Investigation of δ^{26}Mg in large benthic foraminifera as a temperature proxy

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In the last decade, stable magnesium (Mg) isotope fractionation in biogenic carbonates has been attracted for a new paleoenvironmental proxy, along with technological advance in mass spectrometry. Although δ^{26}Mg has been expected to serve as more robust temperature proxy from the dawn of their evaluation, considerable differences were observed between various biogenic carbonates having various Mg content. In this study, we investigated δ^{26}Mg in large benthic foraminifers producing high-magnesium calcite tests in order to evaluate them as a temperature proxy. *Amphisorus kudakajimensis* and *Calcarina gaudichaudii* were cultured in six temperature conditions (21℃-30℃), and measured δ^{26}Mg by MC-ICP-MS. In a previous study, both species showed clear relationships of linearity between Mg/Ca and temperature. Regardless of the previous studies reporting positive relationships between δ26Mg and temperaturethe, the δ^{26}Mg in both species showed negative temperature dependency. There was no significant correlation with the growth rate of foraminifers. Evaluation of Mg isotope fractionation process in large benthic foraminifera may give a profound insight into a foraminiferal biomineralization.

Keywords: Temperature proxy, Large Benthic Foraminifera, Mg isotope fractionation

