



Incremental task: Extending the existing 109 year Fladen Ground master chronology using the annual increments of the ocean quahog *Arctica islandica*

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Much of our understanding of climate comes from studying proxy archives from an array of sources. While there exist a good number of high resolution archives from terrestrial sources, the marine environment has been hindered with a low number of precisely-resolved records, especially in the high latitudes where the conditions for the development of natural archives such as corals and varved sediments are hard to come by. In the last 25 to 30 years there have been developments that show that certain species of mollusks can be used to study oceanographic conditions on much more detailed time scales. We present an extension of a chronology from the Fladen Ground, northern North Sea that was constructed using the shells of *Arctica islandica* (Bivalvia). *A. islandica* shows relatively easy-to-measure annual increments that can be cross-matched within and between populations as far as 80 km from each other maintaining a common signal. The width of the growth increments has been related to environmental factors such as water temperature, food availability and food quality (primary productivity). The existing chronology spans most of the 20th century and the last 30 years of the 19th century. Shells collected on the past few years have been absolutely-dated using ^{14}C and show that the Fladen Ground chronology can be potentially extended back to the 5th century. Such data will be a great resource for developing climate models that can more accurately reproduce past conditions and give more reliable predictions of the future climate.