

Paleoproductivity during the Younger Dryas off Northeastern Luzon, Philippines

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Abstract : The influence of the Younger Dryas (YD) event on primary production off the northeast shelf of Luzon, Philippines is examined using sediment cores from two deep sea sites north of the Bicol shelf and with varying relative influence from terrestrial sediment input and the Kuroshio Current. Core A is immediately west of the Kuroshio feeder current and is off the slope while Core B is from a bathymetric high located almost west of Core A. XRF-, CHN- and LOI- derived geochemical proxies are utilized for reconstruction. A decrease in sediment input from ~12.9 to ~11.6 kyr BP corresponding to the YD event is indicated by the proxies, Ti, Al, and Al/Ti, in both cores. This is consistent with the drier climate during this period. Primary productivity indicators in the cores show opposing trends during the YD; Core A shows an increasing trend while Core B shows a decreasing trend. The decreasing trend in Core B can be due to a decrease in terrestrial nutrient input due to a decrease in precipitation. On the other hand, the increasing trend in Core A can be due to a swifter Kuroshio Current caused by a swifter and more southerly NEC bifurcation which in turn is due to a southerly shift of the ITCZ during YD. A stronger Kuroshio feeder would have enhanced upwelling induced by steeper sea surface across the current and by more intense cyclonic gyres due to flow separation where the shelf width suddenly decreases north of the Bicol Shelf.

Keywords : paleoproductivity, younger dryas, Philippines, northeastern Luzon

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