef science including ocean acidification, cyclone and flood effects, reef water quality, coral bleaching and disease, ecological roles of reef fishes, biology and genomics of reef organisms, reef palaeontology, reef resilience and recovery, and reef management and conservation. Keynote speakers provided the most recent views of ocean acidification effects on fishes and corals and the trajectories of coral reefs worldwide during the last decades with an emphasis on how a complex web of reef organisms will react to changes in reef environments. One of the plenary talks discussed current issues of the management of the Great Barrier Reef, interestingly by introducing an economic theory to evenly distribute conservation zoning efforts throughout the reef system.

Story continued on page 2

Image courtesy of Patricia Warner

CONTENTS

About the AIMS@JCU Newsletter:

This newsletter is produced quarterly and distributed by e mail to all AIMS and JCU staff.

If you'd like to be added to our mailing list, or have a query regarding this newsletter, please contact:

Editor: Lauren Gregory
Phone: (07) 4781 4074
Email: aims@jcu.edu.au

Image taken by James Woodford © AIMS

ACRS Conference Report by Yui Sato

Continued

During the conference, presentations by students including other AIMS@JCU colleagues, represented a large proportion of conference talks (~35%), leaving the impression that brilliant research is actively conducted by college students as well as senior and early-career researchers. In addition to AIMS@JCU members, a team of AIMS scientists presented their studies with excellent data qualities from monitoring of corals and water quality in the Great Barrier Reef, and recent findings of ocean acidification impacts on coral reproduction and ontogeny, which was also presented as a keynote talk.

My personal highlight of the conference was a public forum on reef resilience held on the Saturday evening. The panel members were experts in different coral reef associated fields; the reef policy maker, the marine park authority, tourism industry, water program in WWF, farming, irrigation, fishery, agriculture, and reef science. They were each given $100 million (probably hypothetically…) to come up wth 'the best way to save the reef'. It was great to see that each department has identified the current problems in coral reef management as a common issue for all people involved in the reef and has a clear direction in each field to maximize chances for the reef to survive the current challenging situations through education and promotion of science and technologies.

I was honoured to receive the Quicksilver Cruises Prize for my talk presented in a coral disease session. The talk presented results from my PhD study and collaborative works developed from my PhD, addressing microbial mechanisms of black-band-disease, a virulent coral disease that has been reported worldwide and currently threatening reefs in the Great Barrier Reef. The presentation outlined changes in microbial members during the development of black-band-disease in the field using various molecular and biogeochemical profiling tools, and proposed a mechanistic model of the pathogenesis of the disease for the first time. I was given a cruise to Agincourt Reef at the northern outer GBR as a prize, which I am planning to enjoy with my freshly-wedded wife between hard work to complete my PhD.

Yui receiving his award at the ACRS Dinner. Congratulations to all award recipients! (Photo: ACRS Facebook page – please visit their page and "Like" them)

Contact: yui.sato1@jcu.edu.au

AIMS@JCU would like to congratulate Yui on both his prize and his marriage!

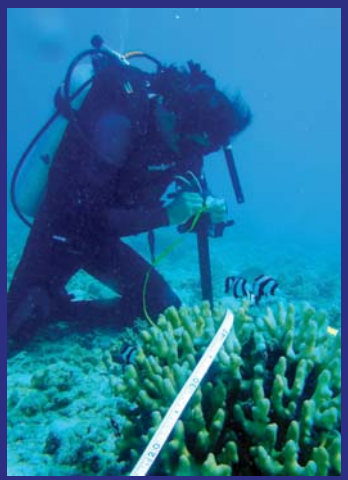
Where are they now?

Francois Seneca

I am currently a postdoctoral scholar in the laboratory of Professor Stephen Palumbi at the Hopkins Marine Station of Stanford University, in California. My project title “Hope for the future of coral reefs: does localized exposure to harsh thermal conditions indicate adaptation at the sub-population level?” aims at determining if certain coral populations showing enhanced resilience to elevated temperature are adapted or simply acclimated to harsher thermal regimes.

I am broadly interested in understanding how marine invertebrate species respond to physical changes in their environment with the goal to predict the consequences of further global climate change on these organisms. My research concentrates on the detection and measurement of change in gene expression levels within the cells of organisms exposed to different stressor stimuli. Studying gene expression patterns under stressful conditions can help to understand the mechanisms behind observed physiological disturbances, and therefore explain the symptoms of a specific stress in an individual.

