13,400 yr BP. The Bølling/Allerød interstadial complex (13,200-11,200 yr BP) was a climatically unstable period with changing arctic-subarctic conditions. This period was punctuated by 4 progressively more severe Sea Surface Temperature (SST) minima; between 12,900-12,800 yr BP (FD I), 12,500-12,400 yr BP (FD II), 12,300-12,000 yr BP (OD I), and 11,800-11,500 yr BP (OD II). The Younger Dryas (YD) (11,200-10,200 yr BP) represents the severest and most prolonged cold episode of this series of climatic deteriorations. It was bounded by very rapid SST variations, and characterized by arctic-polar conditions. The first real warm Atlantic water incursion to the SE Norwegian Sea took place around 10,100 yr BP, followed by a brief return to arctic conditions between 9,900-9,600 yr BP (YD II). The early Holocene climatic optimum occurred between 8,000-5,000 yr BP. A conceptual model is proposed where meltwater fluxes are suggested to cause the observed instability in the SST record.

PHYSICAL PROPERTIES OF LATE QUATERNARY CENTRAL ARCTIC DEEP SEA SEDIMENTS: PALEOCEANOGRAPHIC SIGNIFICANCE

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ARCTIC '91 was a three-ship, multidisciplinary expedition to study all aspects of the Arctic Ocean. As part of this expedition, FS POLARSTERN carried out a major marine geological and geophysical program. A total of sixty-six marine geology stations were studied in seven different geologic regions: Nansen Basin, Gakkel Ridge, Amundsen Basin, Lomonosov Ridge, Makarov Basin, Morris Jesup Rise, and Yermak Plateau. The sediment physical properties of all geological core samples were measured at high resolution in order to enhance the paleoceanographic interpretation of each site, to link sediment cores directly to high resolution seismic reflection data, and to provide data for biostratigraphic control. Sediment physical properties included acoustic compressional velocity, shear strength, index properties, and sediment color reflectance. Preliminary results of the highest priority paleoceanographic sites are reported here.

Nansen and Amundsen Basins are dominated by young turbidite sediments. The frequency and amplitude variations of the physical property curves represent alternating sediment layers of sand and silt with layers of silt clay to clay. The Makarov Basin and Lomonosov Ridge sediments show normally consolidated behavior, with some intervals showing deviations from this trend. The deviations can be directly correlated with lithologic changes, such as event deposits of ice-rafted debris and mud clasts and, therefore, do not represent past erosional or sea-bed loading events. Physical properties from the Morris Jesup Rise sediments show high variability and no pronounced tendency with depth. The abundance of large ice-rafted component in the sediments of this region controls the sediment physical properties.

In general, the shear strength, porosity and acoustic velocity profiles show very little trend with depth below seafloor. This suggests high sediment accumulation rates in the central Arctic Ocean. First estimates of sediment accumulation rates from the Lomonosov Ridge are confirming these results. During the Holocene and oxygen isotope stage 5, the average sediment accumulation rates were 1,5 (g/ccm)/ky, whereas the average sediment accumulation during oxygen isotope stages 3 to 4 and 6 were 3 (g/ccm)/ky. These results correspond to recent sediment accumulation rates in the ice-free Norwegian-Greenland Sea.