



Trace element records in *Mytilus edulis* shells – a proxy for environmental conditions?

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There is an increasing interest in the use of the trace element signatures recorded in calcium carbonate skeletons of marine organisms as archives of past and present environmental conditions, such as temperature, salinity or nutrition level. Because of their global occurrence in the modern and ancient oceans, the trace element chemistry of bivalve shells might be used as a potential proxy for present and past environmental conditions. Calibrations of these potential proxies are, however, scarce. Here, we present some results of an ongoing study that investigates the trace element records in shells of the common bivalve *Mytilus edulis*. Mussels of the species *Mytilus edulis* are grown at NIOZ in the Dutch Wadden Sea. Shells from growth experiments have been analysed for trace elements at the LA-ICP-MS facility at GEUS with high spatial resolution. Eight shell samples from two different batches of mussels were analysed for a large number of elements, mainly divalent metals and rare earth elements. Element/Ca ratios were examined for seasonal trends and compared to sea surface temperature and salinity measured at NIOZ. The Mg/Ca ratio was found to have a strong seasonal trend, and to co-vary with the measured SST. The results are in agreement with previously published studies and indicate that the trace element record in *Mytilus edulis* shells may indeed be used as proxies for environmental conditions. This is a contribution to EUROCLIMATE project 04 ECLIM FP08 CASIOPEIA, and has been made possible thanks to support from the European Science Foundation (ESF) under the EURO-CORES Programme EUROCLIMATE, through contract No. ERAS-CT-2003-980409 of the European Commission, DG Research, FP6.