

Preface

Scientific ocean drilling is a very successful large international geoscience program that has gone through a number of iterations since it was founded as the Deep Sea Drilling Project in 1968. In its present configuration, it drills deep holes in all ocean depths, and frequently instruments them, in order to investigate global scientific questions related to Earth's past geological and biological history and the recent situation, as revealed by continuous cores of the sediments and rocks beneath the sea floor.

This publication summarises exciting Australian and New Zealand achievements in the first phase of the Integrated Ocean Drilling Program (IODP(1)) until the end of 2013, when the second phase of the International Ocean Discovery Program (IODP(2)) came into being. The publication carries on the tradition established by *Full Fathom Five; 15 years of Australian Involvement in the Ocean Drilling Program*, which documented Australian involvement in IODP's predecessor the Ocean Drilling Program (ODP) until its end in 2003. *Full Fathom Five* was inspired and led by Elaine Baker and Jock Keene, of ODP's Secretariat in the University of Sydney.

Membership of IODP¹ helps Australia and New Zealand maintain our leadership in Southern Hemisphere marine research. The generosity of our major partners means that we get a marvellous return on our relatively modest investment in the international operational budget, and access to drilling assets worth around US\$1.1 billion.

The present volume explains how IODP works and how the Australian and New Zealand IODP Consortium (ANZIC) has functioned within IODP, and outlines our many scientific achievements. Impressions from our scientists from the range of regional expeditions are provided in

1 IODP is used as the general term throughout this book to cover both IODP(1) and IODP(2).

Chapter 6, some scientific results are provided in Chapter 7 and a taste of future regional expeditions explored in Chapter 11. Other chapters cover IODP's future, education and outreach, costs and benefits, and a list of major publications involving our scientists. Most of the text was written in 2015 and 2016; later updating has been relatively minor.

Many people have been involved in the production of this book and I am grateful to them all. The ANZIC Governing Council encouraged me from the moment I put the concept of the book to them. The many authors of chapter sections are acknowledged in the titles of those sections – without their enthusiastic support, this book would not have been possible. Michelle Burgess was a skilful and equally enthusiastic editor, who massaged all the contributions, put them into the ANU Press template and provided advice on what might be added and how things might be laid out. Catherine Beasley, our program administrator and my good friend, has been a great help in commenting on ideas and using her considerable word processing skills in helping with the layout where things got tricky. The whole exercise has been a great pleasure to me.

I am very grateful to ANU Press for publishing this book. They selected two international reviewers who provided valuable comments in late 2016: one was Ted Moore of the University of Michigan, Ann Arbor, who has a very long and distinguished history in ocean drilling; the other remained anonymous. They also selected two Australian reviewers: one was Will Howard, of the Australian Chief Scientist's office, who also has a long history in ocean drilling and provided valuable suggestions; the other remained anonymous.

IODP is an exciting program. I have helped steer ANZIC's role in it from 2007 and have thoroughly enjoyed it. It will be hard to step back from this role in late 2017. Two of the many people who played a critical role in the success of the first phase of IODP were the two excellent IODP administrators with whom I worked very closely: Sarah Howgego until the end of 2011 and Catherine Beasley thereafter.

Professor Neville Exon
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The staff of the Australian IODP Office in this period: Neville Exon, Sarah Howgego (until 2011) and Catherine Beasley (from 2012)

Source: Australian IODP Office



The Japanese deep-drilling vessel *Chikyu* at sea. It can core up to 4,000 m below the seabed and in areas where there is a potential danger of striking oil or gas

Source: Photo courtesy of JAMSTEC (Japan Agency for Marine-Earth Science and Technology), which provides the vessel

EXPLORING THE EARTH UNDER THE SEA



The European-chartered *Greatship Maya*, which cored the deep-water fossil outer parts of the Great Barrier Reef in 2010 to gather information about the changing character of the reef as the sea warmed and rose 140 m since the coldest period of the last glaciation, about 13,000 years ago

Source: Photo by David Smith (ECORD Science Operator), courtesy of the European Consortium for Ocean Research Drilling (ECORD)

This text is taken from *Exploring the Earth under the Sea: Australian and New Zealand achievements in the first phase of IODP Scientific Ocean Drilling*, edited by Neville Exon, published 2017 by ANU Press, The Australian National University, Canberra, Australia.