

Analysis from Benthic foraminifera populations of expansion and intensify of the northwestern Pacific oxygen minimum zone during the last deglaciation

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During the last deglaciation, the oxygen minimum zone (OMZ) at 1 km water depth in the northwestern Pacific Ocean intensified. However, time-series fluctuations of the upper layer of the OMZ are poorly understood. Fossil benthic foraminifera are useful indicators of historic deoxygenation at the seafloor due to their specific patterns of adaptation to dysoxic environments. Thus, we studied benthic foraminifera assemblages in a sediment core taken from a water depth of 777 m off of Hokkaido, North Japan, to reconstruct changes in the upper layer of the OMZ during the last deglaciation. The results suggested that dysoxic species such as *Brizalina seminuda* and *Buliminella tenuata* increased rapidly during the Bølling/Ållerød warming event, implying severe oxygen depletion. Similar dysoxic assemblages were recorded at 1 km water depth in this region. We concluded that the upper limit of the OMZ in the northwestern Pacific expanded during the last deglaciation, due to an increase in biological production and decrease in intermediate water ventilation.

Keywords: Benthic foraminifera, last deglaciation, oxygen minimum zone, northwestern Pacific, Bølling/Ållerød