# Current pattern change in the Fram Strait at the Pliocene/Pleistocene boundary

A.C. Gebhardt*, W.H. Geissler, J. Matthiessen, W. Jokat

Thick packages of drift-type sediments were identified in the northwestern and central part of the Fram Strait, mainly along the western Yermak Plateau flank, but also in the central, flat part of the Fram Strait. A large-scale field of sediment waves was found north of 80.5°, along the Yermak Plateau rise. This field separates two drift bodies, a deeper one towards west and a shallower one towards east. The drift bodies were deposited by bottom currents, most likely by the northbound Yermak Branch of the West Spitsbergen Current, but an influence of a southbound current on the westren drift body cannot be ruled out. Within the drift bodies and even more pronounced withing the sediment waves, a stratigraphic boundary is clearly visible. It separates a lower package of waves migrating upslope at a low angle of ~5° from an upper package with significantly increased wave crest migration at ~16.5°. Using the seismic network, this stratigraphic boundary could be tracked to ODP Leg 151, Site 911, where it corresponds to the lithostratigraphic boundary between units IA and IB dated to 2.7 Ma. The increase in wave-crest migration angle points at a shift towards higher sedimentation rates at 2.7 Ma. This corresponds to the intensification of the Northern Hemisphere glaciation with a major expansion of the Scandinavian, northern Barents Sea, North American and Greenland ice sheets. The Barents Shelf that was subaerially exposed and the expansion of the northern Barents Sea ice sheet (as well as Svalbard) are the likely sources for enhanced erosion and fluvial input along the pathway of the West Spitsbergen Current, resulting in higher sedimentation rates in the Fram Strait.