Supplementary materials:

A meteorological overview of the ORACLES (ObseRvations of Aerosols above CLouds and their intEractionS) campaign over the southeast Atlantic during 2016-2018

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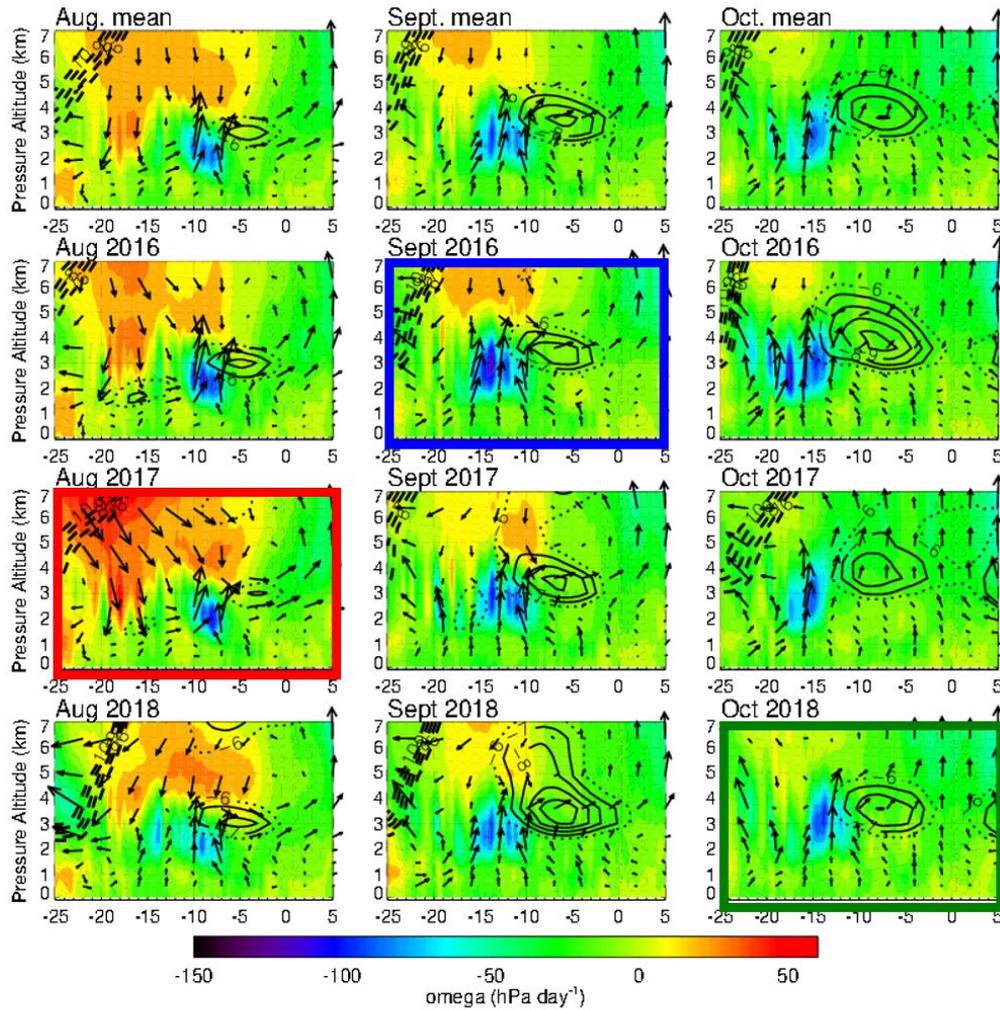


Figure 1S. The latitude-height cross-section of vertical motion (omega, shading, hPa day^{-1}) overlaid by wind vector (meridional wind and omega (v, -ω)) and zonal wind (black contour, m s^{-1}) averaged over 12-24° E during August, September, and October for 19 years mean (2000–2018, top) and 3 years of the ORACLES deployment (2016, 2017, and 2018). The color box around the plot represents the deployment month.

