direction which is along the axis of the East African Rift System. This conclusion is drawn from inspection of regional gravity and magnetic maps of the region.

OCEAN SEDIMENT FLUXES: SPATIAL AND TEMPORAL VARIABILITY IN THE ATLANTIC OCEAN

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DSDP and ODP have provided a data base to quantify sediment fluxes into the ocean basins during the Late Mesozoic and the Cenozoic. As part of a major project to study the history of pelagic sedimentation in the world ocean we are concentrating presently on the Late Cenozoic Atlantic Ocean. Due to its late plate tectonic history and the opening of gateways connecting the Arctic and the Antarctic, today it is principally different from the Indian and Pacific oceans. Deep-water renewal occurs both in the Greenland Sea and in the Atlantic sector of the Southern Ocean due to the down-welling of cold, oxygen-rich waters causing an intense stratification of the deep intervals of the oceanic water column, whereas the Atlantic Ocean has been disconnected from the circum-equatorial current system due to the collision of the African and Eurasian plates and due to the construction of the middle American land bridge during the Middle and Late Cenozoic. The distributional patterns of Late Cenozoic sediment fluxes plotted into a carefully reconstructed palinspastic framework of the paleophysiography of the Atlantic reflect the major elements of the surface-water circulation, as well as the source areas for the lateral advection of the terrigenous components. The peculiar mode of Atlantic deep-water renewal and circulation can also be deduced from the temporal and spatial distribution of hiatuses in the various sediment columns. A major effort is required to homogenize the stratigraphic data base, which is accomplished by establishing an artificial holo-stratigraphy through stacking of all potential bio-events. Sediment compositions and physical properties are compiled from the DSDP/ODP data bases with minor corrections. The results of the project are illustrated in a series of palinspastic maps illustrating the mass-balanced distribution of sediment fluxes of biogenic and terrigenous sediment components for time slices of 1 - 5 mio. y. in duration. They allow the establishment of descriptive paleoceanographic models for the Late Cenozoic Atlantic Ocean.

THE MODERN ATMOSPHERIC AND OCEANIC SURFACE CIRCULATION AND ITS RECORD IN SEDIMENTS OF THE SOUTHWEST PACIFIC OCEAN

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Due to its shallow topography, the seafloor east of Australia is one of the few extensive areas of the Pacific Ocean where biogenous calcareous components are widely preserved. 180 surface sediment samples were investigated for their planktic foraminiferal (> 149 µm) and terrigenous sediment components. These data were used to trace atmospheric and oceanic circulation patterns and to develop, with multivariate statistical methods, an equation for the calculation of sea-surface temperatures and salinities. The pattern of the percentage distribution of quartz can be related to modern wind regimes. In recent sediments the quartz content is a distinct