

## Response to Reviewer 2

Thank you for reviewing our manuscript and for the inciteful comments and suggestions. We have addressed these comments, as shown below, and with line numbers for reference to the revised manuscript. Our responses are in blue font below each comment.

This study provides a valuable analysis of the 2010–2018 sea level rise hiatus off northwest Africa using satellite/reanalysis data (1993–2018). The identification of steric dominance (74%) and subpolar-tropical salinity linkages is novel and impactful. Methodological rigor and validation with independent datasets are key strengths. However, clarification of physical mechanisms and data limitations is needed for full acceptance. I recommend acceptance after minor revisions.

Thank you very much for your comments and suggestions.

Eq. 6 oversimplifies vertical-horizontal coupling. Could you show decadal trends of vertical velocity ( $w$ ) in the dome core using ORAS5 data?

Thank you. Yes, we have done so. We have now included the time series of vertical velocity in the Guinea Dome core in the revised manuscript, Fig. 13b.

Please discuss how anticyclonic circulation modulates downwelling against background upwelling in more detail.

The anticyclonic shift will weaken upwelling of cooler water from beneath, resulting in warming in upper layers, and it will cause a convergence zone, resulting in downwelling of surface water that will increase warming beneath, as demonstrated by the shift in seasonal temperature at 50 m during period two (Fig. 12[a3,b3]) and by the shift in temperature and velocity time series at the Guinea Dome core (Fig. 13[a,b]). The downwelling, moreover, is opposite to the permanent upward flux of water in the Guinea Dome, which implies a weakening of the dome circulation between periods one and two.

While mentioned in Section 2.2, error quantification is missing. Could the authors add error bars in Fig. 4?

Thank you for the comment. We have now included in the revised manuscript the uncertainty of the satellite altimetry and GRACE mass data in Fig. 2a and 2b, respectively, as well as the uncertainty of ERA5 P-E and land runoff in Figs. 4c and 4d, respectively.

The 2010–2018 hiatus (Fig. 2a) coincides with subdomain A freshening (Fig. 7a2) but the causal sequencing is unclear. Please add lead-lag correlation analysis between subpolar salinity and SLA.

Thank you for the comment. Because of mixing during the propagation of subpolar waters to subdomain A, and because subdomain A SLA integrates other factors aside from salinity shifts, the physical basis for correlating subpolar salinity and subdomain A SLA is somewhat weak: it is difficult for the propagating water to retain its characteristics during transport; for example, the temperature changes in the surface layer due to the radiation, which could modulate subdomain A SLA. Instead, we have correlated subpolar salinity and subdomain A salinity in the same layer (Fig. 7a3), which gives a coefficient of 0.687 when subdomain A salinity is lagging by about 5.5 years (lines 362–364). The physical justification for doing this is that, after excluding the probability of all local sources of water, it is only water from a remote source that can modulate subdomain A salinity.