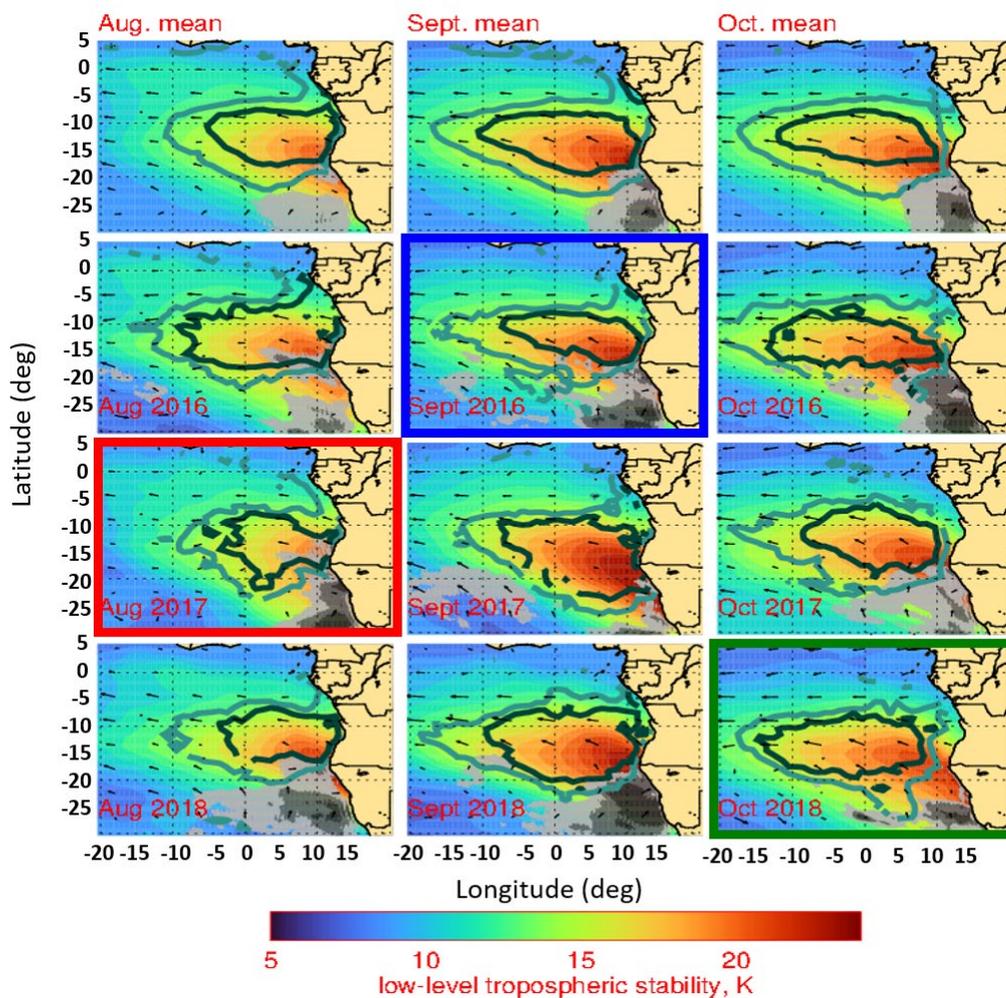



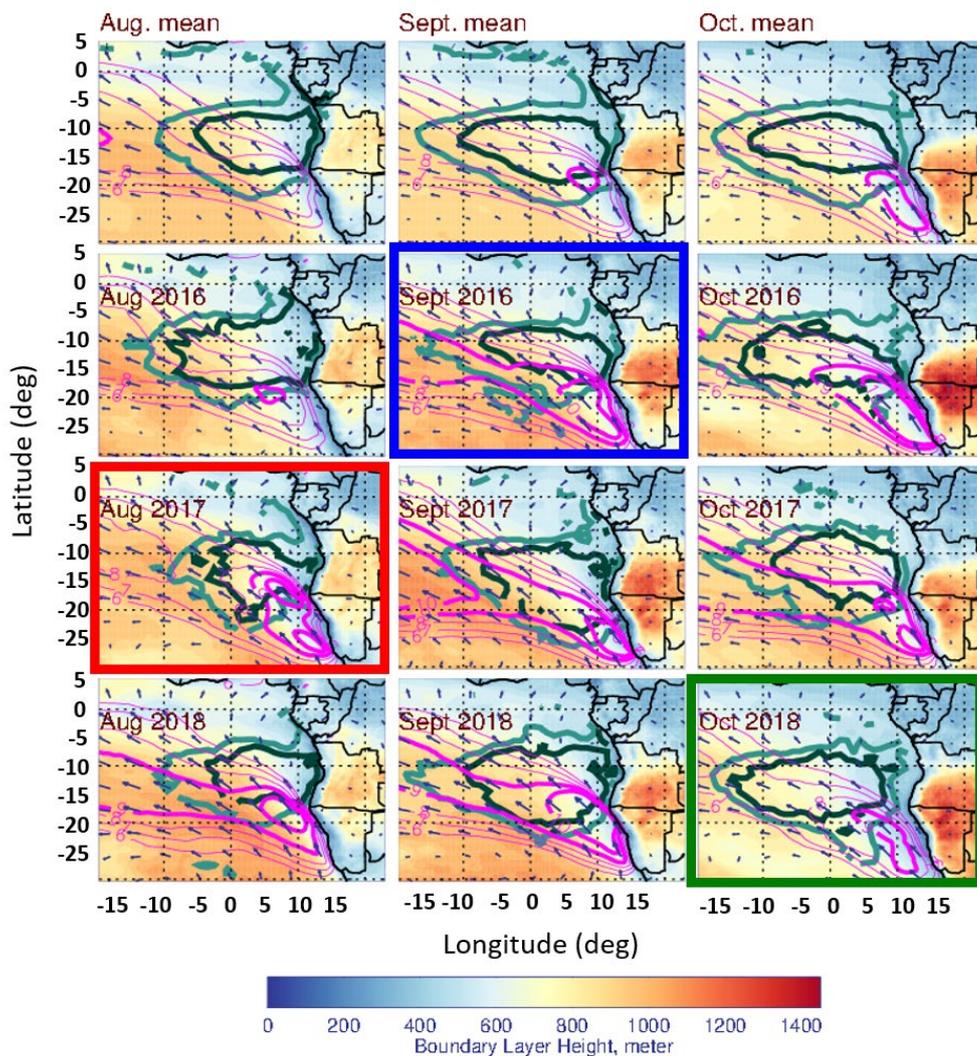
Figure 2S. Map of LTS (shading, color) and low-level cloud fraction (low-CF; cloud-top below 2.5 km) (0.8 and 0.9) overlaid by subsidence (omega at 800hPa, 50, 65, 80 hPa day⁻¹ from the light gray) and horizontal wind vector (black) at 800 hPa for August, September, and October. Top row: climatology computed over 2003-2018. Second through the fourth row: monthly averages for August through October 2016, 2017, and 2018, respectively. The colored boxes around the plots represent the years of ORACLES deployments.

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Figure. 3S. Monthly mean mixed-layer BLH (shading, color), the horizontal wind (vector; magnitude in magenta contours) at 925 hPa overlaid by low-CF for the climatological mean and 3 years of the ORACLES deployment (August, September, and October, 2016–2018). The colored boxes around the plots represent the years of ORACLES deployments.

