

# OCEANOGRAPHIC SERVICES

## OBJECTIVE

To meet the national need for basic operational oceanographic information, prediction and advice, on both short and long time scales and for both coastal regions and the open ocean

## OUTPUT

Providing information on current and forecast ocean conditions for the Australian region tailored to meet the sectoral needs of the marine and defence communities in particular, and to underpin the ocean observing systems which provide input to weather and climate monitoring and prediction.

## OUTCOME

Enhanced safety and efficiency of marine activities, enhanced contribution to marine resource and environment management and enhanced global and regional weather and climate monitoring and prediction capabilities.

The Oceanographic Services Program meets the national need for basic operational oceanographic information, prediction and advice, on both short and long time scales, for both coastal regions and the open ocean. It consists of two outputs:

- High Seas Oceanographic Services; and
- Coastal Oceanographic Services.

The overall output of the Oceanographic Services Program consists of information on current and forecast ocean conditions for the Australian region tailored to meet the sectoral needs of the marine and defence communities in particular, and to underpin the ocean observing systems which provide input to weather and climate monitoring and prediction.

The outcome of the Oceanographic Services Program is enhanced safety and efficiency of marine activities, enhanced contribution to marine resource and environment management and enhanced global and regional weather and climate monitoring and prediction capabilities.

In summary, Oceanographic Services encompass a wide range of information, data and products related to the physical state of the ocean and its constituents, including inputs for weather and climate monitoring and prediction, and global and regional seasonal and longer term climate prediction, as well as support for tactical activities of the Australian Defence Force, data and prediction services for resource and environmental management, and information for coastal and open ocean industry operations and activities.

## Highlights

Principal achievements in 2002-03 included:

- the establishment of the Oceanographic Services Program Office, which is responsible for the ongoing management of the Program; and

- formal agreement between the Bureau, the Royal Australian Navy (RAN) and CSIRO to jointly develop an enhanced operational ocean modelling system, the Ocean Modelling and Services System (OMSS), being developed in partnership by the agencies involved over the period 2003-2006 at a total cost of \$15M.

## Resource Use

The resources committed to Oceanographic Services in 2002-03 are summarised in Table 3 and given in more detail in Table 13

## Performance

During 2002-03, the main directions for the Oceanographic Services Program have involved the continuing establishment of the Program, staffing of its National Program Office and activities, and significant progress towards the development of key supporting infrastructure. The Oceanographic Services Program supports the safety of life and property at sea, the conduct of marine-based economic activities, the proper management of marine resources and the marine environment, addresses the requirements of national security, and underpins enhanced global and regional weather and climate monitoring and prediction capabilities. The program consists of two components; Coastal Oceanographic Services, which essentially deal with services required in coastal areas, including Australia's Exclusive Economic Zone (EEZ) and High Seas Oceanographic Services, covering requirements outside the EEZ. While the main focus has been putting in place the main elements of the Program, other ongoing activities have been progressing as resources permit.

## High Seas Oceanographic Services

During the year, a major milestone for the development of underpinning science and operational systems was reached, with the formal agreement between the Bureau, the Royal Australian Navy (RAN) and CSIRO to jointly develop an enhanced operational ocean modelling system that will provide detailed analysis and prediction of the ocean state, including currents, in the Australian region. The Ocean Modelling and Services System (OMSS) is being developed in partnership by the agencies involved, and will involve a significant undertaking over the period 2003-2006. The total cost of the project is some \$15M, with each of the partners making approximately equal contributions.

The outcomes of this project will be operational systems and products, which will form the keystones of the Bureau's ocean services. They will support the provision of a broad range of oceanographic products and services appropriate to user needs (see Figure 51). The Oceanographic Services Program Manager will be taking a major coordinating role for the OMSS project.



*The Royal Australian Navy, Bureau of Meteorology and CSIRO have signed an agreement to fund the joint development of a \$15M Ocean Modelling and Services System (OMSS)*

Table 13. Oceanographic Services expenses and revenue (\$'000) and staff level for 2002-03 compared with the actuals for 2001-02 and with the 2002-03 Budget and Budget plus Additional Estimates appropriations.

