

Short-term fluctuations in local radiocarbon reservoir age reconstructed from corals in the Ryukyu Islands

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High-resolution radiocarbon (^{14}C) dating is required in palaeoclimatology, palaeoseismology and archaeology. However, previously reported local reservoir age (ΔR) values have discrepancies in the Kuroshio region, which makes problems when accurately calibrating ^{14}C ages to calendar ages of marine samples. We measured radiocarbon dating of *Porites* corals from Ishigaki and Kikai Islands, which lie within the path of the Kuroshio Current off southern Japan, to determine local reservoir effect there. We found that the average ΔR from 1947 to 1950 for samples from Ishigaki Island was -36.0 years, which is consistent with the average ΔR value from 1901 to 1948 that we obtained for samples from Kikai Island. On the other hand, high-resolution ΔR data from Ishigaki Island for 1947 to 1950 fluctuated over a range of more than 150 years, from -136 ± 42 to 62 ± 50 years. Our compilation of new ΔR data and previously published data from the western Pacific indicates a strong positive-to-negative shift in ΔR during the period from 1900 to 1950. This shift of the local marine reservoir effect will affect calibration of ^{14}C ages to provide calendar dates in the Western Pacific.

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