Geophysical Research Abstracts
Vol. 17, EGU2015-3653, 2015
EGU General Assembly 2015

Sea-ice distribution and primary production on the East Greenland Shelf and the NW Fram Strait - a high resolution study of the last 5.2 ka

Henriette Marie Kolling, Ruediger Stein, and Kirsten Fahl
Alfred-Wegener-Institute, Marine Geology and Paleontology, Bremerhaven, Germany (hkolling@awi.de)

Over the last decades, the extent and thickness of Arctic sea ice has changed dramatically and much more rapidly than predicted by climate models. Based on this alarming observation, the reconstruction of natural variability of past sea-ice cover and its forcing became a major focus of international scientific research. Here, we present a high-resolution biomarker approach over the last 4 ka from the East Greenland Shelf to investigate the interrelationship between sea-ice cover, meltwater/freshwater discharge and primary productivity. The phytoplankton-derived sea-ice proxy IP25 (Belt et al., 2007) points to a late Holocene cooling trend initiated around 1.5 ka which is interrupted by a period of reduced sea-ice cover centred around 1 ka. The latter might be related to the well known Medieval Warm Period. Our new results from the East Greenland Shelf will be compared with similar records from the Fram Strait area published by Müller et al., (2012). These data give information about differences and/or similarities of sea-ice variability and changes in productivity in the area influenced by the cold East Greenland Current and the warm Westspitsbergen Current, respectively. First data suggest a time lag of the Neoglacial cooling between western (Greenland side) and eastern (Westspitsbergen-side) of Fram Strait, as also proposed by Müller et al. (2012).

References

Belt., S.T., Massé, G., Rowland, S.J., Poulin, M., Michel, C., LeBlanc, B., 2007. A novel chemical fossil of paleo sea ice: IP25. Organic Geochemistry 38, 16-27

Müller, J., Werner, K., Stein, R., Fahl, K., Moros, M., Jansen, E., 2012. Holocene cooling culminates in sea ice oscillations in Fram Strait. Quaternay Science Reviews 47, 1-14