

Geochronological Study by Use of the Radiochemical Disequilibrium between Nuclides in the Uranium Decay Series

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1989 Fiscal Year Final Research Report Summary

Geochronological Study by Use of the Radiochemical Disequilibrium between Nuclides in the Uranium Decay Series

Research Project

Project/Area Number

62470047

Research Category

Grant-in-Aid for General Scientific Research (B)

Allocation Type

Single-year Grants

Research Field

Stratigraphy/Paleontology

Research Institution

Kanazawa University

Principal Investigator

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1987 - 1989

Keywords

Uranium-Series Method / Kita-Daito Island / Mimami-Daito Island / Yonaguni Island / Riukiu Limestone / Last Interglacial Stage / Tsukui Formation / Rotoehu Ash

Research Abstract

Results newly obtained during the term of this study are summarized as follows:

(1) A simple and effective technique to separate uranium and thorium isotopes from geologic materials such as silicates and carbonates was developed for the ^{230}Th method of dating.

(2) The distribution of Pleistocene limestone was confirmed at nine locations and the total number of ninety of coral samples were collected for dating by the $^{230}\text{Th}/^{234}\text{U}$ method from Kita- and Minami-Daito Islands. As the results of dating, autochthonous limestone bodies on both islands were assigned to the last interglacial. The height of "raised surf bench" relating to the dated limestone was ca. 10 m and 12.2-12.7 m on Kita- and Minami-Daito Islands, respectively. From these facts, both islands are considered to have been uplifted very slowly, at the rate of

approximately 0.05 m/ka, since the last interglacial.

(3) The Riukiu Limestone on northwestern part of Yonaguni Island consists of three reef complexes formed during three interglacials, 120-140 ka BP, 200-230 ka BP and ca. 300 ka BP. The height of marine terrace reminds us that this island have been uplifted at the rate of 0.1-0.2 m/ka during the last 130 ka.

(4) Ahermatypic simple corals of six species were collected for age determination from the Tsukui Formation in the southeastern part of Miura Peninsula, Kanagawa Prefecture. $^{230}\text{Th}/^{234}\text{U}$ ages of three species are corresponding to the oxygen isotope stage 9.

(5) In order to make sure the eruption age of the Rotoehu Ash, one of wide distributed tephra of New Zealand, $^{230}\text{Th}-^{238}\text{U}$ method was applied and obtained the date of $71,000 \pm 6,000$ years. From this results, marine sediments of Te Papa Terrace in the Bay of Plenty, North Island, is concluded to have been deposited during a global high sea stand at ca. 85 ka.

Research Products (12 results)

All Other

All Publications (12 results)

- [Publications] 河名俊男: "石垣島大浜の"津波大石"のサンゴ化石年代" 第四紀研究. 26. 155-158 (1987) ▼
- [Publications] 大村明雄: "ウラン系列年代測定法" 地質学論集. 29. 107-127 (1988) ▼
- [Publications] 大村明雄: "中部琉球喜界島の地史-琉球石灰岩産サンゴ化石のウラン系列年代測定のまとめとして-" 地質学論集. 29. 253-268 (1988) ▼
- [Publications] 大村明雄: " $^{238}\text{U}-^{230}\text{Th}$ 放射非平衡系による火山噴出物の年代測定" 地質調査所月報. 39. 559-572 (1988) ▼
- [Publications] Ota,Yoko: " $^{230}\text{Th}-^{238}\text{U}$ age of Rotoehu Ash and its implications for marine terrace chronology of eastern Bay of Plenty,New Zealand" New Zealand Journal of Geology and Geophysics. 32. 327-331 (1989) ▼
- [Publications] Omura,Akio: " $^{230}\text{Th}/^{234}\text{U}$ dates of corals from Kikai and Hateruma Islands,Ryukyus,southern Japan : Their implications to shoreline and tectonic history since the penultimate interglacial" Quaternary Research(準備中). ▼
- [Publications] Kawana, Toshio, Nakata, Takashi, and Omura, Akio: "Age of the fossil coral from the "Tsunami-ufuishi" on Ohama of Ishigaki Island, the South Ryukyus. Japan." Quaternary Res.(Daiyonki-Kenkyu), 26-2, 155-158, 1987. ▼
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- [Publications] Ota, Yoko, Omura, Akio, and Iwata, Hideki: " $^{230}\text{Th}-^{238}\text{U}$ age of Rotoehu Ash and its implications for marine terrace chronology of eastern Bay of Plenty, New Zealand." New Zealand Jour.Geol.Geophys., 32-3, 327-331, 1989. ▼
- [Publications] Omura,Akio: " $^{230}\text{Th}/^{234}\text{U}$ dates of corals from Kikai and Hateruma Islands, Ryukyus, southern Japan : Their implications to shoreline and tectonic history since the penultimate interglacial." Quaternary Research. ▼

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