



Alkenone temperature anomalies in the Brazil-Malvinas Confluence area caused by lateral advection of suspended particulate material

C. Rühlemann (1), M. Butzin (2)

(1) Federal Institute for Geosciences and Natural Resources (BGR), Hannover, Germany, (2) University of Bremen, Germany, c.ruehlemann@bgr.de, mbutzin@marum.de

Alkenone temperatures derived from suspended particulate organic material which was collected in austral summer 2001 from surface waters (5 m) south of the Brazil-Malvinas Confluence deviate from measured temperatures by -4° to -7°C when UK'37 ratios are converted into temperature using the Müller et al. (1998) calibration and up to -3°C when using the calibration of Conte et al. (2005). In contrast, alkenone temperatures determined on particulate material sampled north of the confluence reveal close correspondence to in situ temperatures or show slightly warmer values. We suggest that the southern samples are biased by suspended organic detritus originating from the cold subpolar waters of the northward flowing Malvinas Current whereas the northern samples carry an UK'37 signal of tropical/subtropical origin, transported southward with the Brazil Current. Based on surface ocean transport pathways and velocities simulated with the Large Scale Geostrophic (LSG) ocean general circulation model we identify areas of the world ocean where alkenone temperatures are potentially biased to warmer or colder values due to long particle residence times and lateral advection with surface waters.