INVESTIGATIONS OF THE CONTINENTAL MARGIN OF SOUTHWEST JAPAN, JUNE AND JULY 1975, GH75-4 CRUISE

Edited by Eiji Inoue
Geological Survey of Japan

INTRODUCTION

The Geological Survey of Japan is engaged in a five year programme of marine geological investigations on the continental shelves and slopes around Japan which began in 1974 and will end in 1978. The investigations will provide fundamental information about the geology of the continental margin for economic needs. The final results of the investigations will be expressed in geological and sedimentological maps on a scale of 1:200,000 and geological reconnaissance maps on a scale of 1:1,000,000.

For the surveys, the geological research vessel "Hakurei-maru" is chartered from the Metal Mining Agency.

In 1975 financial year, the G. S. J. carried out geological investigations in four areas of the continental margin over a period of 100 days, as follows:—

No. of cruise	duration	month	areas and objects
GH75-2	10 days	April	Sagami-nada Sea. For mapping the geology of the sea bed and to test the submersible rock drill "MD300 PT".
GH75-3	30 days	May to June	Sagami-nada Sea for the investigation of the surface sediments. South of the Kiisuido Channel for mapping the geology of the sea bed.
GH75-4	22 days	June to July	Pacific side of southwest Japan for reconnaissance research.
GH75-5	38 days	July to August	Around the Ryukyu Island Arc for reconnaissance research.

This report is concerned with the outline of the work and the preliminary results of the geological investigations of the GH75-4 cruise.

The area surveyed

The area surveyed is situated at the northern margin of the Philippine Sea, and covers the areas of the Enshu-, Kumano-, and Hyuga-seas off the coast of southwest Japan. The Kuroshio Current flows along the area studied from west to east with a speed of 2 or 3 knots.

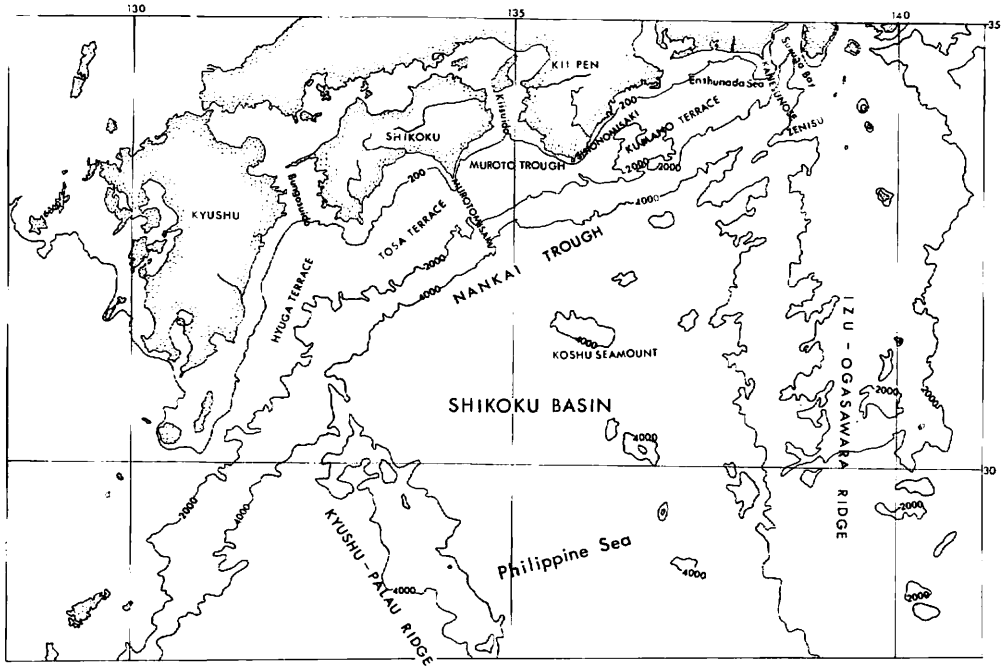

Fig. 1 Physiography of the area surveyed.

Topographically the area includes narrow continental shelves, continental slopes with several wide terraces, the Nankai Trough, and the abyssal plain of the Shikoku Basin (Fig. 1).

Four marked terraces are distributed on the middle parts of the continental slopes at depths between 1,000 and 2,000 m: i.e., the Kumano, Muroto, Tosa, and Hyuga Terraces. TAYAMA (1950) described these terraces and considered that these were erosional surfaces formed in the Tertiary. However, a more likely interpretation is that the terraces were formed by sediment-fill in depressions on the continental slopes (SATO, 1969: HILDE, *et al.*, 1969; and YOSHII, *et al.*, 1970).

The lower continental slopes below the outer ridges of the terraces extend to the Nankai Trough at the depth of about 4000 m. The lower slopes have an irregular topography of strongly disturbed deposits indicating that this area belongs to the accretion zone.

The Nankai Trough occupies the zone between the continental margin and the ocean floor. The trough is very narrow, shallow depression extending to depths between 3000 and more than 45000 m. The trough ends in Suruga Bay to the east and is terminated by the Kyushu-Palau Ridge to the west. The trough is considered to mark the site of a subduction zone of the Philippine Plate underthrusting the Asia Plate.

A broad and flat abyssal plain–the Shikoku Basin extends to the south of the Nankai Trough. The basin lies at an average depth of 4000 m and is bordered by the Izu-Ogasawara Island Arc in the east and by the Kyushu–Palau Ridge in the west. A chain of volcanic seamounts runs along the central part of the basin, and the Koshu

Seamount, the top of which is at the depth of 2180 m, occurs at the northern end of the chain.

According to the results of DSDP drilling, thick sediments younger than Miocene are deposited on Miocene Basement of the Nankai Trough and the Shikoku Basin.