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(a)
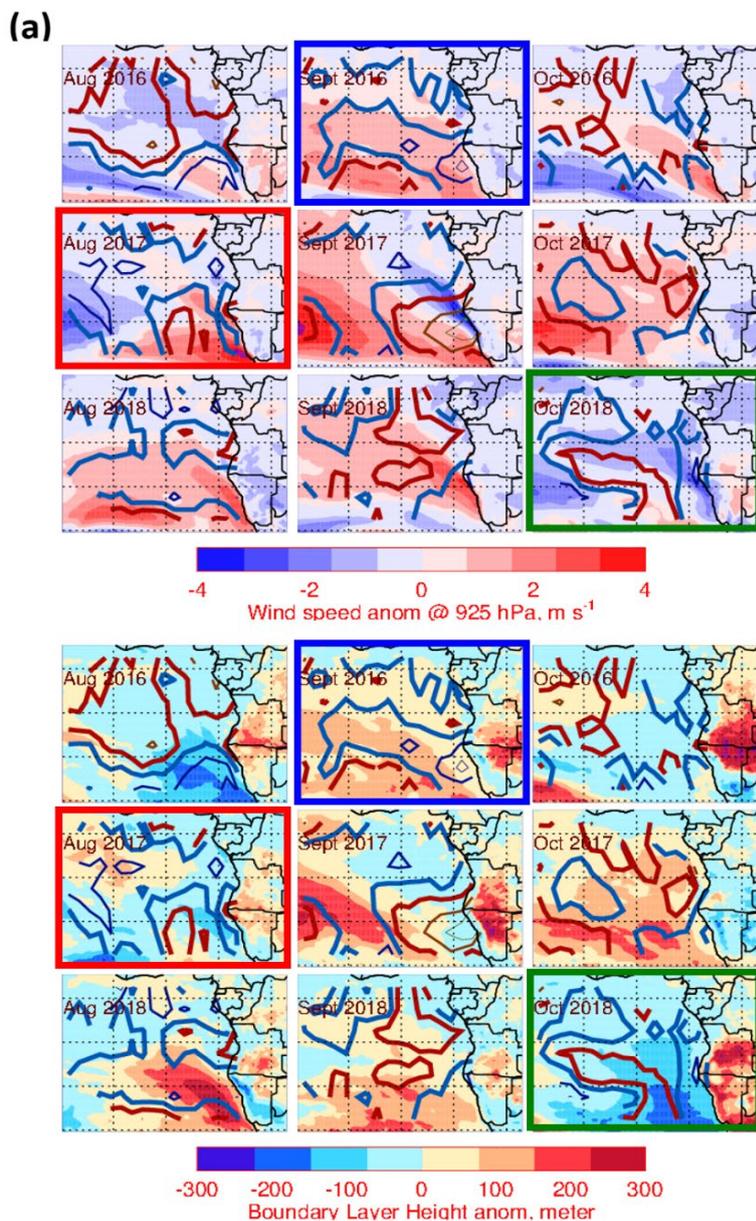
Figure 4S. (a) Map of monthly mean wind speed at 925 hPa anomaly (color shading, m s^{-1}) overlaid by low-CF anomaly (contours: blue (-0.02, -0.07, -0.12), and dark red (+0.02, +0.07, +0.12), %). (b) Map of monthly mean BLH anomaly (color shading, m) overlaid by low-CF anomaly (contours: blue (-0.02, -0.07, -0.12), and dark red (+0.02, +0.07, +0.12), %). The colored boxes around the plots represent the years of ORACLES deployments.
