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II. BOTTOM TOPOGRAPHY AT THE JUNCTION OF THE TOHOKU AND THE OGASAWARA ARCS

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The survey area is facing to the junction of the Japan and the Ogasawara Trenches, which may form a triple junction of a trench-trench-trench type together with the Sagami Trough. Northern part of the survey area is located on the forearc slope of the southern margin of the Tohoku Arc, and the southern part on the northern margin of the Ogasawara Arc (Fig. II–1). The Tohoku and the Ogasawara Arcs are apparently bordered by the Sagami Trough which runs perpendicular to both of the Arcs.

Many canyons exist on the north side slope of the Sagami Trough. Almost all of them run obliquely or perpendicularly to the axis of the Sagami Trough, and some of them start from the outer shelf or from the upper slope. On the south side slope of the Sagami Trough, canyons are scarcely observed. A few canyons develop on the eastern slope of Hachijo Island, and are in a direction perpendicular to the trench axis, same as Sagami Canyon. Steep scarps are observed to the north of the Sagami Canyon. The scarps bound ridged and uplifted topography to the north from smooth and depressed topography to the south. The Sagami Canyon runs parallelly a little south side of the scarps where a topographic depression shows minimum. Those canyons seem to be controlled structurally in their developments as is suggested to develop along structural depressions and faults.

The continental shelf off the east coast of the Boso Peninsula is narrower on the southern part and is wider on the northern part. Many banks and hills are distributed on the north side of the Sagami Trough, associated with canyons, where the continental shelf is narrower on near shore area (Fig. II–2). Bottom topography in Kashima-Nada, north of the Boso area shows a monotonous feature as is deepening toward east with bathymetric contours parallel to the coast line (Fig. II–3).

The southern part of the Boso Peninsula is suggested to be an uplifted area of older layers since Paleogene time with dominant structural trends parallel to the Trough. Northern and north side of the Peninsula, there may be a subsidence with sedimentation of younger layers since late Pleistocene time on the surface. A tilted structural movement on the north side of the Sagami Trough might continued since late Quarternary time which is also suggested in the terraces in the Boso Peninsula (SUGIMURA and NARUSE, 1954).

On the other hand, depression with relatively smooth topography is a dominant feature in the south side of the Sagami Trough (Fig. II–5). In the northern part of the Ogasawara Arc, no highs which border continental slope and inner trench slope are observed. The Shichito (Iwo-jima) Ridge is only a high here, except a high neighbouring on the east of the ridge which may form a forearc basement high of the arc.

There are ridges or topographic lineations extended obliquely on the west side of the

