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Convection in the Irminger Sea: Upper ocean heat and freshwater evolution between 2002 to 2010

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The Irminger Sea has been suspected to be one of the few places in the North Atlantic where a ventilation of certain density classes of the North Atlantic Deep Water (NADW) takes place.
Based on temperature and salinity time series data from a moored observatory at nominal 60°N/40°W the convection depth at this location is derived. The time series are used to estimate the heat and freshwater fluxes and their respective contribution to the buoyancy budget. It is shown that the freshwater fluxes can have a significant influence on the evolution of the buoyancy budget and thus in setting the convection depth. In the period 2002 to 2007 the convection depth was less than 500m. In the recent winters 2007/2008 and 2008/2009 a particular high upper ocean salinity contributed to a deeper convection, down to about 700m. However, the buoyancy flux was not strong enough to ventilate the NADW density range.
As the observatory is equipped with a real time data transmission buoy the current (2009/2010) winter convection intensity is presented.