

# Sediment accumulation rates at the edge of the Atlantic: relationships among sea ice, water current and sea floor relief.

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Sediment accumulation rates were studied at the southernmost Atlantic Ocean in the vicinities of the Filchner Trough. This is an important region for water mass formation and a marine mammal feeding spot, presumably following high primary production. The region also experiences contrasting sea ice patterns. In spring and summer there are open water conditions at the east of the trough, whereas at the west, the sea surface usually remains covered by multiyear sea ice. Earlier studies showed that sedimentary organic carbon and biogenic silica were more concentrated on the eastern flank of the trough. We attempted to study whether sediment accumulation follow this pattern and its implication for the long-term (hundreds of years) carbon storage in the sediment column. We analyzed 16, 20-cm sediment cores along the axis of the Filchner Trough and the adjacent continental shelf and slope. Sediment accumulation rates (SAR) varied from 8 to 128 cm ky<sup>-1</sup>. The highest SAR were found on the deepest parts of the axis of the trough and the shelf and slope of its eastern flank, whereas the smallest SAR were found in the shelf and slope of the western flank and at the mouth of the trough. Preliminarily, SAR values matched with the sea-ice pattern and the water current system, showing high values in areas with seasonal open water conditions and the inflow of deep water onto the shelf and low values in areas where multiyear sea ice persists and the outflow of dense cold water towards the deep Weddell Sea.

