

Acoustic tracking of mixed layer depth - Supplementary Material

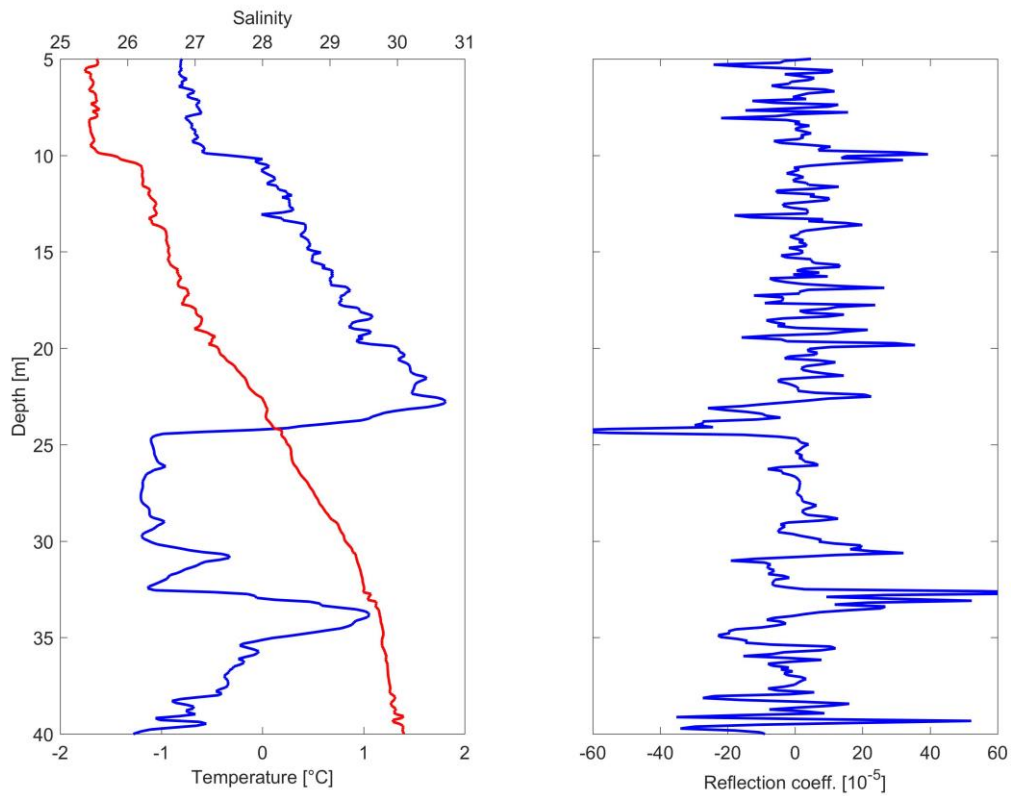


Figure S1. Example of a CTD station without a well-defined mixed layer (blue category). **a** CTD profiles of temperature (blue) and salinity (red). **b** reflection coefficient profile derived from CTD data (see methods section for details).

