Late Pleistocene Paleoceanographic Records of the South Atlantic Ocean

S Mulitza, A Paul and G Wefer, MARUM - University of Bremen, Bremen, Germany

Introduction

The South Atlantic Ocean receives inflows from the Pacific, the Indian and the Southern Ocean and plays a significant role in the coupling of oceanic processes between these basins and the North Atlantic. An important feature of the present-day circulation in the South Atlantic is the cross-equatorial flow of warm upper layer waters into the North Atlantic, which are imported to compensate for the southward flow of North Atlantic Deep Water (NADW). The associated heat transport into the North Atlantic has a considerable effect on the modern climate (e.g., Wefer et al. (2004)). Processes in the South Atlantic can affect this heat transport and thus can have consequences for climates elsewhere. The current systems in the South Atlantic are also critical for the nutrient budget of the ocean. The frontal region between the South Atlantic and the Southern Ocean is the ventilation area for South Atlantic central and intermediate water masses that spread northward into the Atlantic. Since these water masses are derived from nutrient-rich Antarctic surface waters, they are the main source of nutrients to sustain the productivity in the eastern boundary upwelling regions of the tropical and subtropical Atlantic. The knowledge of past variations of the Atlantic circulation and how these variations led to changes in sea-surface temperature (SST), productivity, and atmospheric circulation are critical to our understanding of the role of the South Atlantic in longterm and abrupt climate change. In recent decades, these issues have been addressed by investigating late Pleistocene sediments in the South Atlantic.