

MIS002-05

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## Carbonate rocks crop out on the slope of Miyako-sone, eastern off Miyako Island

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Bathymetric mapping and ROV (Remotely Operating Vehicle, Hyper Dolphin) submersible observations were carried out on the slope of the Miyako-Sone submarine platform, east off Miyako Island (southern Japan). The survey area is located in the central part of the Ryukyu Island Arc, extending from Kyushu to Taiwan for a distance of 1,200 km, where the Philippine Sea Plate is subducting beneath the Eurasian Plate along the Ryukyu Trench.

The bathymetric map indicates that several terraces are developed on the slope of the Miyako-Sone. The submersible observations started from a cliff at 519 m water depth and ended at the shallowest terrace at 121 m water depth. Terraces are observed at water depths of about 140, 330 and 400 m in the northeast Miyako-Sone. Some lineaments, possibly corresponding to faults, extend perpendicular to direction of the Ryukyu Island Arc, at the upper slope of the Miyako-Sone.

Our observations revealed that the surface sediments of the terraces consist mainly of unconsolidated, coarse sand-sized carbonate grains (bioclasts). The steep slope is constructed by well indurated carbonate rocks. All samples collected from the slope are limestone clasts. No siliciclastic deposits corresponding to the Late Miocene to Early Pleistocene Shimajiri Group, that extends in Okinawa and Miyako islands, were recovered.

Important clues from our studies are:

1. The carbonate rocks which were subaerially exposed and karstified during the lowstand of sea level at the Last Glacial Maximum possibly occur on the shallowest terrace and its marginal slope, less than 140 m water depth.
2. Absence of the Late Miocene to Early Pleistocene Shimajiri Group from the Miyako-Sone suggests that the distribution of such siliciclastic deposits is limited to the area below the investigated depth range (121-519 m water depth) due to the subsidence which took place in the last two million years (or more).

Keywords: Miyako Island, Carbonate, Ryukyu Arc, Quaternary, Subsidence, Tectonics