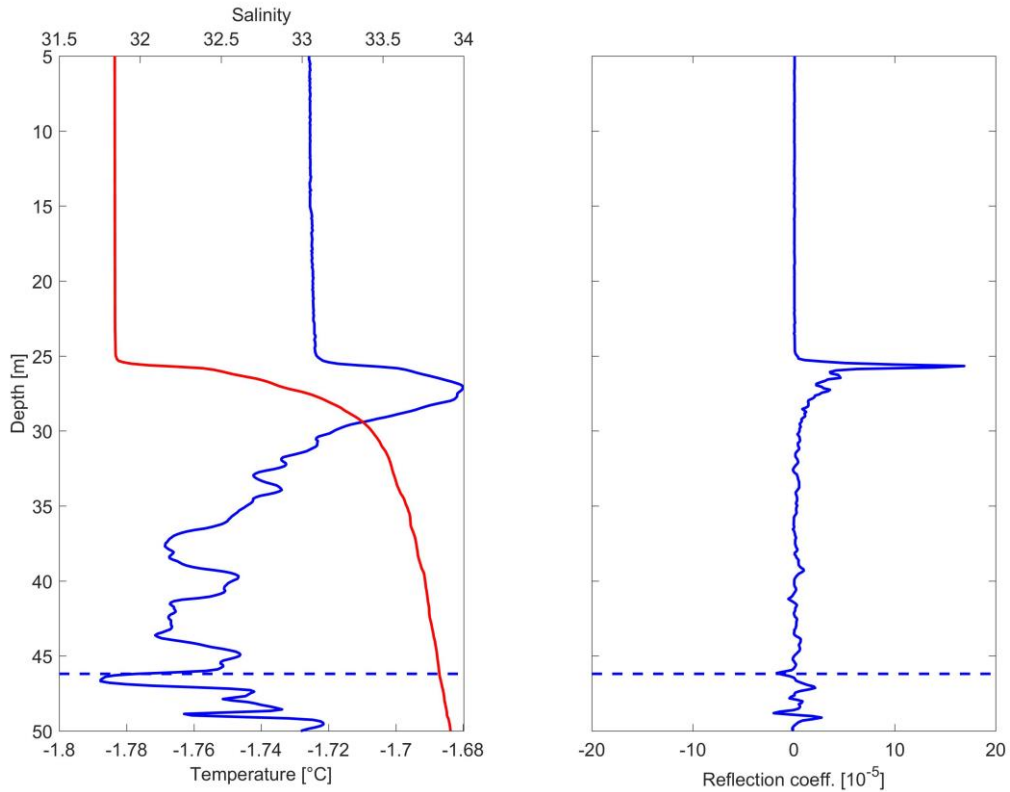


Figure S2. Example of a CTD station where the ΔT threshold method fails (outlier marked as red cross in Fig 3). **a** CTD profiles of temperature (blue) and salinity (red). **b** reflection coefficient profile derived from CTD data (see methods section for details). Blue horizontal line show MLD_{CTD} derived from the ΔT threshold method.

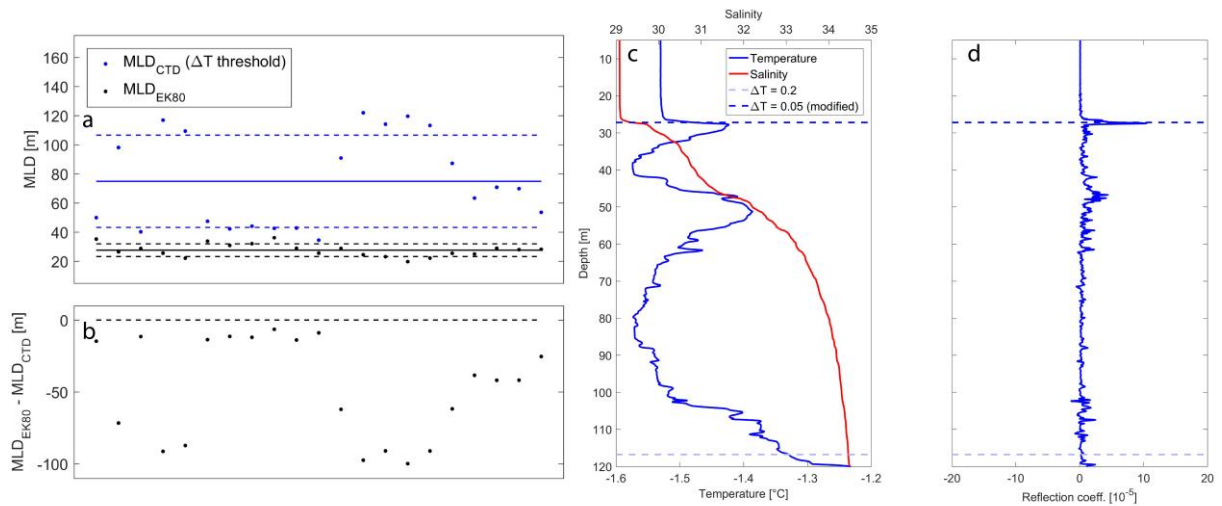


Figure S3. **a** MLD_{CTD} (blue dots) and MLD_{EK80} (black dots), mean values (solid lines) and plus/minus one standard deviation (dashed lines) for the AO2016 stations without ΔT modification. **b** difference between MLD_{EK80} and MLD_{CTD} . **c** example of a CTD profile with temperature (blue) and salinity (red). **d** reflection coefficient profile derived from CTD data. Dark blue horizontal line show MLD_{CTD} derived from the modified ΔT threshold and light blue from the non-modified ΔT threshold. Note that the rmsd between MLD_{EK80} and MLD_{CTD} using the non-modified ΔT is 58 m (compared to 3 when using the modified ΔT).

