



Sclerochronologic and oxygen isotope analysis of growth increments in the bivalve *Arctica islandica* from the Southwest Icelandic Shelf

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The marine bivalve mollusc *Arctica islandica* is known as the longest-living non-colonial animal, and considered to be a valuable paleo proxy and recorder of past environmental variability in the North Atlantic region. We have performed a pilot study using *A. islandica* from the Faxaflói area close to Reykjavik. This study presents the first absolutely dated, statistically robust master shell chronology from the southwest Icelandic shelf (64° N). The chronology is based on annual growth increments in ten live-collected specimens from the same population, which is combined to form a 142-year long chronology, covering AD 1873-2014. We present an annual $\delta^{18}\text{O}_{\text{shell}}$ record covering AD 1890-2008, which is negatively correlated with SST, indicating that the chemical composition of the shells can be used as a recorder of temperature variability of the North Atlantic water, southwest off Iceland. On a lower-frequency, the standardized growth index (SGI) of the population was found to co-vary with the multiannual variability of the SST (HadISST1) in the North Atlantic and indicated a positive relationship between the shell growth and SST for the period 1950-2010. The data also seem to support a relationship on a multidecadal time scale between smoothed shell SGI data obtained in this study and AMO index in the period 1883-2004. In a new project, we will continue to work on this shell material and focus on extending the chronology and on methodological issues related to the stable oxygen isotopic composition of the growth increment.