



## **Occurrence and Variability of stably layered thermocline salinity minima in a tideless basin**

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Stably stratified salinity minima have been reported recently in the Gotland basin of the Baltic Sea, characterised by a slightly increased mixed layer salinity overlaying less saline thermocline water. Measured data show that they can persevere over time scales of weeks and have at least an horizontal extend of several 10s of km. A first explanation suggests a nearby upwelling area as a salt source, whose water is transported offshore via Ekman transport thereby simultaneously heated from above and horizontally mixed with the old surface mixed layer water. The older but colder and less saline thermocline water can then be overlayered by warmer higher saline water. In this area and time frame mesoscale and submesoscale dynamical processes among others result in mixing and restratification of near surface water masses. The last effect should prevent salinity minima in its vicinity. Though an eddy field, with a forward energy cascade, classically leads to higher horizontal mixing. The question stands: Are the salinity minima remains of extended mixing and heating activity of the whole surface mixed layer? Or can they be correlated to more specific local processes? Using a 600m horizontal resolution hydrostatic ocean model with vertical adaptive coordinates (GETM), we quantify their occurrence and variability in relation to the local surface mixed layer current field.