Fig. 1 The German *Polarstern* of the Alfred Wegener Institute, the Helmholtz-Centre for Polar and Marine Research, together with the Swedish *Oden*, reached the North Pole on September 7, 1991 as the first ships with conventional propulsion systems. Russian researchers have participated in many of *Polarstern's* expeditions into the Arctic and Southern Oceans. Thus, it is one of the very few foreign research vessels which have been granted research licenses to the Siberian shelf seas (Photo AWI).

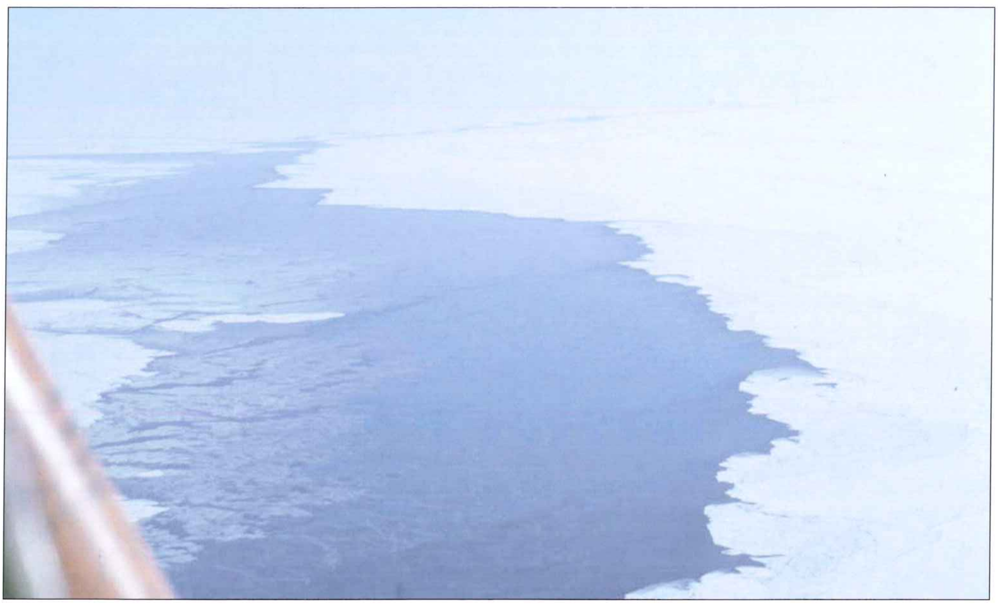

Fig. 2 "Flaw Lead Polynia" in the Laptev Sea that separates fast ice attached to the coast (*right hand side*) from the drifting and moving sea ice of the Arctic Ocean (*left hand side*). The polynia is the place of very fast sea ice formation (Photo: H. KASSENS, GEOMAR, Kiel).

Session IV Summary
Siberian Shelf Seas and the Adjacent Arctic Ocean

Session Chair: Heidemarie KASSENS (Kiel)

The Laptev Sea is the most important place for the formation of new sea ice feeding the Transpolar Drift. It immediately caught the interest of German marine polar researchers because here, large amounts of suspended fine-grained sediments are included into the sea ice during its formation. GEOMAR had been able to establish scientific links to Russian polar research institutions, and as a result, it had the privilege to mount the first joint Russian-German expedition into the area in spring 1991 when a small delegation was allowed to visit a Russian polar station on Kotelny (New Siberian Islands). Since then, joint Russian-German expeditions to the Laptev Sea have been carried out throughout the year (financial resources and weather/ice conditions permitting) with the aim of understanding the interaction between fresh water drainage from the Siberian hinterland and the processes controlling sea ice formation in the adjacent Arctic Ocean. This session of the symposium focuses on the description of the environmental conditions and their temporal variability in the Laptev Sea.

The first paper, by JUHLS et al., discusses the oceanography of the Laptev Sea and presents data from both summer and winter expeditions. Next, WEGNER et al. describe summer sediment transport dynamics on the Laptev Shelf, highlighting the results of the multi-year efforts of the "Laptev Sea System" project.

The remaining four papers of the session all focus on analyses of the environmental variability of the Laptev Sea using a range of fossil proxies. POLYAKOVA et al. have studied recent and past distribution of phytoplankton remains in the sediments (diatoms and aquatic palynomorph assemblages) and succeeded in establishing a precise chronology of Holocene environmental changes in the Laptev Sea.

TALDENKOVA et al. interpret the past environmental changes for the Laptev Sea continental margin since the last deglaciation.

BAUCH et al. present the results of a multi-proxy reconstruction of environmental conditions in northern Russia during the last interglacial, whereas SPIELHAGEN et al. discuss the Holocene variability of Atlantic water advection into the Arctic Ocean, which is very important for establishing a heat balance for the Atlantic water masses that reach the Laptev Sea margin and sometimes even onlap on its shelf.