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Changes in the hydrographic regime/deep water circulation in response to sporadic deep water intrusions into the Eastern Gotland Basin/Baltic Sea

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The 1997/98 warm/saline inflow of North Sea water into the Eastern Gotland Basin (EGB) was the first of a series of warm deep inflows affecting the hydrographic conditions in deep Baltic basins, Wieczorek et al.(2008). Associated mixing conditions point to diffusive convection processes, influencing the thermohaline properties of the deep water.

However, the reaction of such mixing conditions on sporadically occurring deep water intrusions still remained open. Long-term current measurements of three subsurface moorings, each equipped with three current meters, are used to study the deep circulation above topographic flanks of the deep EGB from May 2006 until March 2007. During this recording period, several inflow events of different strength released temporal changes in the hydrographic conditions, as well as the deep water circulation. The changes in the deep water circulation are studied by comparing the obtained time series with model simulations resulting from two different numerical models (MOM-4 and GETM).