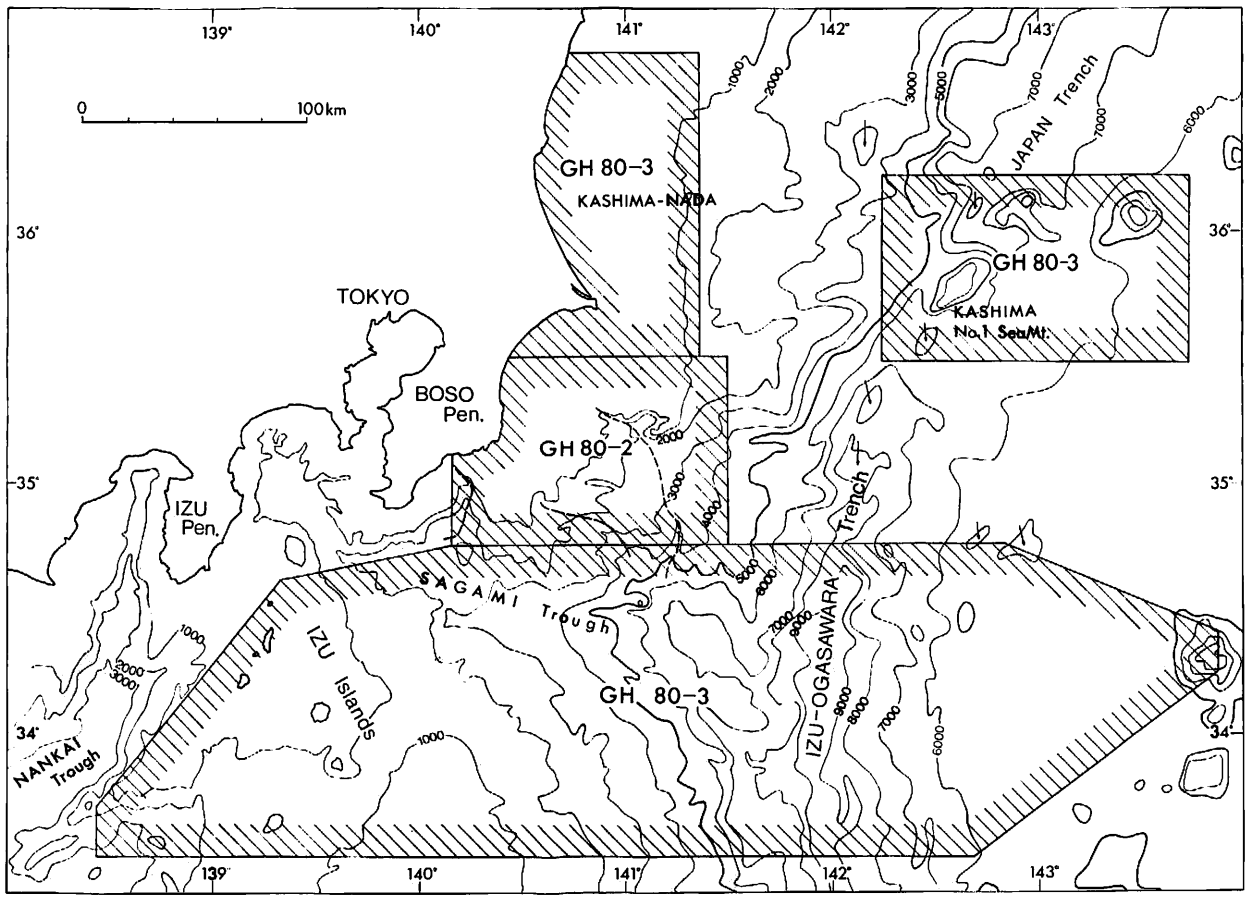

Fig. II-1 Physiological provinces of the GH80-2 and 3 survey areas.

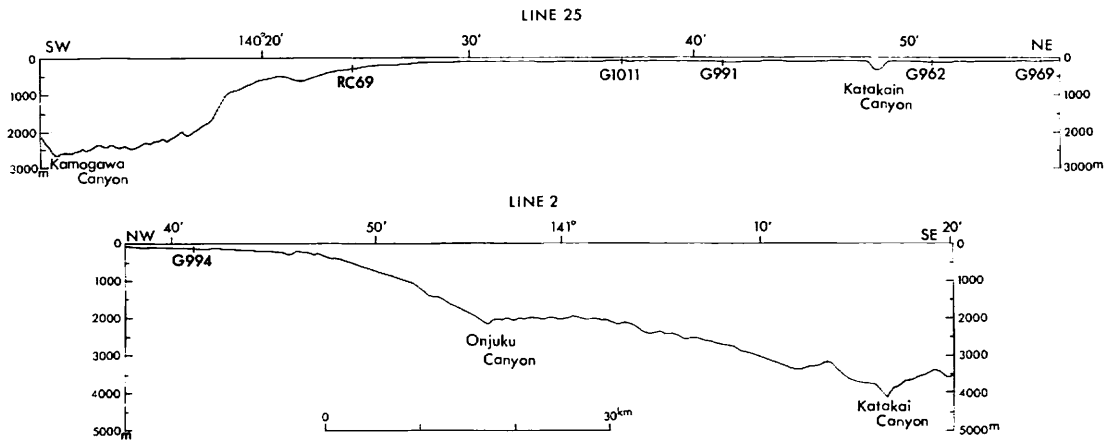

Fig. II–2 Typical topographical profiles off the Boso Peninsula, GH80–2.

