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KlimaCampus Colloquium

Gerald Haug

THE POLAR OCEANS AND ATMOSPHERIC CO₂

In the publication to be presented, we argue for a pervasive link between cold climates and polar ocean stratification (Haug et al., 1999; Sigman et al., 2004, 2007). In both the Subarctic North Pacific and the Antarctic Zone of the Southern Ocean, ice ages were marked by low productivity (Figs. 1 and 2, Jaccard et al. 2010, 2013). The accumulated evidence from sediment cores points to an increase in density stratification that reduced the supply of nutrients from the ocean interior into the sunlit surface in both of these regions.

The last ice age was associated with stratification of the Antarctic and the subarctic North Pacific and it can be argued that the well-known glacial decrease in North Atlantic Deep Water indicates a similar stratification of the North Atlantic. This link also applies to longer time scales, including the onset of extensive northern hemisphere glaciation 2.7 million years ago, which was concurrent with stratification of the Subarctic North Pacific and the Southern Ocean. The generality of the cooling/stratification connection calls for a general mechanism.

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Gerald Haug from the Max Planck Institute for Chemistry, Mainz, is invited by Bjorn Stevens, MPI-M and Kay Emeis, CEN.

Bundesstraße 53, Room 22/23 (ground floor)