

Distribution of Pu in the coral of the Northwest Pacific Ocean

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²³⁹⁺²⁴⁰Pu activity concentrations and ²⁴⁰Pu/²³⁹Pu atom ratios were measured in annually banded coral skeletons from the islands of the Tropical and the Northwest Pacific Ocean (Tawara Islands: 1° 25'N, 173° 01' E; Calaguas Islands: 14° 28.49'N, 122° 57.39' E; Ishigaki Islands: 24° 25' N, 124° 07' E). The highest ²⁴⁰Pu/²³⁹Pu atom ratios (0.464±0.061) was found to be derived from the thermonuclear detonation with the high yield nuclear fission energy of 5.7 Mt (Ivy Mike) conducted in November 1952 and was found in the coral band of the Calaguas Islands collected in 1953. ²³⁹⁺²⁴⁰Pu activity concentrations in the corals of the Calaguas Islands and the Ishigaki Islands showed the highest values of 2,190±16 and 1,800±142 mBq/kg, respectively in 1954 in which nuclear fission tests in US Pacific Proving Grounds (PPG) had maximum yields. The distribution of ²³⁹⁺²⁴⁰Pu activity concentrations in coral bands of 1950s in these two regions showed similar patterns with the fission yields from the PPG. The highest ²³⁹⁺²⁴⁰Pu activity concentration of 33±6 mBq/kg in corals of the Tarawa Islands located at far southeast direction from the PPG collected in 1955 is one to two orders of magnitude lower compared to the coral bands from the Calaguas and Ishigaki Islands in the 1950s. This indicates that the plutonium released from the bomb tests in the PPG was mainly dispersed to the west *via* the Northeast Trade Winds and the North Equatorial Current. ²⁴⁰Pu/²³⁹Pu atom ratios in the coral bands of the Calaguas Islands varied within the range 0.213 - 0.313 from 1960 to the early 1970s. This may be associated with changes of the North Equatorial Current bifurcation latitude related to the Niño-3.4 index.