	ACTUAL	BUDGET	BUDGET & ADD. EST.	ACTUAL
	2001-02	2002-03	2002-03	2002-03
	(\$'000)	(\$'000)	(\$'000)	(\$'000)
<i>FINANCIAL</i>				
<b>EXPENSES</b>				
Employee Expenses (Appropriation)	0	193	193	32
Employee Expenses (Section 31)	0	0	0	0
Supply of Goods and Services (Appropriation)	0	112	112	13
Supply of Goods and Services (Section 31)	0	0	0	0
Operating Lease Rentals	0	23	22	13
Depreciation	0	11	11	3
Other Goods and Services Expenses (WMO Contribution)	0	0	0	0
<b>TOTAL EXPENSE*</b>	<b>0</b>	<b>339</b>	<b>338</b>	<b>61</b>
<b>REVENUE</b>				
Appropriations	0	336	336	338
Sale of Goods and Services	0	0	0	0
Miscellaneous - Resources Free of Charge	0			0
<b>TOTAL REVENUE*</b>	<b>0</b>	<b>336</b>	<b>336</b>	<b>338</b>
<i>STAFFING</i>				
Staff Years (actual)				
- Funded from Employee Expenses (Appropriation)	0.0	2.4	2.4	0.4
- Funded from Supplier Expenses (Appropriation)	0.0	0.0	0.0	0.0
- Funded from Section 31 Receipts	0.0	0.0	0.0	0.0
- Funded from Capitalised Salaries (Asset Replacement)	0.0	0.0	0.0	0.0
<b>TOTAL</b>	<b>0.0</b>	<b>2.4</b>	<b>2.4</b>	<b>0.4</b>

\*The operating result (Total Revenue less Total Expense) provides funds required to pay the Capital Use Charge as a dividend from Equity on the Balance Sheet. The Bureau's dividend is some \$20m per annum.

