seven glacial events are recognized within an interval extending from the upper part of the Gauss magnetic epoch to the Olduvai magnetic event. In addition, ten glacial events have been identified in northern Iceland between the Olduvai event and Brunhes epoch. Comparison of the first appearance of glacial deposits at various locations in Iceland implies that the onset of glaciation was gradational rather than synchronous over the whole of Iceland and might have taken several hundred thousands of years to extend across the island. Current studies in southern Iceland include detailed analysis of sedimentary horizons deposited during the Brunhes magnetic epoch. These studies will undoubtedly contribute to the knowledge of the glacial history of Iceland and the North Atlantic by comparison with the latest deep-sea record of glacial-interglacial cycles.

SEA ICE VARIABILITY AND PALEOPRODUCTIVITY CHANGES IN THE LATE QUATERNARY SOUTHERN OCEAN

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The Southern Ocean is characterized by a largely continuous belt of high biogenic silica accumulation. In the Atlantic sector average Holocene opal accumulation rates are around 10 g cm^2 ka^{-1} within the belt. Today the silica belt is bounded to the south by the winter sea-ice edge and to the north by the Polar Front where opal accumulation rates calculated from surface sediments drop below 1 g cm^2 ka^{-1}. In addition, time-series, sediment-trap studies (compare poster Gersonde and Zielinski) show that export productivity in the Southern Ocean is significantly decreased in pelagic cold water areas that are seasonally covered by sea ice. This indicates that both the location of the Polar Front and the winter sea-ice edge are crucial determinants for the spatial distribution of the Antarctic belt of high biosiliceous export productivity.

Accumulation rates of biogenic opal, as well as the abundance pattern of the radiolarian taxon *Antarctissa*, which can be used as a tracer for past productivity, were studied on a sediment core transect across the Antarctic Circumpolar Current. The results suggest distinctly lower paleoproductivity during glacial times south of the present Polar Front which was linked to the northward migration of the sea-ice edge up to the area of the present Polar Front. This estimate of the past sea-ice distribution is based on diatom sea-ice indicator species (compare poster Zielinski and Gersonde). Apparently the high productivity belt, at present bounded by the Polar Front, did not migrate to the north during glacial time periods, as no distinct glacial/interglacial variations of the paleoproductivity tracers could be found in cores from the northern Polar Frontal Zone. Indeed, paleoproductivity was relatively enhanced during glacial times in the area of present subantarctic waters.
It can be concluded that paleoproductivity in the Southern Ocean was generally lower during glacial time intervals. This finding can be linked to the increase of sea-ice coverage. Thus productivity changes in the Southern Ocean were not responsible for glacial reduction in atmospheric CO_2 concentrations.