We thank the reviewer for raising very constructive comments. We overall agree with the points raised, which have been implemented in revising the manuscript. In the following, our responses to the reviewer are shown in italics.

Response to Reviewer #1

L6: “upwelling near the southwest African coasts is primarily alongshore-wind-driven”. This is strictly not correct as the Angolan upwelling that is also located along the southwest African coast is driven by coastally trapped waves in combination with tidal mixing on the shelf.

Response: *This is a valid point. We have now rephrased this sentence to (lines 6-8) “Like other Eastern Boundary Upwelling Systems, in the Benguela Upwelling System, the upwelling along the coastline is primarily alongshore-wind-driven. In contrast, it is mainly driven by the wind stress curl farther offshore”.*

L7: “primarily alongshore-wind-driven, whereas it is controlled mainly by the wind stress curl farther offshore” It is unclear what is meant: later you use alongshore-wind-driven coastal upwelling. Could be written more clearly. What is the difference between "driven" and "controlled". Does it correspond to mean upwelling and its variability? Please clarify.

Response: *it is correct. We have now changed the sentence to (lines 6-8) “Like other Eastern Boundary Upwelling Systems, in the Benguela Upwelling System, the upwelling along the coastline is primarily alongshore-wind-driven. In contrast, it is mainly driven by the wind stress curl farther offshore”.*

L12: “closed to the coastal band” I would suggest: “within the coastal zone”.

Response: *corrected. Please see line 12.*

L13: I would suggest “for both coastal upwelling and wind-stress-curl-driven upwelling” or “for both alongshore-wind-driven coastal upwelling and wind-stress-curl-driven upwelling”.

Response: *Done. Please see lines 13-15 “Even though the detailed structure of surface wind over the coastal zone matters for both alongshore-wind-driven coastal upwelling and wind-stress-curl-driven upwelling, we show that it is not of major importance for the total amount of upwelled water”.*

L15: anticyclone

Response: *Corrected. Please see line 15.*

L15: zonally integrated

Response: *we have now changed "integrated" to "zonally integrated". Please see line 15.*

L16: such connection

Response: *we have now changed "this connection" to "such connection". Please see line 16.*

L21-23: Do you want to say that there are no multi-decadal trends? Supported by a non-existing multi-decadal trend? Maybe: This view is further supported by the coastal and wind-stress-curl-driven upwelling in several upwelling cells showing hardly any significant multi-decadal trends.

Response: *we rephrased the sentence accordingly. Please see lines 22-23 "This view is further supported by the coastal and wind-stress-curl-driven upwelling in several upwelling cells showing hardly any significant multi-decadal trends".*

L53: excites downwelling Kelvin waves

Response: *Done. Please see line 53 "…which excites downwelling Kelvin waves propagating …".*

L187: I would suggest to remove "vertically integrated" as the transport is not integrated, but the velocity. Better use Ekman zonal and meridional volume transport per unit length.

Response: *we have now rephrased the sentence to (line 187) "In this theory, Ekman zonal (U_E) and meridional (V_E) volume transport per unit length (m^2/s) are expressed as".*

L210 tau^y is already explained above

Response: *corrected. We changed the sentence to (line 210) "Here, x is the distance to the coast".*

L295: alongshore

Response: *we changed (line 295) "along-shore" to "alongshore".*

L374: yearly and the monthly means

Response: *corrected. Please see line 374 "the yearly and the monthly means".*

L374: Dashed lines

Response: *corrected. Please see line 374 "Dashed lines represent …"*

L397: obtained for yearly mean SLP

Response: *corrected. Please see line 397.*

L412: obtained for yearly mean SLP

Response: *corrected. Please see line 412.*

Figure S3: define R

Response: *sorry for the confusion we caused. We have now rephrased the last sentence of figure S3 caption to "The linear correlation (R) between the ASCAT and ERA5 meridional winds is represented in the bottom-right corner of panels b-h".*

Figure S4: please provide units

Response: *we have now added the unit of meridional component of wind speed, which is m/s.*

Caption Figure S5: ERA-5

Response: *corrected.*

Figure S7: There are no red dots. Please correct.

Response: *we have now corrected the figure caption. It is now "Circles indicate the* R_1 *from Chelton et al. (1998), and dashed line represents the interpolated* R_1 *that is used in this study".*