

# Geomorphological mapping of the continental shelf around the Japanese Islands based on the interpretation of submarine anaglyph images

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One of the primary issues of the geological disposal technology is to advance the techniques associated with investigation/assessment for long-term uplift and erosion in terrestrial-marine transitional zone in Japan. To examine this issue, it is inevitable to understand the geomorphic features indicating uplift and erosion in the continental shelf, which widely emerged during glacial periods. However, available information of the geomorphic features in the continental shelf around Japanese Islands is quite limited compared to the terrestrial area. This would be mainly because an overview sketch of seafloor landforms in the continental shelf around Japanese Islands is still lacking except 1/1000,000 scale “Quaternary map of Japan” (Japan Association for Quaternary Research ed., 1987). In this context, this study aims to produce the submarine geomorphological map showing the morphological features of medium-scale landforms in the continental shelf around Japanese Islands. Identification of the landforms was performed mainly based on visual interpretations of submarine anaglyph images constructed from digital bathymetric charts of Japan Hydrographic Association (M7000 series).

Submarine geomorphological map displays shelf breaks, significant breaks of slope, submarine canyons, and submarine terraces. The shelf breaks were defined as the most seaward convex slope break around the transitional zone between the continental shelf and slope; this definition differs from “Quaternary map of Japan” (Japan Association for Quaternary Research ed., 1987). Submarine canyons were classified in terms of whether they dissect the continental shelf or not. These two geomorphic elements were transferred into shape files (data format for geographic information system) as this will enable quantitative analyses of the landforms present on the submarine geomorphological map.

Submarine geomorphological map provides basic information concerning the geomorphic features of the Japan's continental shelf. This information is as follows: (1) regional difference of the continental shelf and its depths, (2) distribution of the area, where the extent of continental shelf is constrained by the dissection front formed by submarine canyons and submarine landslides, and (3) distribution of submarine terraces. The future subject of submarine geomorphological mapping is to conduct the identification of submarine active faults, shelf channels, and tidal landforms. Moreover, it will be expected to construct the geomorphological map seamlessly connecting terrestrial area to marine area by incorporating marine terraces and active faults shown in the previous studies into the submarine geomorphological map.

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## Reference

Japan Association for Quaternary Research ed. (1987) Quaternary map of Japan, University of Tokyo Press.

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