My current research interests aim to address the big question: can reef-building corals adapt to future global climate change? In recent years, our group has studied a very special population of corals found in the shallow waters of an Ofu Island lagoon in American Samoa. These corals experience extreme fluctuations in daily average temperature and pH, the maxima of which are similar to the predictions for the environmental conditions on coral reefs worldwide 50 - 100 years from today. My goal is to determine if these hardy individuals are only acclimatized or in fact adapted to their harsher conditions. In the latter case, we might expect that similarly adapted populations across the tropics may act as potential sources for the dissemination of those genetic traits needed for coral survival in the face of future global climate change. Recognition of these potential refugia will be essential to successful management of climate change effects on coral reef ecosystems and designating such valuable populations as conservation priorities.



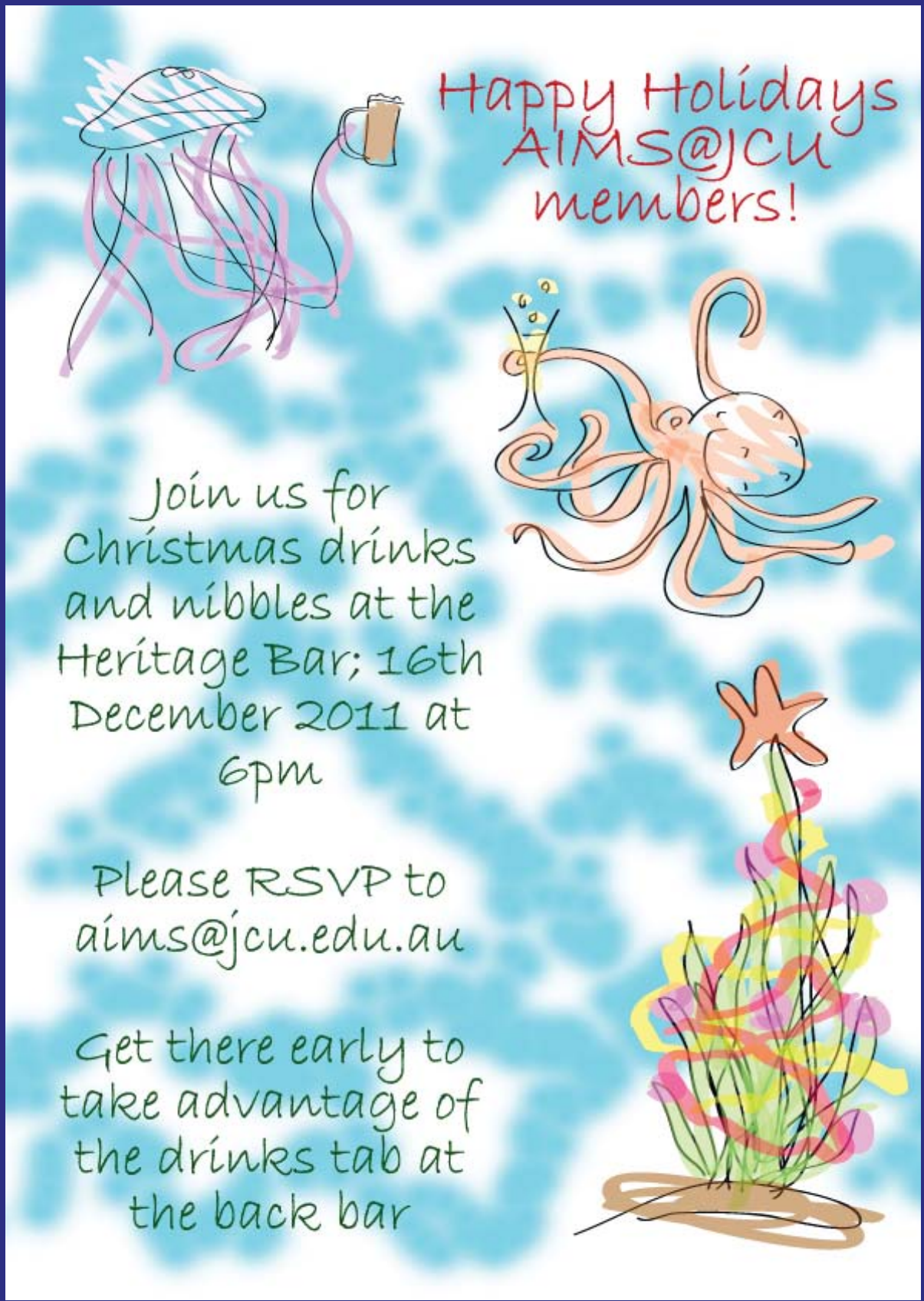
For more information, see:
http://www.stanford.edu/group/Palumbi/PeoplePages/seneca.html

