



Fluctuating sea surface temperatures in the subtropical North Atlantic during Oceanic Anoxic Event 1a at DSDP Site 398 and ODP Site 641

P. Hofmann (1), R. Wiegand (1), L. Handley (2), T. Wagner (2), H. M. Talbot (2), and A. Mcanena (1)

(1) University of Cologne, Geology and Mineralogy, Germany (peter.hofmann@uni-koeln.de), (2) School of Civil Engineering and Geosciences, Newcastle University, UK

The early Aptian is characterized by a perturbation of the global carbon cycle which occurred during Oceanic Anoxic Event 1a (OAE 1a, Selli-Event, ca. 120 Ma). OAE 1a is well documented by organic carbon-rich sediments from marine and terrestrial localities worldwide. The trigger mechanism and the environmental consequences of OAE 1a are still under dispute. Here we present sea surface temperature estimates based on TEX₈₆ measurements (tetraether index of tetraethers containing 86 carbons) from the Galicia Margin (subtropical North Atlantic) at DSDP Site 398 and ODP Site 641C. The investigated sites are approximately 350 km apart and located on the slope of the Vigo seamount (Site 398) and the Galicia Bank (Site 641). Sea surface temperature (SST) records at both Sites suggest a significant and sustained warming of the Galicia Margin surface waters during OAE 1a. The observed warming during OAE 1a is disrupted by several SST decreases which vary in magnitude from site to site. Similar surface water cooling episodes but with different magnitudes have been reported from the central Pacific region. The exact nature and timing of these intermittent cooling periods remains to be discovered but the occurrence in both the North Atlantic and Pacific may point towards a global trigger mechanism. We speculate that the thermal development of the surface waters of the subtropical North Atlantic during OAE 1a may reflect global fluctuations in pCO₂ in response to variations in the intensity of Pacific volcanic activity in the Pacific Ontong Java area with superimposed local adjustments in the oceanic circulation pattern of the North Atlantic.