Shichito Ridge (MOGI, 1972; KARIG and MOORE, 1975). Islands on the ridges suggest that the ridges are formed by a modern arc volcanism. The Izu Peninsula may be identified to be made by the same mechanism.

Kashima No. 1 Seamount may be a tablemount located on the axis of the trench, bordering the Japan Trench to the north and the Ogasawara Trench to the south. The seamount seems to be composed of two blocks which have flat tops of approximately 4,000 m deep and 5,500 m deep. The flat tops show a little ridged and semi-circle shape (Fig. II–4 and 6). Two blocks of the seamount are separated by a steep scarp parallel to the trench axis which runs throughout the seamount and extends over the outer trench slope until the trench axis in both sides. The steep scarp is suggested to be a normal fault formed by the subduction of the Pacific Plate under the Tohoku Arc, which makes the seamount broken into the two blocks (MOGI and NISHIZAWA, 1980).

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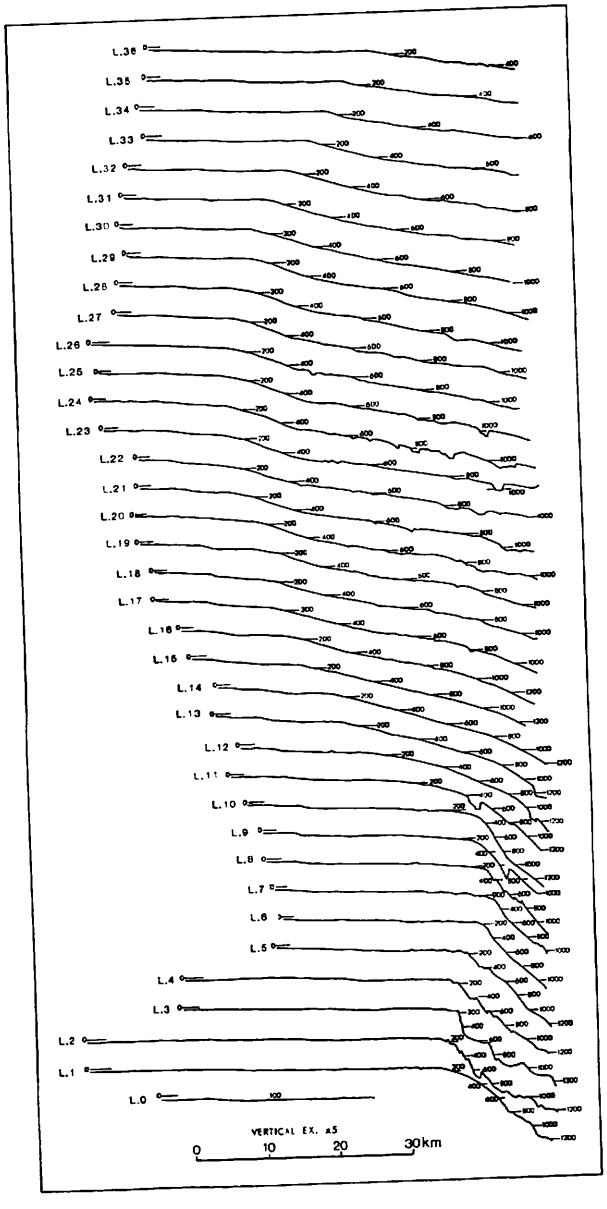
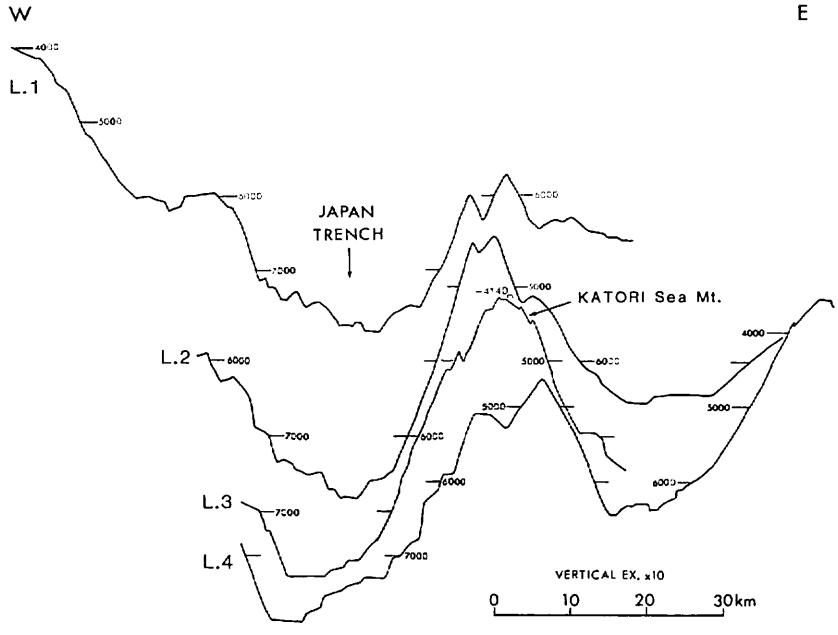
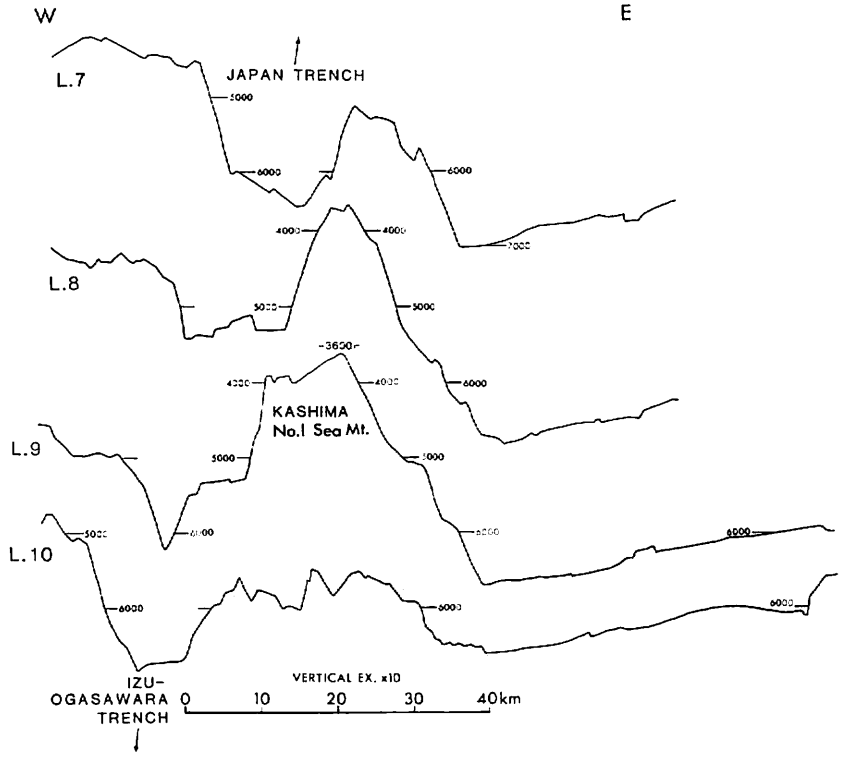


Fig. II-3 Topographical profiles in Kashima-Nada, GH80-3.


