



## **Environmental conditions of the Belgian coastal area over the past millennium from *Mytilus edulis* shells: preliminary results**

**I. Meert** (1), D. P. Gillikin (1), F. Dehairs (1), A. Ervynck (2), B. Hillewaert (3), E. Keppens (4) and the CALMARs group (5)

(1) Vrije Universiteit Brussel, Department of Analytical and Environmental Chemistry, Brussels, Belgium (imeert@vub.ac.be), (2) Vlaams Instituut voor het Onroerend Erfgoed, Brussels, Belgium, (3) RAAKVLAK Interlokale Vereniging voor Archeologie in Brugge en Ommeland, Brugge, Belgium, (4) Vrije Universiteit Brussel, Department of Geology, Brussels, Belgium, (5) A Belgian Federal Science Policy Office funded project : <http://www.vub.ac.be/calmar>

Global climate change and other alterations in environments have been a major issue the last decades. To be able to predict changes and to have better monitoring of the environment in the future we need knowledge of the present and past environment. Because measurements of environmental variables such as seawater temperature and salinity did not happen accurately in the recent past or simply do not exist, proxies are needed to obtain information about the palaeoenvironment. Much research has confirmed that the elemental and isotopic composition of calcareous skeletons are records of past and present environmental conditions and thus allow reconstruction of the environmental history. The calcareous skeleton of the bivalve *Mytilus edulis* is very useful to investigate global change because it has a wide geographical distribution. Sensitive microanalysis techniques, such as High Resolution Inductively Coupled Plasma-Mass Spectrometry (HRICP-MS) offer the possibility to analyse chemical compositions of calcareous skeletons at a high spatial and thus temporal resolution.

Our contribution to this research branch consists of the investigation of recent and archaeological *Mytilus edulis* shells, the first were collected at the Belgian East-Coast (Knokke) and the latter were collected in Brugge and the now non-existent village of Monnikerede. They have been stratigraphically dated and they range from the 13<sup>th</sup> until the 19<sup>th</sup> century. The calcareous skeletons are and will be analysed for their

stable isotope composition of oxygen and carbon and their elemental composition of certain trace elements such as barium and lead. These parameters have been shown to be proxies of water temperature, salinity and pollution respectively. But this reflection may be overshadowed by diagenesis. Furthermore, the mussels came from a waste pile (midden) and were most likely boiled. The influence of boiling, if any, will be assessed on modern shells. The level of diagenesis will be assessed by both chemical (Mn, Fe, Sr concentrations) and physical (state of crystal micro-structure) methods. Finally, a preliminary attempt of palaeoenvironment reconstruction of the Southern Bight over the past millennium will be made.