

# Report to ETMAES-I on MPI Area X

## National Report from Australia

1. The Australian Maritime Safety Authority (AMSA) has the operational responsibility for the national systems used in Australia for supporting emergency response activities when marine pollution accidents and search and rescue incidents occur within Australia's territorial seas and the wider area of responsibility attributed to Australia under various international conventions and treaties.

### Marine Oil Spills

2. Under MPERSS arrangements, Australia has responsibility for Marine Pollution Incident Area X. In practical terms, the AMSA is highly focused on Australian coastal and nearby ocean areas, including the Australian EEZ. Due to the sharing of responsibilities between the national (federal) government and the state/territory governments, the AMSA does not have in-principle, responsibility for the immediate in-shore zone (generally high water mark to 3 nautical miles), but in practice, is usually called in when oil spills occur, as it has the most highly developed capabilities and supporting infrastructure that are required to successfully mount a response and coordinate the clean-up campaign.

3. At the present time, the AMSA uses the outputs from the Net Water Movement (NWM) model, comprising numerical predictions of ocean/atmospheric boundary environmental conditions, which are input to its oil-fate and trajectory model (Oil Spill Trajectory Model – OSTM). The OSTM is a combination of the commercially available HYDROMAP and OILMAP models. The NWM is operated for the AMSA under contract by the Bureau of Meteorology (AMOC) with additional scientific expertise provided by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and other national marine science agencies.

4. The present system enables rapid response to be initiated on demand, as well as the production of hindcasts and reverse-casts (to determine initial location of sources). The excellent working relationship between the AMSA and the Bureau continues to provide a sound base for the operation of the system and when additional or *ad hoc* information is required to support response activities.

5. During recent years, the following improvements to the OSTM have been made:

- high definition coastline vector datasets were added for mainland Australia and offshore territories;
- the interface of the OSTM with Australian Hydrographic Office (AHO) raster, based nautical charts (GeoTiff format) was enabled;
- S57 ENC chart data from the AHO (for Queensland), was incorporated;
- digital bathymetry data has been increased significantly in coverage and resolution with that previously available (250m gridded Australia wide);
- evaluation and upgrade of HYDROMAP's hydrodynamic model was undertaken;
- upgrades of the OILMAP software were made to provide additional data manipulation, data visualization and model output features;
- interface of the spill model output of the OSTM with the Oil Spill Response Atlas (OSRA) GIS system was enabled, leading to improved delivery of information to stakeholders of the Australian National (Oil Spill) Plan;
- underlying operational datasets (bathymetry and detailed coastlines) were updated and digitized;
- the ability to include large-scale currents supplied by the CSIRO (as measured by satellites) was implemented;
- use of detailed spatial wind data, provided by the Bureau of Meteorology for the entire

region (3 day forecast data) was enabled;

- tools were developed to integrate NetCDF wind and current data directly from the Bureau/CSIRO web site via FTP;
- the ability to view and animate spatial wind files was implemented;
- an additional tool was developed to allow a number of individual current and wind files to be added to generate predictions over longer time periods; and
- efficiency testing of the model was undertaken using a ground truth exercise in Moreton Bay, Queensland.

6. The memorandum of Understanding (MOU) between the AMSA and the Maritime Safety Authority of New Zealand on oil pollution preparedness and response provides the ongoing framework for cooperation during marine pollution emergencies across the boundaries of MPI Areas X and XIV in the Tasman Sea. The MOU enables the sharing of resources and staff as well as mutual assistance when required.

7. The Pacific Islands Regional Marine Spill Contingency Plan (PACPLAN) provides the framework for assistance by the four “metropolitan countries” in the region (Australia, France, New Zealand and the USA) in the case of marine pollution emergencies in Pacific Island Countries (PICs). The PACPLAN covers the response to spills into the marine environment of all forms of pollutants. However, it retains a focus on oil spills, as oil is the main pollutant likely to be spilled in the region. It covers spills into the marine environment from all sources, including both shipping and shore-based facilities. The PACPLAN constitutes the regional/international response plan for the Pacific Islands region.

8. The Parties to the PACPLAN are the 26 SPREP members (both island and non-island members) plus the oil industry, as represented by the oil companies, which operate within the PACPLAN area. The national members that are parties to PACPLAN are shown in Table 1. The area covered by PACPLAN is shown in Figure 1.

SPREP Island Members		SPREP Non-Island Members
Pacific Island Countries	Pacific Island Territories	
Cook Islands	American Samoa (US)	Australia
Fiji Islands	Northern Mariana Islands (US)	France
Kiribati	French Polynesia (France)	New Zealand
Marshall Islands	Guam (US)	United States of America
Federated States of Micronesia	New Caledonia (France)	
Nauru	Pitcairn Islands (UK)	
Niue	Tokelau (NZ)	
Palau	Wallis & Futuna (France)	
Papua New Guinea		
Samoa		
Solomon Islands		
Tonga		
Tuvalu		
Vanuatu		

**Table 1.** National members of PACPLAN



**Figure 1.** Extent of PACPLAN area

9. The Aim of PACPLAN is:

- To prevent/minimize damage to marine and coastal environments and resources from major marine spills, and to hasten the recovery of any environments and resources damaged by major marine spills, in the Pacific Islands region.

10. The Objectives of PACPLAN are:

- To promote and implement regional co-operation in planning and training for marine spill response, and in the actual prevention of and response to marine spills;
- To facilitate the implementation of both the Pacific Regional Environment Programme (SPREP) Pollution Protocol and the International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC) at the operational level for all SPREP island members, including those that are not yet parties to the SPREP Pollution Protocol and/or the OPRC Convention;
- To provide systems for the detection and reporting of marine spills within the area covered by the plan, including communications networks;
- To outline the counter-measures available to restrict the spread of a spill and minimize the environmental, economic and social impacts of a spill;
- To outline the mechanism and procedures by which SPREP island members may request assistance, in the form of specialized equipment and technical experts; from each other, from SPREP non-island members, from the oil industry and from other parties;
- To outline procedures for the recovery of costs of responding to marine spills;
- To outline arrangements for resourcing maintenance of PACPLAN and associated systems by SPREP.

