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Seasonal and interannual variability of the surface circulation in the Nordic Seas

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The Nordic Seas are the regions of exchanges between the Arctic and the Atlantic oceans. Furthermore, they are the regions of deep-water formation. By providing a substantial part of the source waters for North Atlantic Deep Water the Nordic Seas influence the global thermohaline circulation. Therefore, an understanding of the Nordic Seas circulation and its variability is needed to determine how changes in the high latitude climate affect the global thermohaline circulation and the regional climate. Although, the summer circulation in the region is known from in-situ and other measurements, knowledge about the winter circulation is limited because of the unavailability of data from the ice-covered seas. However, Peacock and Laxon (2004, J Geophys Res, 109, C07001) showed that it is possible to derive sea surface height anomaly from satellite altimeter data in the ice-covered seas. The study presents novel satellite-altimeter data derived from ice-covered seas combined with altimeter records from the open ocean. Envisat altimeter data for a five-year long period, beginning in October 2002, has been used and corrected by applying a set of relevant geophysical corrections. Seasonal and interannual variability of the sea surface height anomaly is discussed.