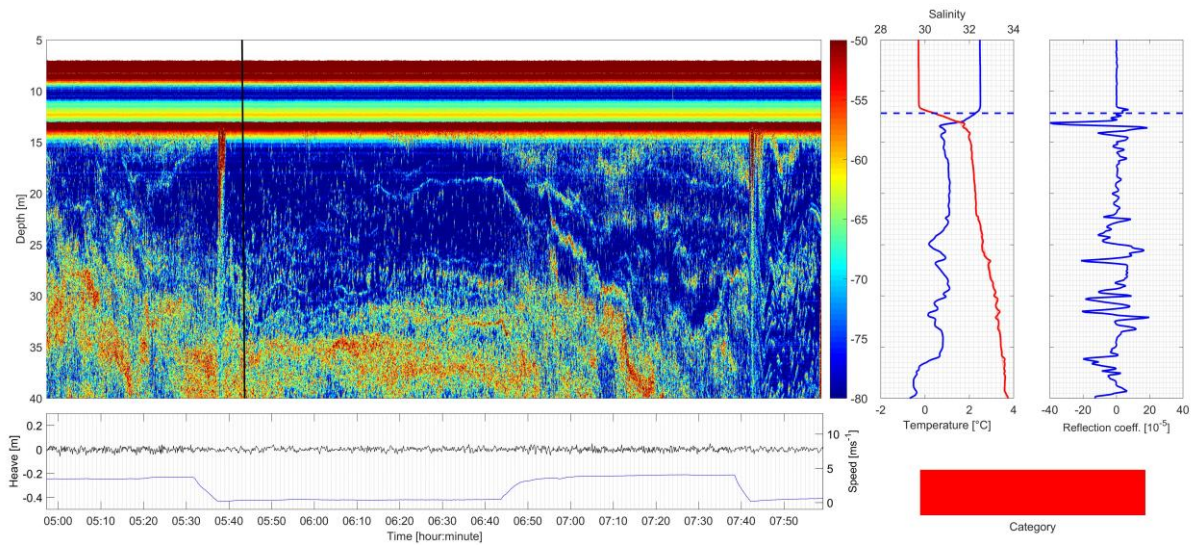


Figure S4. MLD detection failure due to loss of acoustic data close to the transducer. **a**, EK80 echogram. **b**, CTD profiles showing temperature (blue) and salinity (red). **c**, reflection coefficients derived from CTD data. **d**, heave (black), speed over ground (blue).

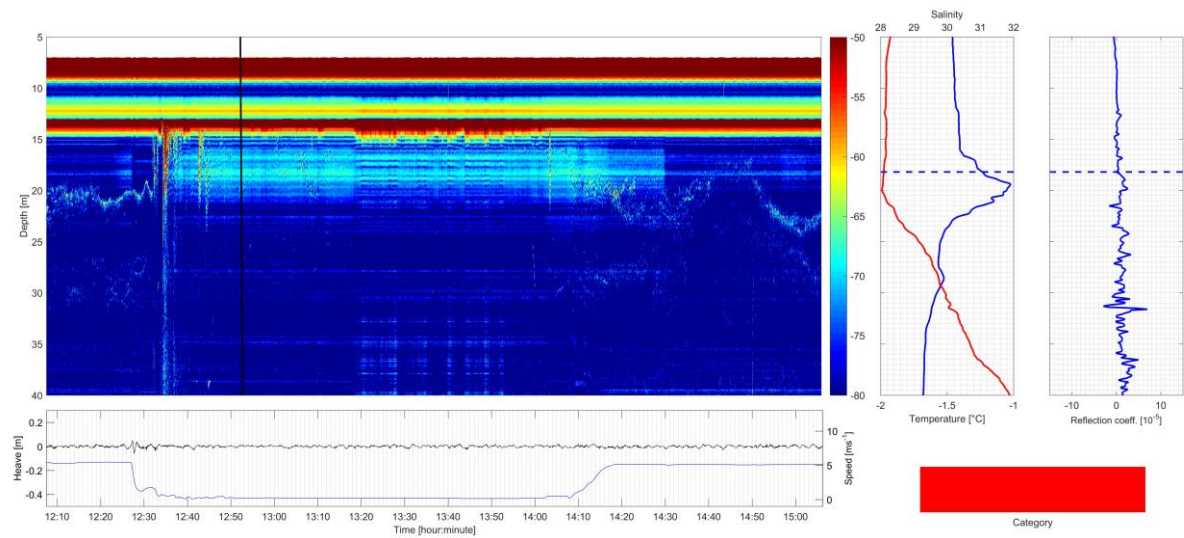


Figure S5. MLD detection failure due to noise from unknown source. **a**, EK80 echogram. **b**, CTD profiles showing temperature (blue) and salinity (red). **c**, reflection coefficients derived from CTD data. **d**, heave (black), speed over ground (blue).