

Stable isotopic composition of two morphotypes of *Globigerinoides ruber* (white) in the subtropical gyre in the North Pacific

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Globigerinoides ruber has recently received much attention for paleoceanography in the subtropical and tropical ocean. *G. ruber* has two morphotypes (*G. ruber* s.s. and *G. ruber* s.l.): *G. ruber* s.s. and s.l. are dwelling at the surface layer and at the deeper depth in the surface water, respectively. In order to establish a proxy for the quantitative reconstruction of sea surface temperature, oxygen and carbon isotopes were analyzed in *G. ruber* collected at 30°N, 175°E in the Pacific. Based upon the fluxes of foraminifers and organic matter (OM), the entire duration of the sediment trap experiment was divided into two periods: Period 6A (May to December) characterized by low fluxes of organic matter and foraminifers under stratified condition of the surface ocean, and 6B (January to April) characterized by high fluxes of OM and foraminifers under well developed deep-mixing layer. With respect to seasonal variability, $\delta^{18}\text{O}$ values of both *G. ruber* s.s. and *G. ruber* s.l. decreased in summer with a minimum around September-October and increased in winter and spring, which was also the case with their $\delta^{13}\text{C}$ values. The mean difference of $\delta^{18}\text{O}$ values between both morphotypes was 0.25 in August-October, corresponding to 1°C difference in water temperature. Consistency with field observation confirms that *G. ruber* s.s. and *G. ruber* s.l. are dwelling at the surface and at 30-50 m water depth, respectively. In contrast, difference in $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ values between the two morphotypes was not significant in early April due to a deep-mixing. Together with foraminiferal assemblage, $\delta^{18}\text{O}$ values of two morphotypes of *G. ruber* can be a good proxy for quantitative reconstruction of vertical seawater temperature in the surface ocean.