

# ウラン系列年代測定法によるサンゴ礁段丘の形成過程に関する研究

メタデータ	言語: Japanese 出版者: 公開日: 2022-05-20 キーワード (Ja): キーワード (En): 作成者: メールアドレス: 所属:
URL	<a href="https://doi.org/10.24517/00057073">https://doi.org/10.24517/00057073</a>

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# 1998 Fiscal Year Final Research Report Summary

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## A study on growth history of reef terraces deduced from the U-series method of dating

Research Project

### Project/Area Number

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08454148

### Research Category

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Grant-in-Aid for Scientific Research (B)

### Allocation Type

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Single-year Grants

### Section

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一般

### Research Field

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Stratigraphy/Paleontology

### Research Institution

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Kanazawa University

### Principal Investigator

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### Project Period (FY)

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1996 - 1998

### Keywords

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Quaternary / Coral Reef Terrace / Sea Level Change / U-Series dating / Kikai Island / Philippine Islands / Huon Peninsula / Fiji Islands

### Research Abstract

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The growth history of coral reef terraces at Kikai Island (Ryukyu Islands), Huon Peninsula (Papua New Guinea), Philippine Islands, and Fiji Islands, which were formed during the last several tens of thousands years, has been elucidated by using U-series dates of corals as a time scale. The main results obtained in this study are outlined as follows :

1. As the result of U-series dating and stratigraphic study, coral limestone younger than the isotope stage 5a was sporadically distributed at an altitude of ca. 10 to ca. 65 m in the Kikai Island. Such limestone overlies the fore-reef sediments assigned to stage 3 to 5e. These facts suggest that coral reefs have been formed on the sea floor being successively shallowed with the regression from isotope stage 5e to 3. In contrast, alpha-spectrometric

- U method was also useful for interpreting the growth history of Holocene coral reef terraces. The Holocene coral limestone at the island began to deposit at ca. 10 ka in water depth of 5 to 10 m. Then the transgressive and highstand systems tracts were deposited during the times when sea level raised and attained to the maximum height (ca. 12 m) up to ca. 7.5 ka. As lowering of the sea level, the terrigenous materials became gradually in short supply and a fringing reef started to grow around 7 ka.
- A buried coral reef implying that the sea level at the last glacial maximum was 126 m in water depth, was found beneath the outer edge of insular shelf off the Miyako Islands.
  - It was explicated, from U-series dating and oxygen isotopic analysis of late Pleistocene corals at Huon Peninsula, that the rapid rise of sea level at ca. 140 ka has been interrupted at ca. 135-130 ka and restarted after it has been once lowered.
  - The distribution of coral reef terrace formed during the stage 5e was confirmed at Panglao, Bohol, and Mactan Islands. A tidal notch of the stage 5e also occurred at the west side of Palawan Islands. The altitude of those indicators for paleo-shoreline denotes that some areas in the Philippine Islands have not uplifted, even though they are situated in the active margin in the western Pacific region.▲ Less

## Research Products (22 results)

All Other

All Publications (22 results)

- [Publications] Radtke,Ulrich: "The Quaternary coral reef tracts of Hateruma,Ryukyu Islands,Japan." Quaternary International. 31. 61-70 (1996) ▼
- [Publications] Chappell,John: "Reconciliation of late Quaternary sea levels derived from coral terraces at Huon Peninsula with deep sea oxygen isotopes records." Earth and Planetary Science Letters. 141. 227-236 (1996) ▼
- [Publications] 大村 明雄: "琉球列島島棚堆積物とその堆積年代-宮古島南西沖を例に-" 月刊地球. 19. 594-599 (1997) ▼
- [Publications] 佐々木圭一: "南西諸島喜界島の志戸桶北海岸における完新世サンゴ礁段丘の形成過程" 第四紀研究. 37. 349-360 (1998) ▼
- [Publications] Esat,Tezer: "Rapid fluctuations in sea level recorded at Huon Peninsula during the penultimate deglaciation." Science. 283. 197-201 (1999) ▼
- [Publications] McCulloch,Malcolm: "The coral record of equatorial sea surface temperatures during the penultimate deglaciation at Huon Peninsula." Science. 283. 202-204 (1999) ▼
- [Publications] 太田陽子: "喜界島サンゴ礁段丘の研究史と問題点" 第四紀研究. 38印刷中. (1999) ▼
- [Publications] 大村明雄: "喜界島の更新世堆積物とそのウラン系列年代について" 第四紀研究. 38印刷中. (1999) ▼
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- [Publications] 小池一之・太田陽子編: "変化する日本の海岸-最終間氷期から現在まで-" 株式会社古今書院 橋本寿資, 185 (1996) ▼
- [Publications] 長友恒人編: "考古学のための年代測定学入門" 株式会社古今書院印刷中, ▼
- [Publications] Radtke, U., Grun, R., Omura, A.and Mangini, A.: "The Quaternary coral reef tracts of Hateruma, Ryukyu Islands, Japan" Quaternary International. vol.31. 61-70 (1996) ▼
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- [Publications] Sasaki, K., Omura, A., Ota, T., Murase, T., Azuma, T., Kobayashi, M.and Ikura, K.: "Holocene regressive coral reef terraces at the northern Shidooke Coast of Kikai Island, central Japan in Japanese with English abstract." The Quaternary Research (Daiyonki-kenkyu). vol.37. 361-370 (1998) ▼
- [Publications] Esat, T.M., McCulloch, M.T., Chappell, J., Pillans, B.and Omura, A.: "Rapid fluctuations in sea level recorded at Huon Peninsula during the penultimate deglaciation" Science. vol.283. 197-201 (1999) ▼
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Published: 1999-12-07