Contact: f.o.seneca@gmail.com

Image taken by James Woodford © AIMS

AIMS@JCU Christmas Party

16th December at the Heritage Bar, Flinders Street from 6pm



We hope to see you there!

Contact: aims@jcu.edu.au

Image taken by James Woodford © AIMS

New AIMS Chief Executive Officer

John Gunn

John Gunn is the Chief Executive Officer of AIMS. John has significant experience in leading development of strategy, scientific research and capability, and stakeholder engagement across a research portfolio encompassing marine ecology, fisheries, coastal systems, physical and chemical oceanography, atmospheric chemistry and climate science. John joined AIMS from the position of Chief Scientist of the Australian Antarctic Program, where he played a key role in developing the new Australian Antarctic Science Strategy Plan: 2011 – 2021. Prior to this, John was Deputy Chief of CSIRO's Marine and Atmospheric Research Division, the culmination of 29 year career with the Commonwealth Scientific and Industrial Research Organisation.

John has held a number of important advisory and policy development roles through his membership of the Scientific Steering Committee for the Global Ocean Observing System, the Australian Academy of Science National Committee for Antarctic Research, the Antarctic Climate and Ecosystems Co-Operative Research Centre Board, the Oceans Policy Science Advisory Group (OPSAG), the Commonwealth Government's High Level Coordination Group on Climate Change Science, and Australia's Integrated Marine Observing System Board.

Alongside his executive experience, John has an extensive academic record. Having graduated from James Cook University, Townsville in 1978 with a first class honours in marine biology, John has authored over 150 peer-review publications, book chapters, papers to international commissions and technical reports, and has presented at more than 100 conferences and symposia, in many instances as the keynote speaker. He has an international reputation in the fields of pelagic fish ecology and in the development of marine biological observing technology and systems.

Having worked within and led a number of world-leading, multidisciplinary teams and programs, John is a passionate advocate for science, and in particular marine science, and its role in securing a prosperous and sustainable future for Australia. While addressing the needs and demands of a broad user community, he is determined to maintain and further enhance the scientific excellence for which AIMS has gained an enviable international reputation.

Contact: j.gunn@aims.gov.au

Image taken by James Woodford © AIMS

AIMS@JCU Infrastructure Update

AIMS@JCU Aquashed

The AIMS@JCU 'Aquashed' was completed in February 2006. Located within the Marine and Aquaculture Research Facilities Unit (MARFU) at JCU, the Aquashed was originally fitted-out with equipment ready for student experiments.

The transformation of the old 'greenhouse' into the new Aquashed provided over 350m² of usable space. The Aquashed had new power, water and waste-water collection included and provides a cooler and drier work area.

The aquashed is currently undergoing a major refit with multiple new research projects being installed. These projects will see the entire aquashed area both internally and externally fully utilised for at least the next three years.

AIMS@JCU Controlled Environment Centre

The AIMS@JCU Controlled Environment Facility (CEF) was completed in February 2006 and is now available for use by students and researchers. The million-dollar state-of-the-art facility, located at AIMS, Cape Ferguson, gives users access to environment-controlled rooms with air conditioning, filtered ambient seawater, filtered heated or cooled seawater, and freshwater reticulation.

The facility makes efficient use of energy through clever design. Air conditioning and seawater cooling will be made possible by re-circulating water from a nearby chiller plant. Seawater will be circulated through solar strip heaters on the roof of the building to provide heated water. Within the facility, air and seawater temperatures will be continuously monitored and the facility will be managed by Matt Kenway.