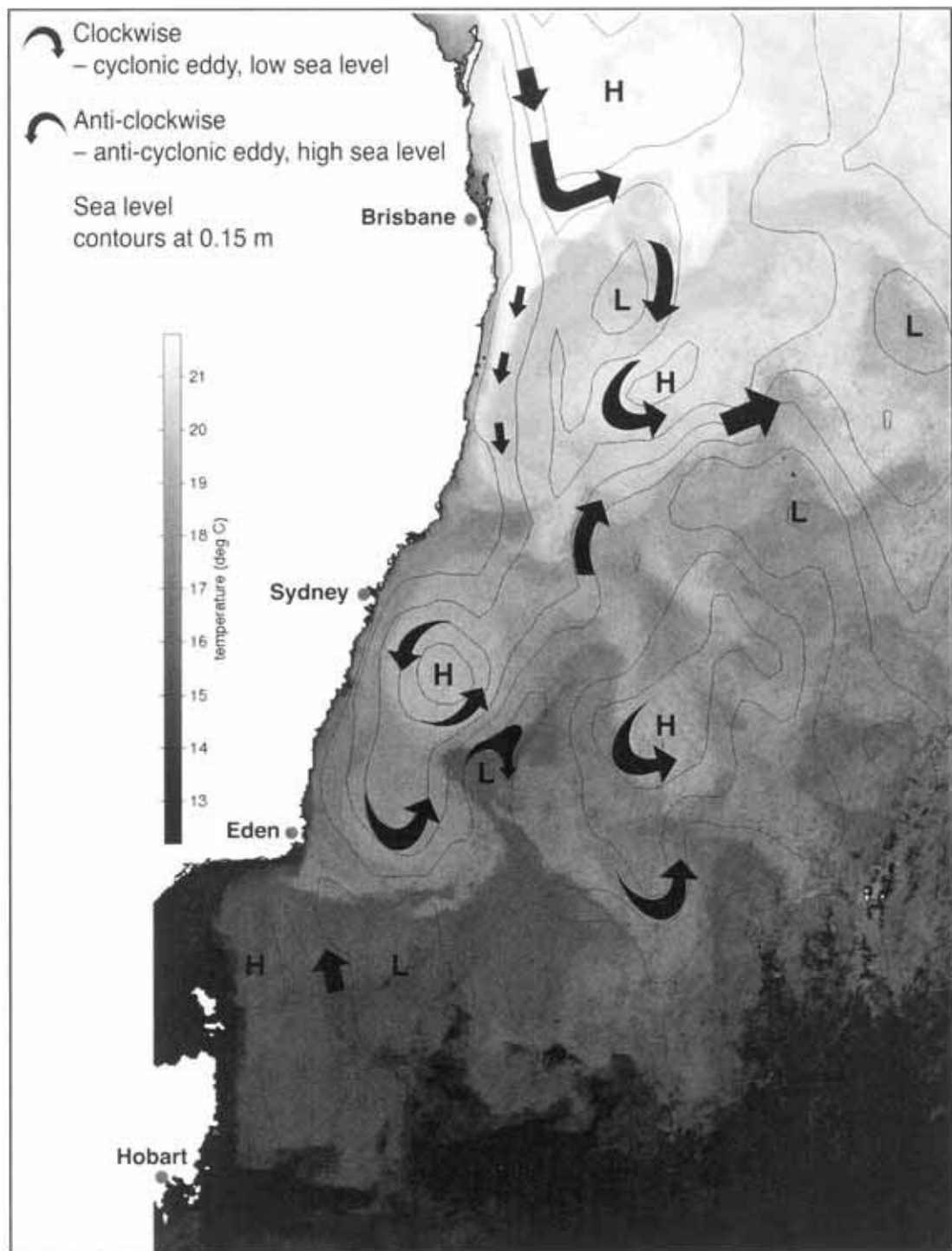


Figure 51. Example of ocean current and sea-surface temperature maps to be routinely produced by the Ocean Modelling and Services System (OMSS), using a range of in situ and remotely sensed data sources on sea level, meteorological and general ocean conditions. (Courtesy of CSIRO).

The development of a national program to deploy Argo profiling floats on an ongoing and sustainable basis, has been a priority during the year. Argo floats are state-of-the-art, autonomous submersible probes, which drift freely with ocean currents at depths of around 2,000 metres. They are programmed to profile subsurface temperature and salinity as they rise to the surface every ten days, where they transmit the data to shore via satellite, before sinking once again to their park depth of 2,000m. The expected lifetime of these floats is 3-5 years. Plans for the deployment of these floats are being developed and managed jointly with CSIRO Marine Research (CMR). The Australian program is presently focused on deployments in the South East Indian Ocean, to the west of the Western Australian coast. These deployments contribute to the International Argo Program, which aims to populate the world's oceans with profiling floats on a 300 x 300 km grid by 2005, given sufficient resources. Australia's contributions ensure that Australia's regions of interest are at least partially covered, attracting international resources to our region and enabling access to the global database. Uncertainty about forward funding has delayed plans for deployments by the Bureau, but it is expected that the current combined annual program (9 by the Bureau, 10 by CMR) will be maintained into 2003-04. The Cooperative Research Centre for Antarctic Climate and Ecosystems also plans to contribute to the program through its deployment schedule of around 40 floats over the next two to three years to the south of Australia in the Southern Ocean. Development of other ocean observing networks that complement the Argo array, such as the deployment of expendable temperature probes (expendable bathythermographs – XBTs) from merchant vessels, has been subject to resource uncertainties to the extent that no significant expansion of activities is envisaged until the 2004-05 financial year and beyond.

The Bureau has agreed to participate in the plan by Australian marine agencies to

reorganise national oceanographic data management activities. Following a review of the functions of the Australian Oceanographic Data Centre (AODC), which is currently operated by the RAN, to meet defence and civilian requirements for marine data in Australia, agencies, including the Bureau, are to develop a distributed system for national oceanographic data management under the aegis of a reconstituted AODC.

## Coastal Oceanographic Services

Planning for the transition of the National Tidal Facility Australia (NTFA) from its operation as an arm of the Flinders University of South Australia, to one whereby it may be managed and funded by the Commonwealth, has been underway during the year. The University intends to cease operational support of the NTFA at the end of October 2003. Several options for the transition have been considered, some involving a major role for the Bureau given its national role in tidal and sea level data for Australia. The final arrangements will be subject to Ministerial approval.

Planning for the development of the Australian Tsunami Alert System (ATAS), in conjunction with Geoscience Australia and Emergency Management Australia, has progressed through the establishment of a new Disaster Mitigation Program Office under the Weather Services Program, and the appointment of the national Disaster Mitigation Program Manager during the year. Disaster mitigation aspects are a significant component of the tsunami issue, and the increased focus on them by the new Program Office will hasten development of the ATAS. The operational aspects of tsunamis will also be a major focus for the Oceanographic Services Program, which will further boost the ATAS project in 2003-04.