

Preface

This book is a collection of papers and reports concerning the results of geological researches carried out during the several cruises of the Japanese Geodynamics Project (GDP) which started in April 1973 and ended in March 1978, and includes some additional discussions. The project was international programme concerning the dynamics and dynamic history of the earth with emphasis on deep-seated foundation of geological phenomena. The programme was an interdisciplinary one, coordinated by the Inter-Union Commission on Geodynamics (ICG) established by the International Council of Scientific Union (ICSU) at the request of the International Union of Geological Science (IUGS) and the International Union of Geodesy and Geophysics (IUGG), with rules providing for the active participation of all interested ICSU Unions and Committees.

The objectives of the researches of the Japanese national programme of GDP were as following.

- I. Investigation of the movement and structure of the ocean floor in the Western Pacific.
- II. Investigation of the movement and structure of the island arcs.
- III. Basic investigation on the flows in the mantle.

Program I was correlatable to the International ICG Working Group I. The Basic approach to this program was ship-board investigation of the ocean areas and subsequent laboratory analyses of samples collected by the research cruises which were devoted to the Geodynamics Project. Some samples and data obtained by several other cruises have also been examined in this program, although these cruises were not primarily undertaken for geodynamics.

The N.N.S.S. ship positioning system has been installed in the R.V. Hakuho-Maru since 1972, in Bosei-Maru since 1974, and Tokai-Daigaku-Maru II since 1975.

During the first several cruises it was recognized that the interruption of sailing largely disturbs some other research works such as continuous seismic reflection profiling survey, geomagnetic anomalies survey, and gravity measurement. From these experiences, several special cruises were planned for geological researches in which many dredge works and corings could be performed, with the ships staying or mostly staying on the specific sites. Most of the papers in this book report the results of the studies carried out during these geological research cruises.

As is well known, the Philippine Sea occupies a broad area in the Western Pacific Ocean showing a particular and noteworthy feature (Fig. 1). That is, the sea is bordered by an arc-trench system, not only in its eastern margin, but also in its western margin. The sea is composed of several basins and ridges, and rises. A ridge (Kyushu-Palau Ridge) stretches from north to south diving the sea into two parts. Another ridge group, Daito Ridge Group