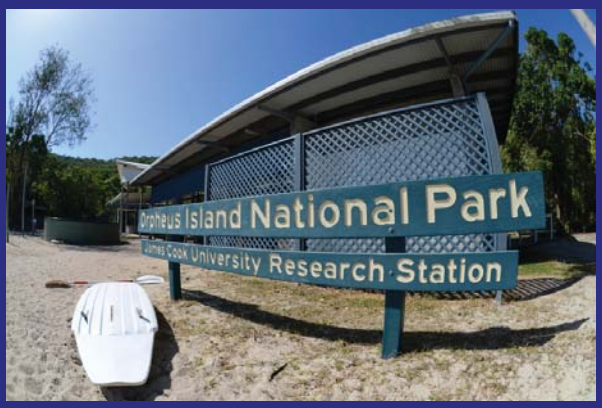
The CEF has two large broodstock rooms and three smaller rearing rooms, and it is expected that initial use of facilities will include research into larval rearing of marine ornamentals and the nutritional requirements of target species larvae, for example rock lobster.

Image taken by James Woodford © AIMS

AIMS@JCU Infrastructure Update Continued

Orpheus Island Research Station air conditioning unit

AIMS@JCU also supported the installation of the external air conditioning unit in TCR1 (temperature controlled room 1) at the Orpheus Island Research Station. The unit has made an important difference in the capacity to use the room for experimental work, for example with coral larvae, and has facilitated international collaborations for AIMS@JCU students. The previous internally mounted unit caused so many vibrations that it inhibited larval settling.



AIMS@JCU Fibre-Optic Link

The fibre-optic link between AIMS and JCU first came online in May 2005, providing the capacity for up to 12 separate 1Gb/s links between us and JCU. Initially we used this infrastructure to create two links, one providing high speed Internet connectivity via AARNet (Australian Academic and Research Network Pty Ltd). The second was a dedicated direct peering link between AIMS and JCU essentially making the AIMS site an extension of the JCU campus and vice versa, providing cost effective, high speed, and simplified access for researchers to the resources they need regardless of their location. Combined with services such as Eduroam, High Performance Computing & Video Conferencing this infrastructure has played a significant role in improving the collaborative efforts between researchers at AIMS and JCU, around Australia and throughout the world.

In August 2007 two more links were used to create a 4Gb/s dual fabric, fibre channel, storage area network between AIMS and JCU. This is has been used to replicate large quantities of data to storage systems located at JCU for disaster recovery. We are currently upgrading the storage system connected to these links to further extend this replication to cover much larger datasets and also implement high speed disk backups and online data archival facilities. JCU IT&R are also currently considering making similar use of the link in the reverse direction.

Technology available today can increase our link speeds up to 40 times using the same cable, and can now create multiple links across one physical piece of fibre which can be aggregated together for further increases in bandwidth. The fibre-optic link provides the foundations which can scale to meet our high speed connectivity needs as they grow for many years into the future and will be a major enabler of new tools for science and outreach.

PTO for information and photograph credits and contacts

Image taken by James Woodford © AIMS

Image taken by James Woodford © AIMS

Research Director's Report

We have been busy sorting through the applicant candidates for the next batch of AIMS@JCU PhD scholarships, for projects commencing in 2012. Our Management Committee and Scientific Advisory Committee are faced with the difficult job of selecting five candidates out of the field of 24 applicants - we hope to announce the outcome in the next newsletter.

I hope to see many of you at our Christmas party on the 16th December - see page 4 of this newsletter. In any case, I would like to thank all the AIMS@JCU members for their continued hard work throughout the year - especially our students - and wish you all a very safe and happy Christmas, and every good fortune for the year ahead.

Contact: e.evansillidge@aims.gov.au

AIMS@JCU Biennial Report

Images and information on pages 6 and 7 were provided by Ben Lawes (ben.lawes@jcu.edu.au), Matt Kenway (m.kenway@aims.gov.au), Bette Willis (bette.willis@jcu.edu.au), Haley Burgess (jcu.orpheus@jcu.edu.au) and James Smith (j.smith@aims.gov.au), for the AIMS@JCU Biennial Report (2009-2010) which will be available shortly. To reduce our environmental impact, only a limited number of these reports will be printed and a digital version will be made availabe for all AIMS@JCU members - please advise us as soon as possible if you require a hard copy.

Thank you to everyone who has contributed to this report, it will be distributed in the new year.

Photographs in this publication were submitted by AIMS@JCU students/staff unless otherwise stated.

Australian Government | Australian Institute of Marine Science | AIMS@JCU | James Cook University Australia