

## Introduction

An urgent meeting to discuss an international investigation of the impact of the huge amount of spilled crude oil on the marine ecosystem of the Gulf as a result of the then recently terminated Gulf war, was held in Kuwait on 24-27 September 1991. The meeting was organized by the Intergovernmental Oceanographic Commission (IOC) and the Regional Organization for Protection of the Marine Environment (ROPME), in cooperation with the United Nations Environment Programme (UNEP). An Integrated Project Plan for the ROPME sea area was finalized at the meeting (Report of the Meeting of the ROPME-IOC Steering Committee on Oceanographic Cooperation in the ROPME Sea Area, organized in cooperation with UNEP).

Subsequently, IOC-ROPME requested the major IOC member nations to support the implementation of the Integrated Project Plan. The Japanese Government, through the Ministry of Education, Science, Sports and Culture, contacted the Tokyo University of Fisheries. The University decided to send a training/research vessel, the *Umitaka Maru*, to the ROPME sea area to conduct oceanographic surveys, because the activities could be done during training cruises and because the vessel had undertaken a survey cruise in the ROPME sea area in 1969 at the request of the Kuwait Government. This international research project was funded by the Japanese Ministry of Education, Science, Sports and Culture for 3 years, covering the fiscal years 1992-1994.

According to the Integrated Project Plan, the intention of the project was to use ship-based survey to obtain a synoptic view of oceanographic processes and to undertake interdisciplinary studies that would facilitate understanding of recent pollution events, as well as to provide a basis for future regional studies in support of the long-term objectives of ROPME. Also the survey cruises would provide opportunities for regional training and information exchange.

The cruise program had two parts: the synoptic oceanographic program, which was the main component, and a series of site-specific studies to evaluate the impact of the oil spills on the marine environment.

Studies suggested for the oceanographic program included: 1) synoptic-scale CTD surveys for defining baroclinic structure and water mass analysis; 2) investigation of localized physical processes to define exchange and sub-synoptic-scale current patterns in the Strait of Hormuz, NW coast, mid-sea sill, freshwater sources in the northeastern region and Salwa Bay; 3) determination of hydrocarbon loading by sediment interface research, including sediment trap, sediment sampling and hydrocarbon analysis, as well as benthic community sampling for future analysis; 4) biodegradation of hydrocarbons, through benthic sampling and metabolic studies; 5) water column sampling for future chemical

and biological analyses; 6) surveys of hard-bottom coral areas including a survey of offshore islands by diving; and 7) collection and analysis of commercial marine species—shrimp, fish and molluscs.

The first 100-day cruise by the research vessel *Mt. Mitchell* of the US National Oceanographic and Atmospheric Administration was successfully carried out from late February to early June 1992, following the two elements of the Integrated Project Plan. The results were published in a special issue of the *Marine Pollution Bulletin* in 1995.

The *Umitaka Maru* cruises took place in January and December 1993 and December 1994. Although they were planned in a similar manner, including regional training opportunities, each cruise was limited to 12 days because the activities were part of extensive training cruises for cadets. A major problem in these cruises was that the vessel could not enter Iranian territorial waters to take samples, despite diplomatic efforts by ROPME. Table 1 gives a summary of the *Umitaka Maru* cruises.

Dr. Ibrahim A. Alam, formerly associate professor at the Research Institute of King Fahd University of Petroleum and Minerals (now Vice-Mayor of Jeddah City, Kingdom of Saudi Arabia), was a team leader of the ROPME participants during the 3 cruises and made a great contribution to their success.

After these cruises, the “International Symposium on the Status of the Marine Environment in the ROPME Sea Area after the 1990-1991 Environmental Crisis, With Special Reference to the Umitaka-Maru Cruises”, was held at the Tokyo University of Fisheries, 4-7 December 1995, with the support of UNEP and the Japanese Ministry of Education, Science, Sports and Culture. There were 31 oral and 16 poster papers presented, with 98 participants including invited speakers (Drs. Scott Fowler, Monaco; C. Michael Reynolds, USA; Charles C. Shepherd, UK; and Friedhelm Krupp, Germany), representatives of UNEP (Dr. Makram Gerges) and IOC (Dr. K. Kitazawa), and the coordinator and a representative of ROPME headquarters. As a result, we decided to publish this book.

The following persons were responsible for the various chapters including peer review:

Chapter 1—Dr. R.M. Reynolds, Brookhaven National Laboratory, USA, and Dr. J. Yoshida, Tokyo University of Fisheries;

Chapter 2—Dr. M. Maeda, Tokyo University of Fisheries, and Dr. L. Al-Omran, Kuwait University;

Chapter 3—Drs. T. Ishimaru, and K. Fujita, Tokyo University of Fisheries;

Chapter 4—Dr. I.A. Alam, Vice-Mayor, Jeddah City, and Dr. A. Otsuki, Tokyo University of Fisheries.

Table 1. Details of the *Umitaka-Maru* Cruises.

Dates	Departure Port	Arrival Port	Number and Status of Participants
First Cruise (6 sections, 21 sampling sites) 14-25 Jan. 1993	Dobayy, UAE	Dobayy, UAE	Japanese: 14 including 1 research associate and 7 graduate students. ROPME: 10, of whom 5 from Kuwait and 5 from Saudi Arabia.
Second Cruise (5 sections, 19 sampling sites) 15-26 Dec. 1993	Dobayy, UAE	Manama, Bahrain	Japanese: 18 including 8 graduate students and 3 underwater camera men. ROPME: 15, of whom 6 from Kuwait, 8 from Saudi Arabia and 1 from UAE.
Third Cruise (7 sections, 24 sampling sites) 15-26 Dec. 1994	Abu Dhabi, UAE	Shuwaikh, Kuwait	Japanese: 15 including 8 graduate students. ROPME: 14, of whom 4 from Kuwait, 8 from Saudi Arabia, 1 from UAE and 1 from Oman.

This book is dedicated to the Year of the Ocean 1998.

20 January 1998

Akira Otsuki  
Chief Scientist  
Department of Ocean Sciences  
Tokyo University of Fisheries