



Thirty Years of Paleoceanography: Planned Efforts vs. Serendipity (Milutin Milankovitch Medal Lecture)

M. Sarnthein

Institute of Geosciences, University of Kiel, Germany (ms@gpi.uni-kiel.de)

In the 1970s and early 1980s paleoceanographic studies of global change started with great and simple expectations. Paleoclimatic archives of deep-sea sediment cores were regarded as largely continuous. Their age control and (then low) time resolution were considered superior to most existing terrestrial records and sufficient for straightforward global correlation, at least within the range of orbital cycles. Quantitative paleoceanographic proxy data were regarded as direct records of changing ocean processes such as the thermohaline circulation and carbon cycle, moreover as reliable records of nearby continental climate. However, it turned out that we had to learn a lot from unforeseen shortcomings in several of these predictions, from unexpected sample recovery, sampling regions and high sedimentation rates, from the ambiguity of some ocean proxies, from a new dialogue with climate modellers, and the new challenges to meet the decadal resolution of ice core records only available after the mid 1980s, last not least, from undesired but frequent sediment hiatuses. Contradictory data sets turned out as most rewarding, providing novel information after reconciliation. Some case studies will be presented, where both planned research and/or serendipity have led to surprising insights in the fields of Plio-Pleistocene stratigraphy, the origin of DO events, changing Atlantic-wide sea surface temperature patterns, and different states of nutrient distribution in various ocean basins and their implications for C14 reservoir ages, even for the history of Asian monsoon and Red Indian immigration waves to the Americas.