

Differences of coral ^{129}I and ^{14}C as nuclear bomb indicators

ANGEL T. BAUTISTA VII*^{1,2}, HIROYOUKI MATSUZAKI¹, FERNANDO P. SIRINGAN³

¹The University of Tokyo, Japan (*correspondence: atbautistavii@gmail.com)

²Philippine Nuclear Research Institute – Department of Science and Technology, Philippines

³Marine Science Institute, University of the Philippines Diliman, Philippines

Iodine-129 and Carbon-14 are radionuclides that were introduced in massive amounts during the nuclear bomb testing era of 1950s and 1960s. Here we show and compare the ^{129}I and ^{14}C records of two coral cores taken from Pacific Ocean (PO) and the South China Sea (SCS) sides of the Philippines.

Results show that ^{129}I in both coral cores display prominent signals within the same year of the nuclear tests, most notably in the year 1962. ^{14}C bomb peaks, on the other hand, were not concurrent with the SCS record increasing around 1961-1969 and the PO record rising 3 years later. This demonstrates that ^{129}I may prove to be a better coral age and event marker than ^{14}C . Moreover, the rates of increase and decrease were both quicker for ^{129}I than ^{14}C . This difference is majorly attributed to the longer atmospheric residence time and the easier ocean-to-atmosphere exchange of ^{14}C , which is presented here through a simple box model.

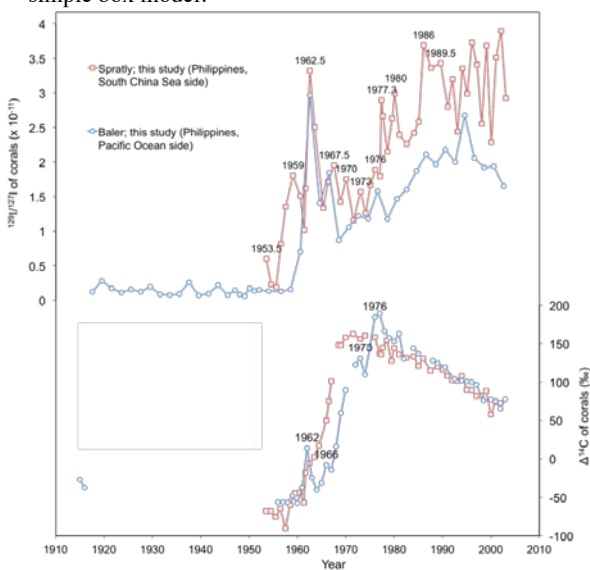


Figure 1: ^{129}I and ^{14}C of two coral cores from the Philippines