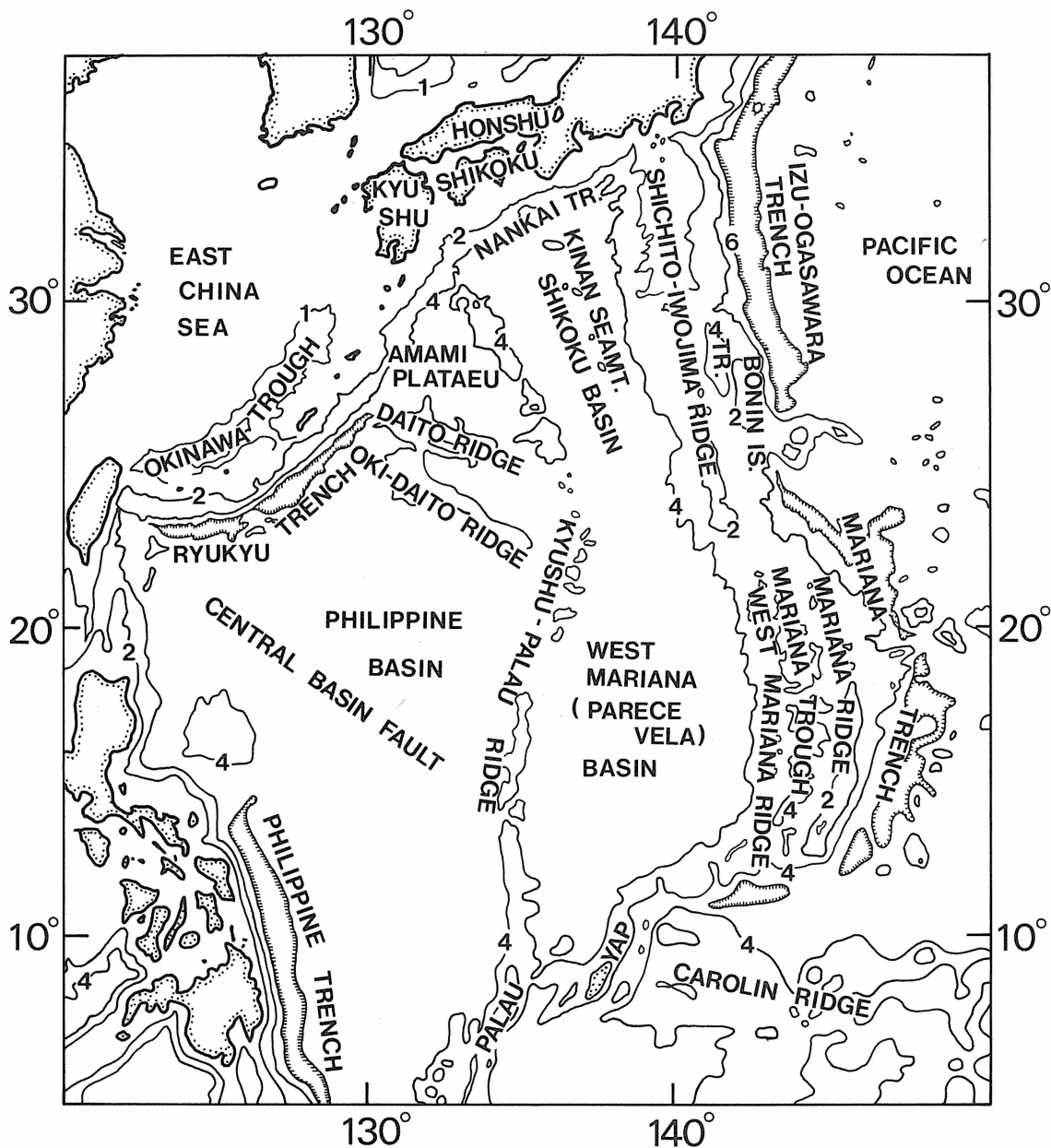


Fig. 1. Simplified topographic map in and around the Philippine Sea, modified after the Bathymetric chart No. 6302, Hydrographic Department, Maritime Safety Agency of Japan (1966).

(the Amami Plateau, the Daito Ridge, the Oki-Daito Ridge) occupies the northern half of the western part of the sea, and is bordered by the Kyushu-Palau Ridge on its eastern side. The non-oceanic character of the crust of these ridges was known before 1968 by seismic refraction observations made by Prof. MURAUCHI and others of Japan and U.S.A.

In planning and carrying out the geological cruises for Program I, the noteworthy feature of the Philippine Sea and the interesting character of the ridges in the sea were noticed. The Geographical situation of the ridges, not far off Japan, was also considered together

with the financial limitation and the cruise capacity of the ships. Accordingly, many of the geological research cruises of Japan were concentrated on the regions of these ridges, namely, the Daito Ridge Group Region and the Kyushu-Palau Ridge Region.

As a result of these cruises, many remarkable data and information were obtained. They were partly released in English through international symposium or publications. However, many of the results have been reported in Japanese and only partly.

Need of publication of a synthetic report of these geological results has been discussed long. Fortunately, it turned out that the editor could receive the Grant-in Aid for Publication of Scientific Research Results for this year.

Naturally, we do not intend to cover in this volume all the aspects of the study of the dynamics and dynamic history of the Northwestern Philippine Sea. However, we believe that the papers included in this volume will contribute to the information on the structure and geohistory of the Northern Philippine Sea and promote the understanding of the tectonics of the marginal seas in the transitional zone between the Asian Continent and the Pacific Ocean.

We are very grateful to the Ministry of Education, Science and Culture for the financial and other support to the cruises of the Geodynamics Project, and the Grant-in Aid for Publication of Scientific Research Result of the Ministry of Education, Science and Culture given for the publication of this book. We are also much indebted to the Kudo Foundation of Science for supporting this work in part.

The scientific parties on board the cruises would like to express their appreciation to Captain Magoshichi SATO, Captain Seiichiro HAYASHI, and Captain Kazuo YOSHIDA, and all the crew members of the R/V Tokai-Daigaku-Maru II and Bosei-Maru of Tokai University, and many students who helped with the scientific works on board for their sincere efforts. We are also obliged to the authorities and office members of the same university together with those of the Ocean Research Institute of the University of Tokyo.

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Tsunemasa SHIKI

*Department of Geology and Mineralogy,
Kyoto University, Kyoto, 606, Japan*