IMOS
issue **one January 2007**
Integrated **Marine Observing** System

at a glance

Funding
$55 million direct funding; $39 million in kind partner contribution

Investment
Federal Government through the Department of Education Science and Training

Components
Integration of 9 separate instrumental facilities linking to e-data processing centres for *in situ* and satellite data

Sphere of Operation
Coastal and deep oceans around Australia

Base
University of Tasmania

Director
Dr Gary Meyers

Total Institutions
27 (Australian and international)

Timeframe
2007-2011

forum:
Australia's marine science community will receive an overview of how the IMOS will take shape with a Community Science and Observations Forum being planned in March or April. Details of the Forum, its dates and venue, will be announced shortly.

Australia gets an Integrated Marine Observing System

The University of Tasmania is to be the headquarters of a national marine facility worth $94 million. The Australian Government will contribute $55.2 million over five years.

The Integrated Marine Observing System, or IMOS, will be a nation-wide collaborative program designed to observe the oceans around Australia, including the coastal oceans and the 'bluewater' environment, and to provide a data-stream that will support research on many of the critical marine issues facing Australia.

IMOS partners comprise most of the universities and agencies with capability in ocean and marine research. The program has strong links with similar international programs and agencies.

System highlights include –

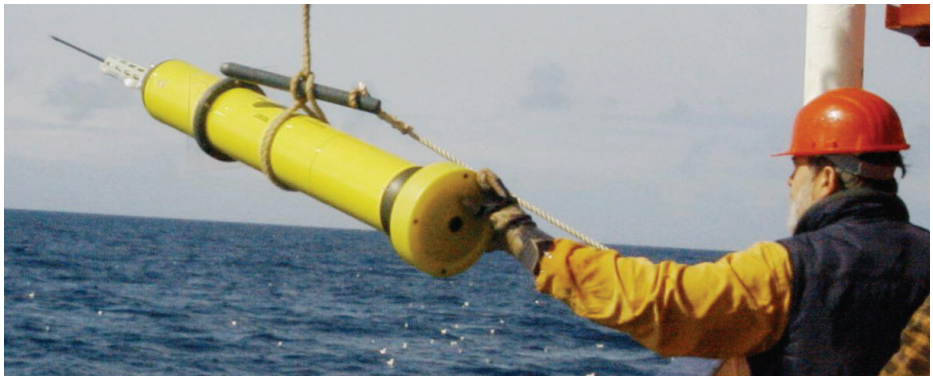
- A fleet of 220-240 Argo robotic floats to measure temperature, salinity and currents in the upper 2000m of ocean
- A fleet of so-called gliders programmed to sample the physical connection between major offshore currents and the biophysical environment over the continental shelf
- An array of shallow water moorings around the country to measure temperautre, salinity and other variables
- The introduction to Australia of coastal radar technology to observe inshore currents
- A 'curtain' of acoustic listening stations on the continental shelf in Queensland and South Australia to detect fish movements
- Sensor networks on the Great Barrier Reef to detect reef responses to climate and ocean phenomena
- A $5m contribution towards refurbishment of the research vessel *Southern Surveyor*

UTAS Pro-Vice Chancellor for Research, Professor Allan Canty, said the IMOS Office will be run in collaboration with CSIRO, taking advantage of the personnel strengths in both institutions.

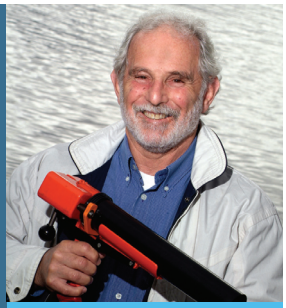
"Together, UTAS and CSIRO will work to facilitate and manage the deployment and use of oceans monitoring equipment in line with strategic directions developed by the national and international marine community," Prof Canty said.

The Tasmanian Government will provide practical and financial support to the University in establishing the Office. Twenty-seven separate institutions will be involved in the new facility, which is funded under the National Collaborative Research Infrastructure Strategy.

More information:
www.ncris.dest.gov.au/capabilities/integrated_marine_observing_system.htm



director's corner



Dr Gary Meyers

As the first Director of the Integrated Marine Observing System (IMOS) Office, a position based at the University of Tasmania, Hobart, I have the opportunity to engage in a challenge that continues a lifetime involvement in ocean science.

In introducing myself, I have a long-standing interest in ocean-observations. When I began as a PhD student in the 1970s I found that there were only 150,000 temperature profiles for the whole tropical Pacific Ocean for all time, and you could barely see the large scale, inter-annual variation, even El Niño. So I asked one of my supervisors – a post doc – why don't we monitor the Pacific with ships-of-opportunity deploying expendable measuring instruments known as XBT's? His response was that it couldn't be done. But of course it could! I went on to play a role in development of the El Niño monitoring system, primarily the XBT network. When I came to Australia in 1983 the network was extended into the Indian Ocean, with a lot of help from Angus McEwan, Stuart Godfrey and other CSIRO colleagues.

Now the Global Ocean Observing System is an accepted priority for many nations around the world, as discussed recently in Science (www.sciencemag.org/cgi/content/summary/314/5806/1657). IMOS will put Australia in line with other countries that are leading the way to informed management of resources in their Exclusive Economic Zones. It will provide a data-base for understanding the ocean-climate system. The Commonwealth Government's National Collaborative Research Infrastructure Strategy has given us (the Australian marine community) the opportunity to show the value of an ocean observing system, and how it can be done. We have to get the best possible outcome from this opportunity. It's going to take a collaborative, community effort and I'm looking forward to being in the middle of it!

