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On the impact of wind forcing on the seasonal variability of Weddell Sea Bottom Water transport

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The seasonal variability of Weddell Sea Bottom Water (WSBW) transport and its driving mechanism are examined using the Finite Element Ocean Model (FEOM). Pronounced seasonal variability is present in both the Filchner shelf water export rate and the WSBW transport rate near the Antarctic Peninsula (AP) tip. At both locations the variability is driven by the surface wind forcing over the Weddell-Enderby Basin. The Filchner shelf water export rate responds to the onshore propagating density anomaly, which is caused by the wind-induced variation of isopycnal depression at the coast. The variability near the AP tip originates from upstream variations at the Filchner Depression and the seasonal variability of the Weddell gyre strength as well.