

**Late Pleistocene coral reef sediments and their U-series ages in Kikai Island,
Central Ryukyus, Japan: Implications for sea-level change and tectonic movements**

中部琉球喜界島に分布する後期更新世サンゴ礁堆積物とそのウラン系列年代

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Pleistocene marine terraces developed in Kikai Island generally have three steps. They consist of mainly thick Middle Pleistocene and thin Upper Pleistocene sediments. The Hyakunodai Formation composed of coral limestone is distributed on the higher two steps called the Hyakunodai Terrace. The Kawamine Terrace extensively developed southwest of Kikai island overlies a detrital limestone called the Wan Formation composed of well-preserved biogenic remains. New α -spectrometric $^{230}\text{Th}/^{234}\text{U}$ dates for 60 colonial and solitary corals collected from both terraces and careful observations of lithofacies reveal new depositional history of Pleistocene terraces on Kikai Island. Fossil corals from the Hyakunodai Terrace show Mid- to Late Pleistocene dates ranging from 154.8 ± 6.4 to 83.2 ± 2.4 ky (2σ statistical error) and Middle Pleistocene age (> 450 ky). These ages, combined with their distributions and lithofacies, can be divided into age groups correlated to MIS 6, early-MIS 5e, MIS 5e, late-MIS 5e, 5d, 5c and 5a. Coral assemblage dated as MIS 5c at the outcrop *ca.* 195 m above present sea level (apsl) indicate depositional depth ranging from 5 to 15 m. The elevation of the samples and the depth range of the corals put the relative sea level position during MIS 5c between 200 – 210 m, higher than the position of the Hyakunodai Terrace. These facts reveal that the highest terrace was formed during MIS 5c. The appearance of MIS 6 sediments implies that sea level fluctuation occurred before MIS 5. Solitary corals from the Kawamine Terrace sediments provided reliable dates ranging from 96 ± 2.8 to 56.7 ± 2.2 ky, corresponding to MIS 5c to 3. These can be divided into four age groups taking error into account. The lithofacies and dates suggest that this sediment was deposited on the insular shelf during both relatively high and low sea stands. Correlation between the age and elevation of samples; show that the oldest sample occurred at *ca.* 40 m, the youngest at *ca.* 18 m apsl. In addition, corals obtained from the proximal location of the Kawamine Terrace tend to show older ages, while corals from the distal site show younger dates. Coral limestone is also sporadically distributed on this terrace. The youngest date obtained was 40.2 ± 1.2 ky from a sample collected at the southwest end of the terrace, about 25 m apsl. Dates of three other samples from the same site are comparable within the margin of error; the average was calculated to be 41.2 ± 0.8 ky. These results indicate that the Kawamine Terrace was formed in different depositional environments between MIS 5b and 3 with the fall of relative sea level: from the insular shelf where fore-reef sediments were deposited to the shallow water environment where coral reefs were formed. Thus, no Pleistocene coral reef sediments, younger than about 41 ky (MIS 3), are exposed on the surface of Kikai Island.

関連既発表論文

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