## Chemical Spills

11. To assist in meeting Australia's obligations as a signatory to the *Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances (2000)*, a risk analysis of bulk chemical spills in Australian ports and waters was completed in June 2006. The report was referred to the National Plan Chemical Operations Working Group (COWG) in September 2006. The COWG has recommended actions to be taken by the Australian governments to examine the implications of the risk analysis, and determine needs for the acquisition of response equipment, as well as the need for future work to be carried out on other substances. The COWG's recommendations were forwarded to the National Plan Operations Group in November 2006. The position of the agencies involved is currently being considered. It is expected that the governments' response to the recommendations and decisions on the initial follow-up will be known by the second half of 2007.

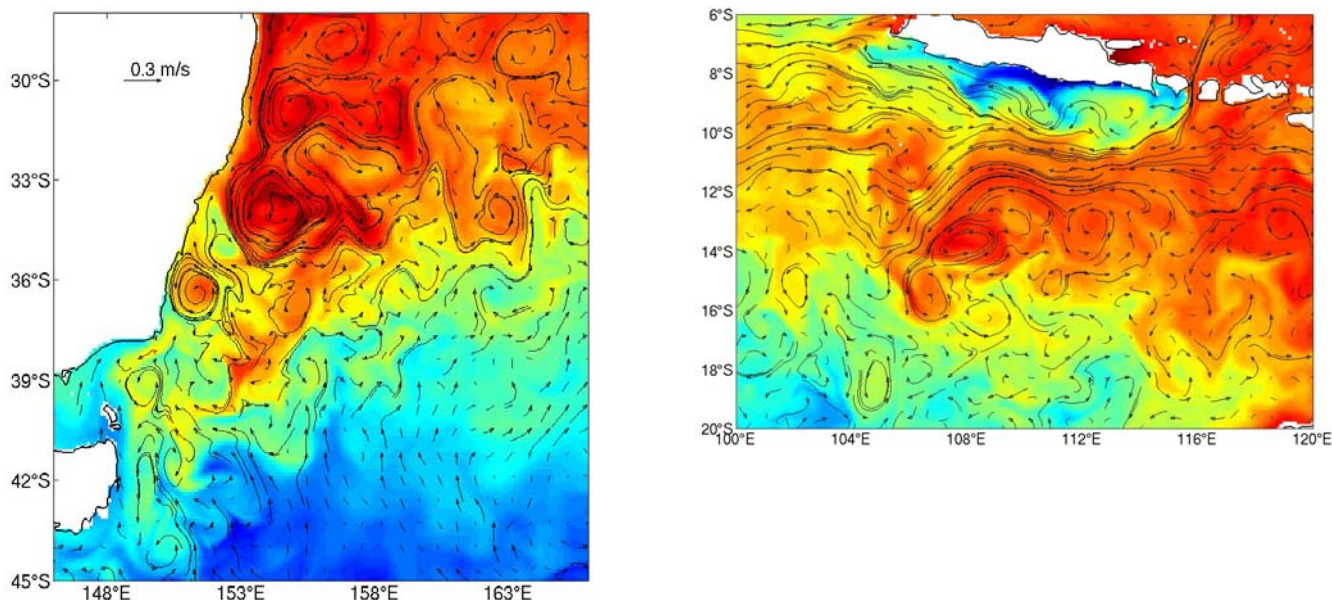
## Search and Rescue (SAR)

12. The AMSA is the Australian authority responsible for undertaking SAR activities in national waters and a further 52.8 million square kilometres of the Indian, Pacific and Southern Oceans. To the present time, the NWM system continues to provide the environmental boundary conditions for the software used by the AMSA in its SAR activities, using original code developed by GEMS Pty Ltd and model and user interfaces developed by the AMSA.

13. The AMSA has established a fleet of five Dornier 328 aircraft for long-range reconnaissance and rescue activities across its area of responsibility.

14. A number of bilateral agreements on assistance during SAR events have been established between Australia and countries in the adjacent Pacific and Indian Ocean regions, including France (New Caledonia and La Réunion), Fiji, Maldives, Mauritius, New Zealand, Papua New Guinea and South Africa. These agreements form the basis of international cooperation and assistance in the vast area of the southern hemisphere for which AMSA is the principle SAR coordination authority.

## Future developments



**Figure 2.** BLUElink analysis of currents and sea-surface temperature on 27 September 1997 showing (a) strong southward Tasman Sea currents along the New South Wales coast and eddies associated with the East Australian Current System; and (b) currents and sea-surface temperature off Indonesia highlighting the strong currents associated with the Indonesian Throughflow.

15. The Bureau of Meteorology, in partnership with the CSIRO and the Royal Australian Navy (RAN), has developed the BLUElink ocean forecasting system, which is currently in pre-operational testing at the Bureau. The BLUElink will provide predictions of oceanic variables, using a state-of-the-art ocean circulation model and fully assimilated data from a variety of ocean observing platforms including satellites, Argo floats and moored and drifting buoys. The AMSA is expected to replace the NWM components of both its oil spill and SAR tracking systems as the necessary outputs from BLUElink become available, most likely during the second half of 2007. Examples of surface temperature and current outputs from BLUElink are shown in Figure 2.

16. While the replacement of the NWM components of the AMSA's system could be readily achieved, it is possible that a more direct coupling of BLUElink outputs with the SAR decision support system could be achieved as the operational BLUElink system itself matures.