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The convective seasonal cycle of the Greenland Sea from 2001 to 2003

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Based on profiling float measurements between April 2001 and September 2003 and from October 2004 to present a detailed description of the seasonal development of the temperature and salinity structure in the Greenland Sea is given.

The seasonal cycle is divided into two phases - wintertime convection and summertime restratification. From 2001 to 2003 convection only reached intermediate depths. During the summer high temperatures in the surface layer are accompanied by low salinities from lateral advection.

Together with analyses of the surface heat and freshwater fluxes, windfields and ice-conditions an estimate of the heat and freshwater budget of the Greenland Sea Gyre is given. Time series of temperature, salinity and currents from moorings at 74˚N in the East Greenland Current are used to quantify the relative roles of advection through the mean Gyre circulation, through wind-driven currents and through eddy-fluxes.