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Seasonal evolution of ocean conditions over the southern Weddell Sea continental shelf

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Import of warm waters onto the Antarctic continental shelf has a major influence on the heat and salt budget of the coastal ocean, and is a potential heat source for ice shelf basal melt. Summertime observations indicate a southward flow of modified Warm Deep Water (MWDW) on the eastern side of Filchner Depression. However, the seasonal variability of this inflow has not yet been established due to the paucity of wintertime observations. Here we aim to describe the seasonality of the inflowing MWDW using 19 instrumented Weddell seals, which during the period February-October 2011 collected 9000 temperature-salinity profiles. The data suggest a persistent inflow of MWDW, although substantially weaker during winter. This is also corroborated by results from a mooring deployed at the shelf break between 2007 and 2009. The seasonal evolution of ocean conditions over the shelf will be presented and discussed in the context of downstream modification of MWDW, and represents the first comprehensive wintertime hydrographic survey over the southern Weddell Sea continental shelf.