from 2003 to 2007 form the longest time series collected at this site and provides a sufficient data base to study the interannual variability of the overflow and the influence of atmospheric forcing. For the first time the mean seasonal structure of the overflow can be presented. The annual average of the overflow flux across the sill was 0.026 Sv (1 $\mathrm{Sv}\equiv10^6\,\mathrm{m^3\,s^{-1}}$). The overflow starts up strongly with high volume transports early in the overflow season and then gradually diminishes, becoming increasingly intermittent during the last third of the overflow season. The comparison of four consecutive overflow seasons reveals relatively small variations of the average overflow flux. In spite of the stability of the average overflow flux there are considerable interannual variations in the onset date of the overflow and the intra-seasonal distribution of the overflow flux. Thus overflow profiles of specific months can differ substantially from year to year. Variability on the shorter scale of 1-2 weeks was strongly connected to wind forcing, indicated by the significant rotary coherence between the current at the Storfjorden sill and wind measurements at two meteorological stations on Edge{\o}ya and Hopen Island. The physical connection is the surface Ekman transport. This connection between cross-sill flow and wind forcing holds independently of the dense-water overflow and is also observed outside the overflow season.

Malgorzata Cisek

Role of the west Spitsbergen shelf and slope in the interactions between the Atlantic and Arctic type water masses in summers 2005-2008.

Goszczko, Ilona, Małgorzata Cisek and Waldemar Walczowski

Interactions between the Atlantic water (AW) and Arctic type water (ArW) masses were analysed based on measurements performed during summer Arctic Experiments by IOPAS in 2005-2008 aboard R/V Oceania. Investigated dataset makes up a series of CTD sections perpendicular to shelf-break and high resolution CTD sections in west Spitsbergen fjords: Hornsund and Kongsfjord. Presence of density compensated Arctic Costal Front (ACF) characterized by horizontal gradients of temperature and salinity was observed. Frontal zone separates warm and saline AW carried north with the West Spitsbergen Current (WSC) from colder and fresher ArW transported with the Sørkapp Current. In surface layer the freshest water originating from ice melting and river run-off occurs. Range and thickness of this water mass vary depending on intensity of summer warming. Width of the ACF shapes layering area which determines efficiency of mixing processes such as salt fingering and double diffusion. Strength of WSC has an effect upon the magnitude of AW inflow on the shelf. Shape of bathymetry diversified along the shelf break and width of the shelf region are additional factors to that. Mixing processes above shelf-break area influence heat and salt transport rates through the Fram Strait to the Arctic Ocean and are significant for the global climate. In 2006 the ACF was sharper and narrower compared to other years which indicates stronger inflow of warm AW.

Helene Reinertsen Langehaug

Changes in the Distribution and Properties of the Deep Water Masses in the Fram Strait for the period 1984-2005

Langehaug, Helene R., Eva Falck and Svein Østerhus

Changes in the distribution and properties of the deep water masses passing through the Fram Strait have been studied for the period 1984 to 2005 in an east-west section at about 79°N. The Fram Strait is the only deep connection between the Arctic Ocean and the adjacent seas, with a sill depth of approximate 2600 m. In recent years we have seen large changes in the inflow of Atlantic Water into the Arctic Ocean. In this study we turn to the deep water masses in the strait to investigate if there have been changes also here. The most important deep water masses comes from the Norwegian Sea, the Greenland Sea, the Canadian Basin, and the Eurasian Basin. The Optimum Multiparameter Analysis has been used to estimate the contribution from each of these water masses. This method requires measurements of nutrients in addition to temperature and salinity. A classical TS-analysis is also accomplished to look for alterations in both the properties and vertical extent of the different water masses. The results revealed several alterations in the deep gap. The deep water masses from the Nordic Seas have become warmer and more saline, while the most saline intermediate water mass got fresher during the study period. According to the chosen water mass definitions the Eurasian Basin Deep Water, and partly the Norwegian Sea Deep Water, have occupied the area where the Greenland Sea Deep Water dominated in the early 80's.

Vidar S. Lien

Is the Barents Sea cooling the Arctic Ocean?

Lien, Vidar S., Tor Gammelsrød, Øyvind Leikvin and Alexander Trofimov

The Barents Sea plays an important role in the transformation of warm and saline Atlantic Water into cold and dense bottom water. CTD and current