W
E
L.1
JAPAN
TRENCH
KATORI Sea Mt.
L.2
L.3
L.4
VERTICAL EX. x10
0 10 20 30km

(a)


W
E
L.7
JAPAN TRENCH
L.8
KASHIMA
No.1 Sea Mt.
L.9
L.10
IZU-
OGASAWARA
TRENCH
VERTICAL EX. x10
0 10 20 30 40km

(b)

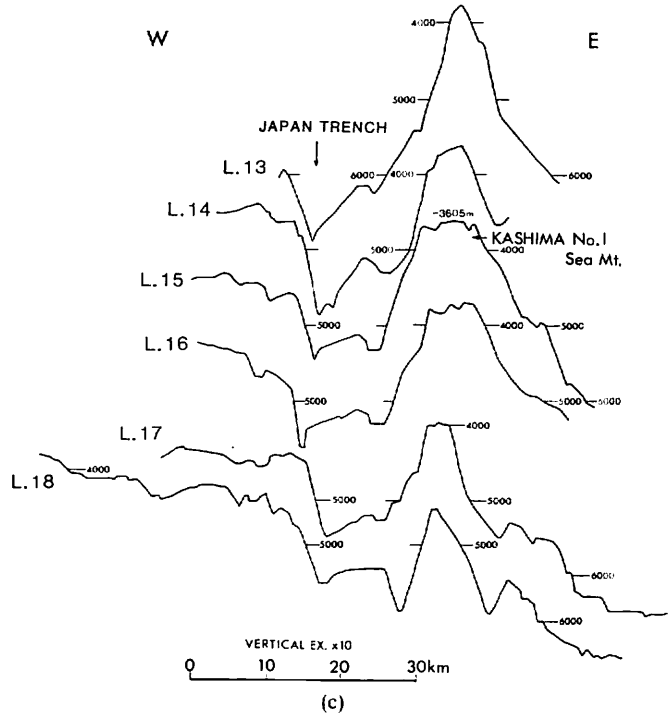


Fig. II–4 Topographical profiles across the Japan Trench in the Kashima No. 1 and Katori seamounts area, GH80–3.

