

CMST News

The Newsletter of the Centre for Marine Science & Technology

#7

CMST Gets a Room with an Ocean View

The prospects for marine research at Curtin University of Technology are now stronger than ever, thanks to vital waterfront space made available by the Fremantle Sailing Club (FSC).

An agreement to establish a waterfront facility on the premises of FSC, situated in the heart of Fremantle's marine community, was reached in May.

Waterfront and jetty access is vital for many of the projects undertaken by CMST, however up until now we have not had access to a dedicated facility. The waterfront facility will replace ad hoc access with a developed facility which will showcase Curtin's capacity in the area and enhance research and project outcomes.

A series of Curtin research programs will make use of the facility, including calibration and testing of instruments for acoustic tracking of whales

and fish, the transmission of data underwater, the characterisation of vessel noise underwater, the trialing of new techniques for benthic habitat mapping and the development of ship motion stabilisers.

The new facility offering waterfront space and jetty access at FSC will enable CMST to undertake these projects far more efficiently and effectively than has been possible in the past. In addition, the facility offers easy access for marine oriented field work, so it will be a valuable source of teaching material and hands on practical work for marine oriented research students. The new development will include a transportable building for offices, wet and dry laboratories, and a mobile unit for jetty-based experiments. The site works are planned to be completed in December.



Commodore Peter Hector of Fremantle Sailing Club and Professor Jeanette Hackett, Vice Chancellor of Curtin University of Technology, sign the lease documentation.

Higher Profile for Marine Research and Development

Curtin University of Technology recently conducted a review of research and development on campus and we are pleased to advise that CMST has been recognised as a Tier 2 Research Centre. A total of 14 Research Centres were endorsed from a field of 30 applications. The outcome is for CMST to hold

a much higher profile, both within Curtin and the wider community. The Centre will expand to embrace additional research in areas of aquatic sciences, ecotoxicology, applied geology, and satellite remote sensing in addition to its current activities in underwater acoustics, hydrodynamics and underwater technology.

More Stereoscopic Cameras

CMST are proud to announce that Canadian company Welaptega Marine has ordered a further three of the Centre's Mini-3D stereoscopic underwater video cameras. "Our clients are increasingly asking for 3D video for underwater inspection, repair and maintenance programs," said Mr Tony Hall, CEO of Welaptega. "The CMST stereoscopic cameras retrieve high quality images which are valuable to clients surveying

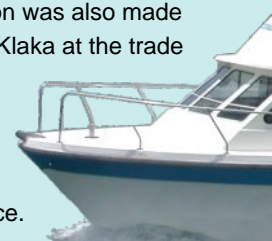
the condition of subsea assets. The cameras are also being used to assist ROV pilots in precise manipulations. The three-dimensional perspectives are reducing individual task times and reducing the risk of damage during manipulations. The CMST cameras have also proven robust in subsea operations".



Boat Design & Performance

A review of fishing vessel fuel efficiency is being conducted for the Fisheries Research & Development Council. CMST is working in conjunction with recent CMST PhD graduate Dr Dave Sterling in Queensland, providing advice on hydrodynamic efficiency improvements for a booklet to be distributed to fishing boat owners and operators.

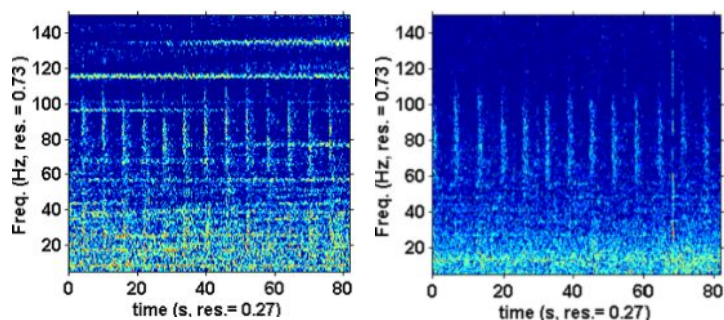
CMST was recently invited to contribute to the careers stand at the Perth Boat Show - the only University present. A presentation was also made by Dr Kim Klaka at the trade day workshop on boat design and performance.



