

Benthic foraminifera in tropical Oxygen Minimum Zones

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This project aims at the reconstruction of past oxygen and nitrate levels in near-bottom waters under the Peruvian coastal upwelling cell during the past 20,000 years in order to identify variations in extension and intensity of one of today's major oxygen minimum zones through time. Benthic foraminifera were proven to mirror redox conditions in bottom and pore waters of the sediments. The pore density of *Bolivina spissa* is a novel proxy for dissolved nitrate. The abundances of different *Bolivina* species with confined oxygen tolerance bands allow quantitative reconstructions of past oxygenation levels. The foraminiferal studies are complemented by trace elemental, isotope, and biomineralisation studies.

Publication: Glock et al. 2011, Journal of Foraminiferal Research, 41: 19-29. Glock et al., 2018. Nature Comm. 9:1217. Glock et al., 2019. PNAS, 116: 2860-2865.

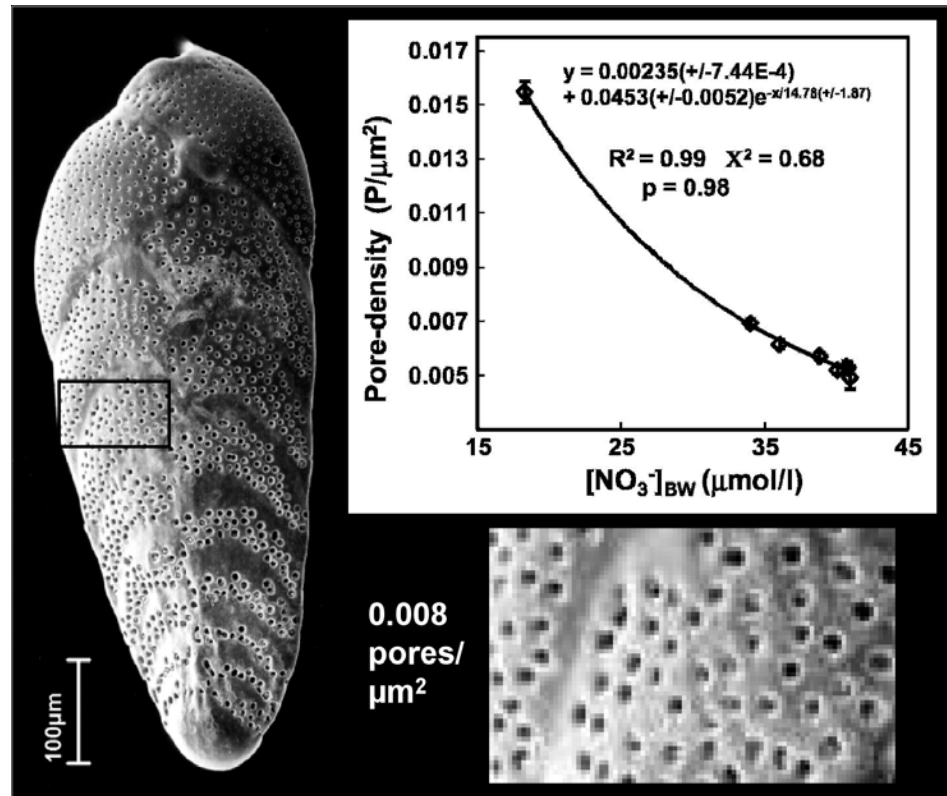


Fig. 1: The relationship between pore density in *Bolivina spissa* and bottom water nitrate concentrations (Glock et al., 2011).