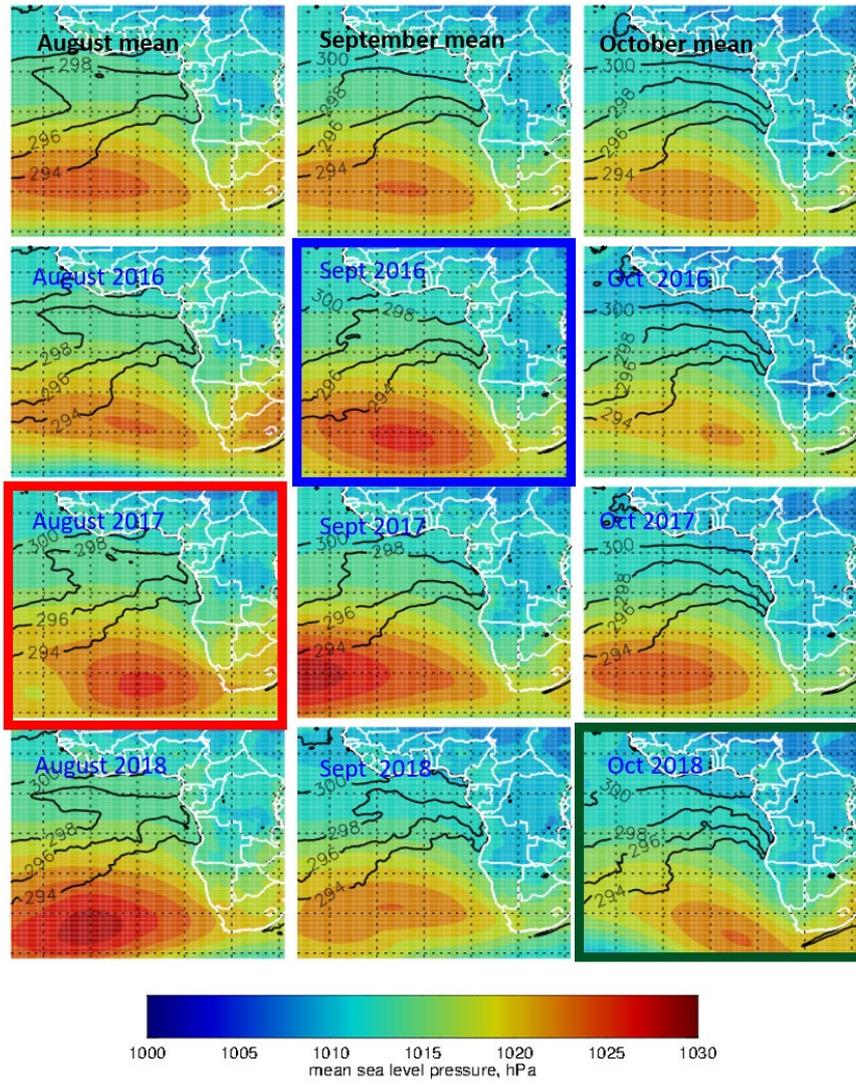
Figure 5S. Mean SLP overlaid with SST for the climatology (2000-2018) and the August, September, and October for 2016-2018. The colored boxes around the plots represent the years of ORACLES deployments.
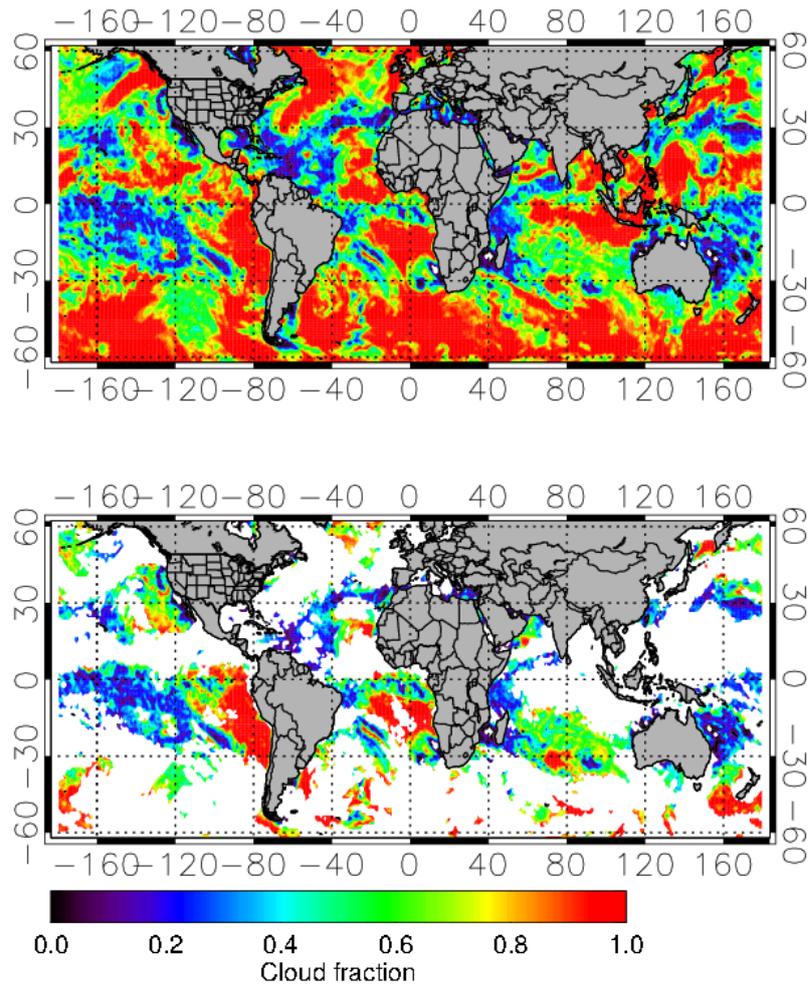
Figure 6S. Global map of daily (top) total cloud fraction and (bottom) low-CF (cloud top height is less than 2.5 km) on 24 September 2016.