Content: Supplementary Figures S1-S2:

- Figure S1: Mode water definition: Potential vorticity (PV) vs. potential density criteria.
- Figure S2: Air-sea fluxes flag.

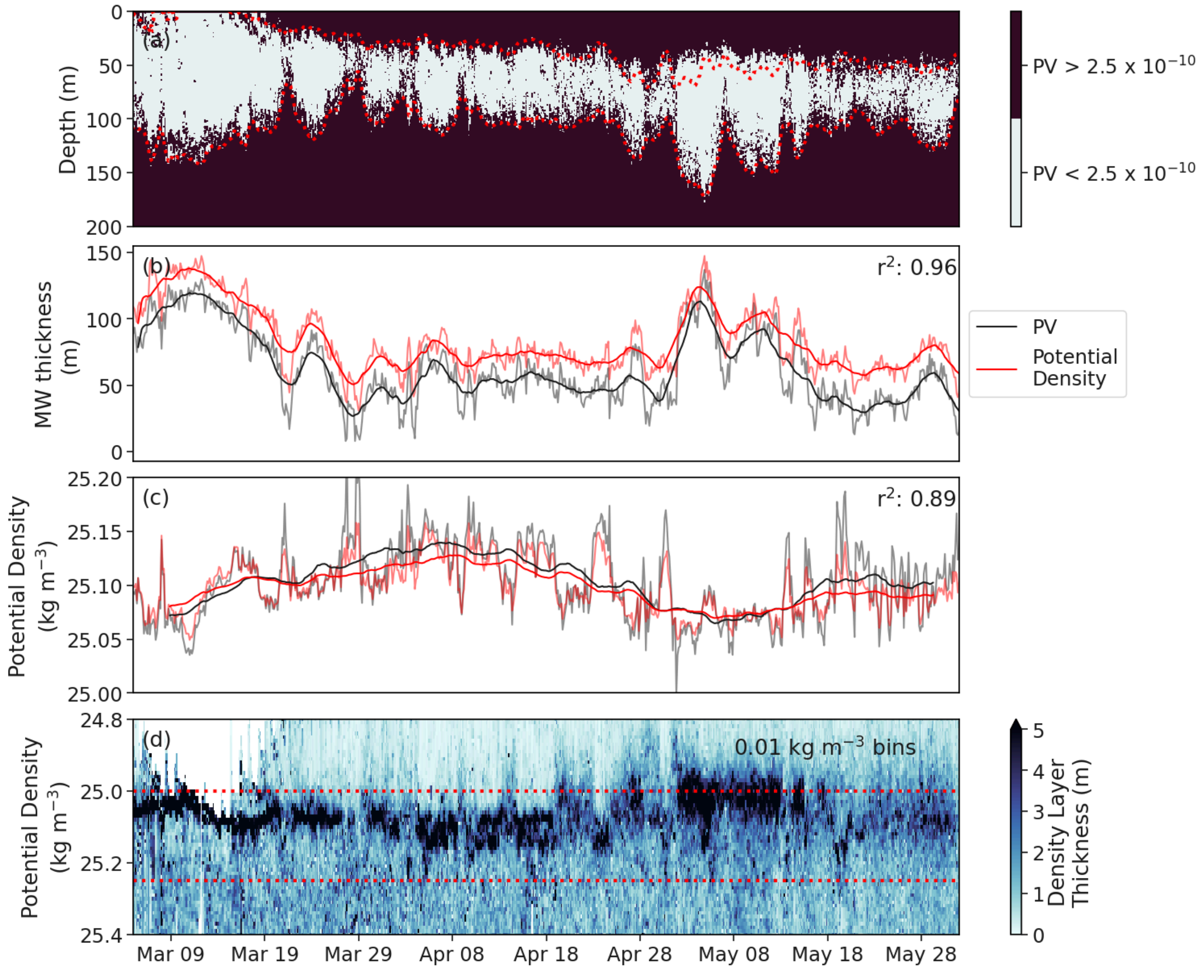

Figure S1. Mode water definition: Potential vorticity (PV) vs. potential density criteria. *a) Ocean glider timeseries colored by PV smaller or larger than the median PV (2.5 x 10^{-10} s-2). Red contours are the 25 and 25.25 kg m^{-3} isopycnals. b) Mode water thickness using the PV criteria (black) and density criteria (red) for the original time series and 24 h rolling mean. The coefficient of determination (r^2) is 0.96 between these two methods. c) Mode water density using the PV criteria (black) and density criteria (red) for the original time series and 24 h rolling mean. The r^2 is 0.89 between these two methods. d) Potential density layer thickness per 0.01 kg m^{-3} bins in potential density space. Red lines are the 25 and 25.25 kg m^{-3} isopycnals.*

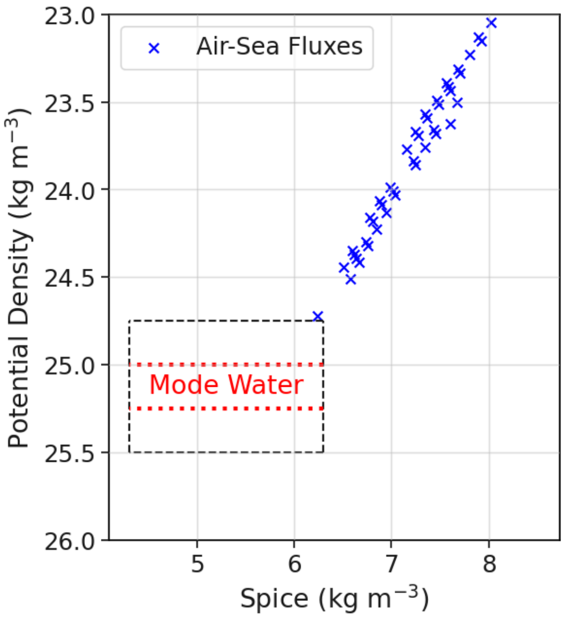

Figure S2: Air-sea fluxes flag. *The volume of water bound by a given tracer surface will change by air–sea buoyancy fluxes if the tracer surface outcrops at the ocean surface. We compute the transformation in T-S coordinates as per Evans et al. (2014, 2023) and retrieve the classes that change due to air-sea buoyancy fluxes. The T-S classes are afterwards converted to σ-τ space and are marked as blue crosses. The box shows the σ-τ domain of interest for this study, and the red lines show the mode water potential density band, which lies below the classes affected by the air-sea interface. Air-sea buoyancy fluxes used were derived from the ERA5 reanalysis product (Hersbach et al., 2020), matched to the glider's position and time for high-resolution analysis, and also retrieved as monthly climatological averages over the study area.*

References

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