This newsletter will be published in the future at irregular intervals, on a needs basis as significant news becomes available. I'll use this space – the Director's Corner – to advocate my views and opinions. In this first issue we have to recognize the tremendous and effective effort by Trevor Powell as facilitator of the IMOS Proposal. Of course we are grateful that it was successful. Beyond that, he has left us with an Investment Plan that is a carefully thought out strategy for implementation. It offers a balanced approach to the various pushes and pulls that arose in the planning process. I recommend that everyone with a direct interest in IMOS go back and give it a careful read, with attention to its goals, governance structure and options for the future.

Gary Meyers

Federal Government – Backing Australia's Marine Ability

Hon Julie Bishop MP

The $94 million nationally-integrated marine observing program announced on November 27 by the Minister for Education, Science and Training, the Hon Julie Bishop MP is part of Australian science infrastructure to be significantly upgraded by $500 million in Australian Government funding

"The investments, provided under the National Collaborative Research Infrastructure Strategy (NCRIS), are essential to build our national capacity to generate knowledge and use it to advance our economic, social and environmental objectives," Minister Bishop said.

"The infrastructure will support emerging industries, such as nanotechnology and biotechnology products, underpin mature industries and help to address national challenges, such as generating sustainable energy and managing our natural resources."

Facilities are being developed by a collaborative effort between the Australian Government, state and territory governments, universities, research agencies and industry. An extra $640 million in cash and in-kind contributions have been pledged thus far for the facilities, in addition to the NCRIS funding.

"This $500 million investment will enable researchers to move ahead on issues of national importance such as climate change, conserving biodiversity and the development of new drugs and therapies. It will also help to address fundamental research in the life sciences, physical sciences and optical and radio astronomy."

NCRIS is an initiative under the Australian Government's *Backing Australia's Ability* package which is providing $8.3 billion over ten years to 2011 to strengthen Australia's ability to generate ideas, accelerate the commercialisation of ideas and develop and retain skills.

More information: www.ncris.dest.gov.au

What is ocean observing?

Ocean observing requires combining satellite data with measurements in the water to characterize the ocean-state: temperature, salinity, currents, productivity and ecological structure. IMOS is about the measurements in the water – the deployment of permanent and fixed facilities such as moorings and sensor arrays, ship measurements repeated over the same ship tracks through time, and portable equipment, such as drifting buoys and unmanned vehicles that can be navigated.

IMOS will include High Frequency Ocean Radar equipment for deployment on coasts or islands for ocean current measurement.

What will IMOS do?

- Enhance the collection of oceanographic and biological data to improve Australia's understanding of ocean variability and regional climate change
- Provide the capability to systematically monitor the interaction of the oceanic currents with shelf waters around Australia, providing large scale oceanographic details on ecosystem health and distribution, and biological productivity.
- Provide systematic ways to collect data on ocean animal populations.
- Provide a stream of data using up-to-date information-technology to support a broad community of researchers.

Governance

The rationale for infrastructure investments was established by consortia (termed nodes) within the marine research community. There are six nodes – a blue water climate observing node and five regional coastal nodes. IMOS will deliver data to the nodes to support research.

An Advisory Board will provide strategic guidance to the IMOS Office, monitor the overall strategic direction, management and performance of the program in accordance with the NCRIS Investment Plan and the NCRIS/DEST Agreement. Annual business operational plans and budget allocations will require the agreement of the Advisory Board.

The Advisory Board will comprise an Independent Chair, the Director IMOS Office and 8 members nominated by the marine community through the nodes collectively for their abilities to guide the program. One member will be an international scientist.

The IMOS office will fund and coordinate particular institutions (termed operators) for the implementation of instruments and infrastructure (termed facilities and sub-facilities). There are eleven facilities. The facilities will deliver streams of data to support research in the regional and blue water nodes.

The IMOS facilities and points of contact:

IMOS Office
– Director, Dr Gary Meyers.

Argo Australia
– Dr Susan Wijffels; CSIRO Marine and Atmospheric Research Susan.Wijffels@csiro.au

Enhancement of Measurements on Ships of Opportunity
– Ken Ridgway (Coordinator); CSIRO Marine and Atmospheric Research Ken.Ridgway@csiro.au

Southern Ocean Automated Time Series Observations
– Dr Tom Trull University of Tasmania, Tom.Trull@utas.edu.au and CSIRO Marine and Atmospheric Research Tom.Trull@csiro.au

Australian National facility for Ocean Gliders
– Professor Charitha Pattiaratchi; School of Environmental Systems and Engineering, University of Western Australia chari.pattiaratchi@uwa.edu.au

Autonomous Underwater Vehicle Facility
– Dr Stefan Williams; Australian Centre for Field Robotics, University of Sydney stefanw@acfr.usyd.edu.au

National Mooring Network
– Mr Simon Allen(Coordinator) CSIRO Marine and Atmospheric Research simon.allen@csiro.au

Australian Coastal Ocean Radar Network
– Professor Mal Heron, Marine Geophysical Laboratory James Cook University mal.heron@jcu.edu.au

Australian Acoustic Tagging and Monitoring System
– Ass. Professor Rob Harcourt, Sydney Harbour Institute for Marine Science, SHIMS Graduate School of the Environment, Macquarie University, Sydney rharcour@gse.mq.edu.au

Facility for Automated Intelligent Monitoring of Marine Systems
– Dr Peter Doherty, Australian Institute of Marine Science, Townsville p.doherty@aims.gov.au

eMarine Information Infrastructure
– Professor Craig Johnson, Department of Zoology, University of Tasmania Craig.Johnson@utas.edu.au

Australian Ocean Remote Sensing Services Enhancing Access to Australian ocean Remote Sensing Data
– Dr Peter Turner, CSIRO Marine and Atmopsheric Research (Overall Coordinator) Peter.Turner@csiro.au