

Appendix B

From laboratory culture experiments, the relationship between temperature and Sr/Ca is available for the four main carbonate contributors of our assemblage (*C. leptoporus*, *H. carteri*, *G. oceanica* and *C. braarudii*) [Stoll *et al.*, 2002a; Müller *et al.*, 2014]. These data are used to determine the slope of the Sr/Ca vs temperature relationship for removing the temperature component of variation in the downcore record from MD96-2080. For similar culture temperatures, the larger species (*C. leptoporus*, *H. carteri*, and *C. braarudii*) feature higher absolute Sr/Ca, an effect observed previously in sediment trap and sediment comparisons [Stoll *et al.*, 2007a; Auliaherliaty *et al.*, 2009]. As this species offset has been observed to be variable in natural settings and is accounted for separately by a site-specific assemblage vs Sr/Ca regression in section 4.1.2 of the main text, we exclude the species-specific offsets from the temperature correction by subtracting a constant magnitude to the measured Sr/Ca of the large species (*H. carteri* = 0.38; *C. braarudii* = 0.27; *C. leptoporus* = 0.25). We choose to adjust these species to the absolute Sr/Ca range of *G. oceanica* and not vice versa because the *G. oceanica* dataset has the highest sampling resolution. From the resulting dataset, we calculate a single regression which was applied for temperature correction of our measured Sr/Ca. The linear regression obtained after the consideration of adjusted data from the four species was: $\text{Sr/Ca} = 0.0501 + 1.7053$ (Figure B1).

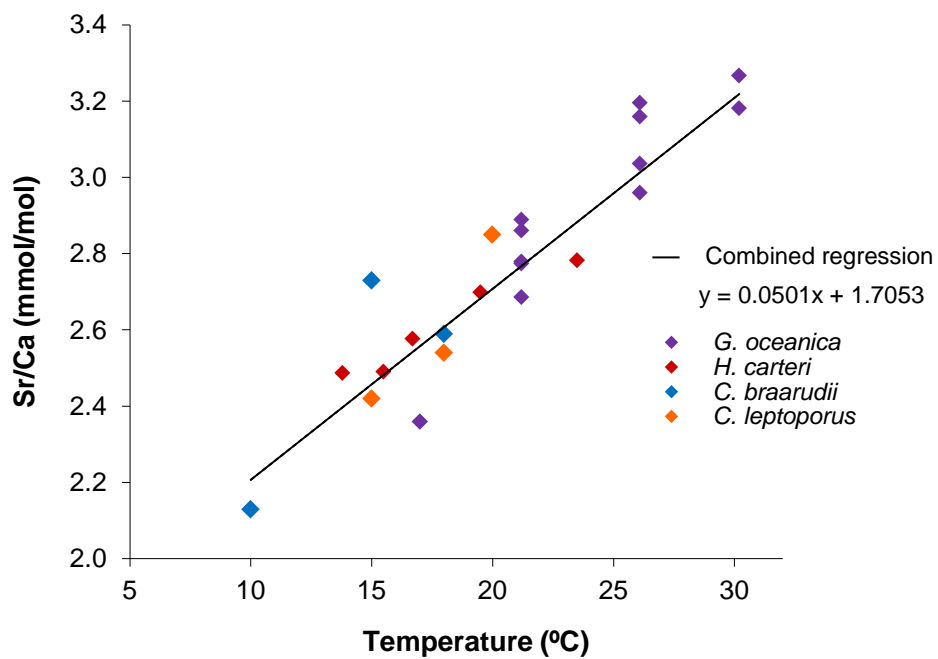


Figure B1. Combined Sr/Ca dependency on temperature obtained from the regression of the main carbonate contributors (*C. leptoporus*, *H. carteri*, *G. oceanica* and *C. braarudii*) (black line), based on culture data of [Stoll *et al.*, 2002a; Müller *et al.*, 2014] after elimination of offsets in absolute Sr/Ca among species as described in the text of appendix B.