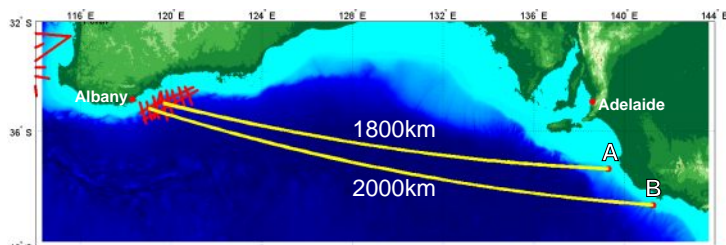
Seismic Survey Sound Levels

Dr Rob McCauley and Dr Alec Duncan were recently invited to present their work at the International Workshop on Impacts of Seismic Survey Activities on Whales and other Marine Biota in Dessau, Germany. Their presentation on "Industrial Seismic Surveys - Sound Sources and Measured Received Levels in Australian Waters" provided an overview of the typical characteristics of the airgun arrays used in commercial seismic exploration, including the acoustic characteristics of airguns, typical array configurations, directionality

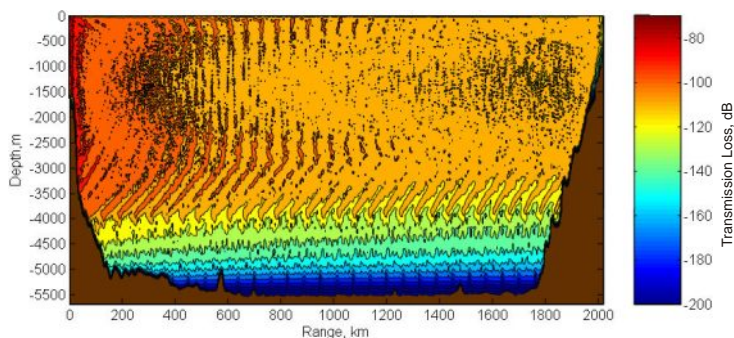
patterns and source levels. The results of a large number of measurements of the sound levels produced by airgun surveys in Australian waters were also presented. The figures below show that seismic surveys conducted off the Western Australian coast were audible in acoustic records collected off the coast of South Australia and Victoria 1800km away - although not damaging at that distance. The very bottom figure shows a simulation of acoustic transmission over that path, created by a new software package developed by Dr. Alexander Gavrillov.



Spectrograms of signals received at sites A (left) and B (right).



Acoustic transmission paths.



Modelled acoustic transmission along the path to site A.

The Centre for Marine Science & Technology (CMST) conducts consulting, research, development and education for the marine industry and for government agencies.

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New Scholarships Available

Two new scholarships are now available for those wishing to undertake study towards a PhD qualification. The two projects are summarised below - contact CMST for more information.

Integrating Cognitive Work Analysis into Software Engineering

A large amount of information must be processed by the command team of a Collins class submarine. This project will study improving the human systems interface with the submarine combat systems. Offered in association with DSTO.

Real-Time Subsea Pipeline Integrity Monitoring

The difficulty of transmitting data from sensors on the seabed through seawater is a major obstacle to the continuous monitoring of the condition of subsea pipelines. This project will explore various ways of overcoming this problem, including the use of acoustic modems.

Naval Architecture Education

Students from Western Australia wishing to study Naval Architecture have the opportunity to study two years at Curtin before completing the final two years at the Australian Maritime College in Tasmania. Details are available from the CMST website.

In related news CMST has been contracted by the UWA School of Oil and Gas Engineering to teach on two of its naval architecture units during semester 2 of 2006 - resistance & propulsion and marine & offshore systems design. Dr Kim Klaka is the main contributor.

Marine Acoustics Online

CMST has recently completed the third unit in a series of online units on marine acoustics. The three units are: *Introductory Marine Acoustics*, *Physical and Acoustical Oceanography*, and *(Advanced) Marine Acoustics*. All three units were developed with support from DSTO whose staff, located all around Australia, were seeking professional development courses in marine acoustics. Enrolment in the units is open to anyone

who wants to know more about the technology and theory of marine acoustics and, as they are taught online, geographical location is no barrier. "We have students located in various parts of Australia and even in the USA" said unit lecturer Dr Alec Duncan. "The popularity of the online units has exceeded our expectations". Syllabus and timetable information for the units is available on the CMST website.

CMST Lunchbox Seminars

CMST holds weekly seminars, with speakers from interstate and overseas, as well as CMST staff.

The schedule of seminars is listed on our website:
www.cmst.curtin.edu.au/seminars

If you would like to receive email updates regarding CMST seminars, simply send an email to the following address:
seminars@cmst.curtin.edu.au