Geophysical Research Abstracts
Vol. 14, EGU2012-11340, 2012
EGU General Assembly 2012

Millenial Scale Oscillations in Paleoceanographic Records From Atlantic Canada

E. Levac (1) and E. Bourlon (2)

(1) Bishop's University, Environmental Studies and Geography, Sherbrooke, Canada (elevac@ubishops.ca, 1-819-822-9661), (2) St. Francis Xavier University, Earth Sciences, Antigonish, Canada (ebourlon@stfx.ca)

High resolution Holocene paleoceanographic records from the Eastern Canadian Margin have been examined for millennial cyclicity. Large scale oscillations on centennial through millennial time scales were detected. While some of the oscillations can be explained by meltwater drainage episodes (Preboreal oscillation, 8.2 ka event), others remain unexplained and their periodicities differ somewhat from the "accepted" 1500 years cycle. The Eastern Canadian Margin is a key area located near sites of intermediate water formation, and a transition region between surface currents originating from the Arctic Ocean and the Gulf Stream. Sea surface conditions can therefore reflect changes in influence (and path) from these various currents. It appears critical to document the inherent variability of Holocene paleoceanographic records in that region, to potentially identify causes for millennial variability.

Wavelet analysis was used to identify oscillation periods in sea surface temperature and salinity reconstructions. The reconstructions were based on palynological records (dinoflagellate cyst) from LaHave Basin on the Scotian Shelf (Atlantic Canada). The wavelet method allows the representation of signal on the time-frequency domain. In the LaHave record, millennial scale oscillations have been recognized and localized in time. Periods of about 900 and 1500 years are clearly present in our four data sets. The 1500-years period probably corresponds to the Dansgaard-Oeschger interstadials. Two others periods of about 2200 and 4100 years were also identified. We are also hoping to analyze another high resolution record from Western Newfoundland, where sedimentation rates are in excess of 1 meter per thousand years.