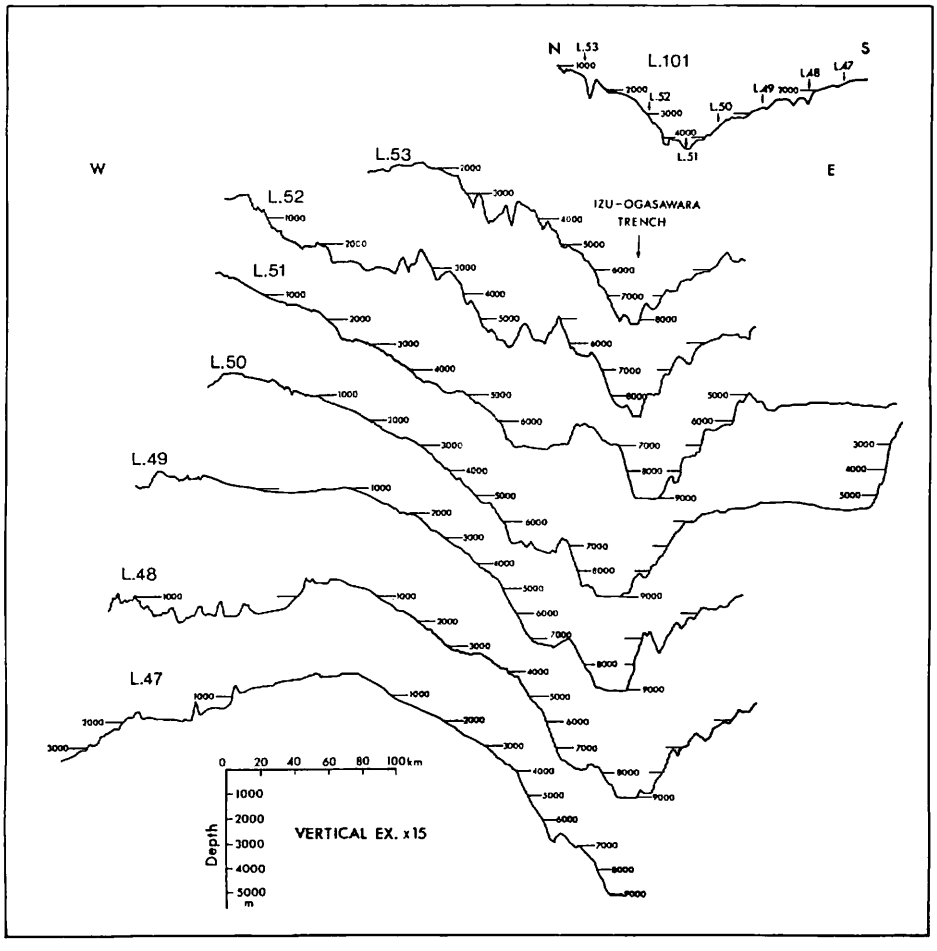


Fig. II-5 Topographical profiles in the northern margin of the Ogasawara Arc, GH80-3.

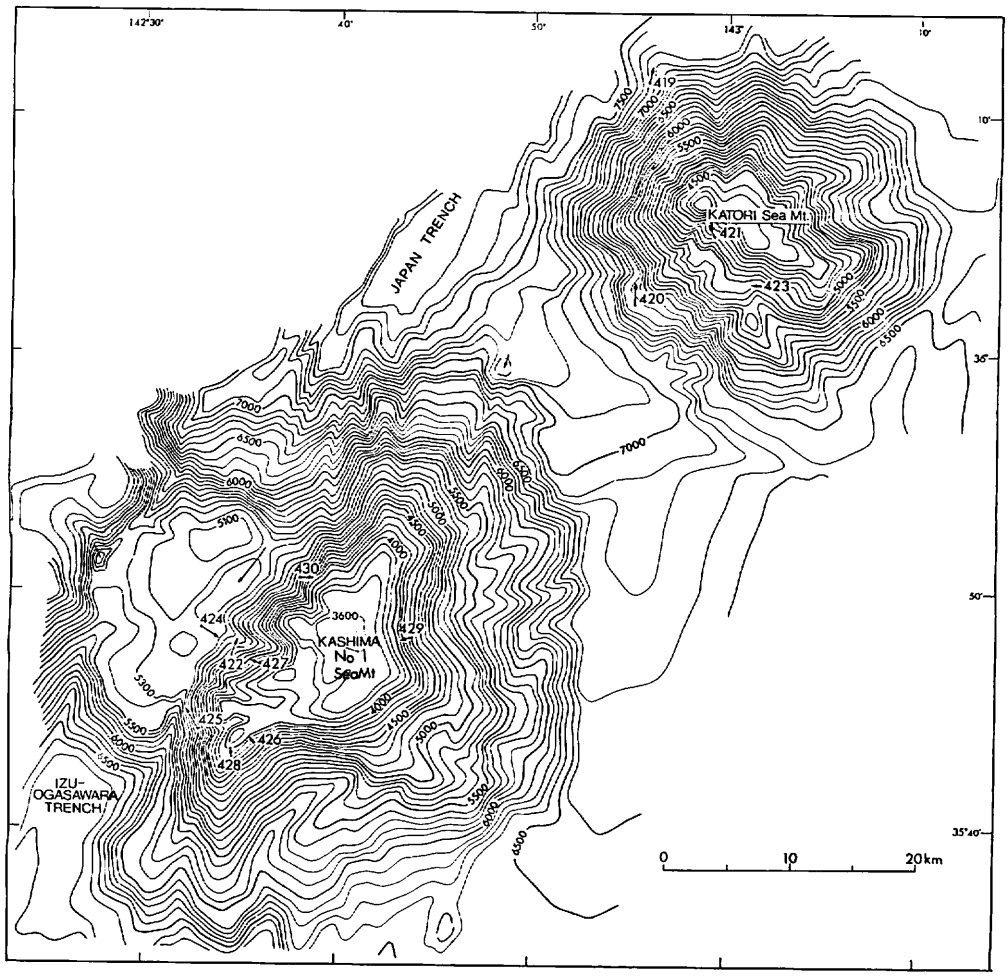


Fig. II-6 Bathymetry around the Kashima No. 1 Seamount. Contour interval is 100 m.