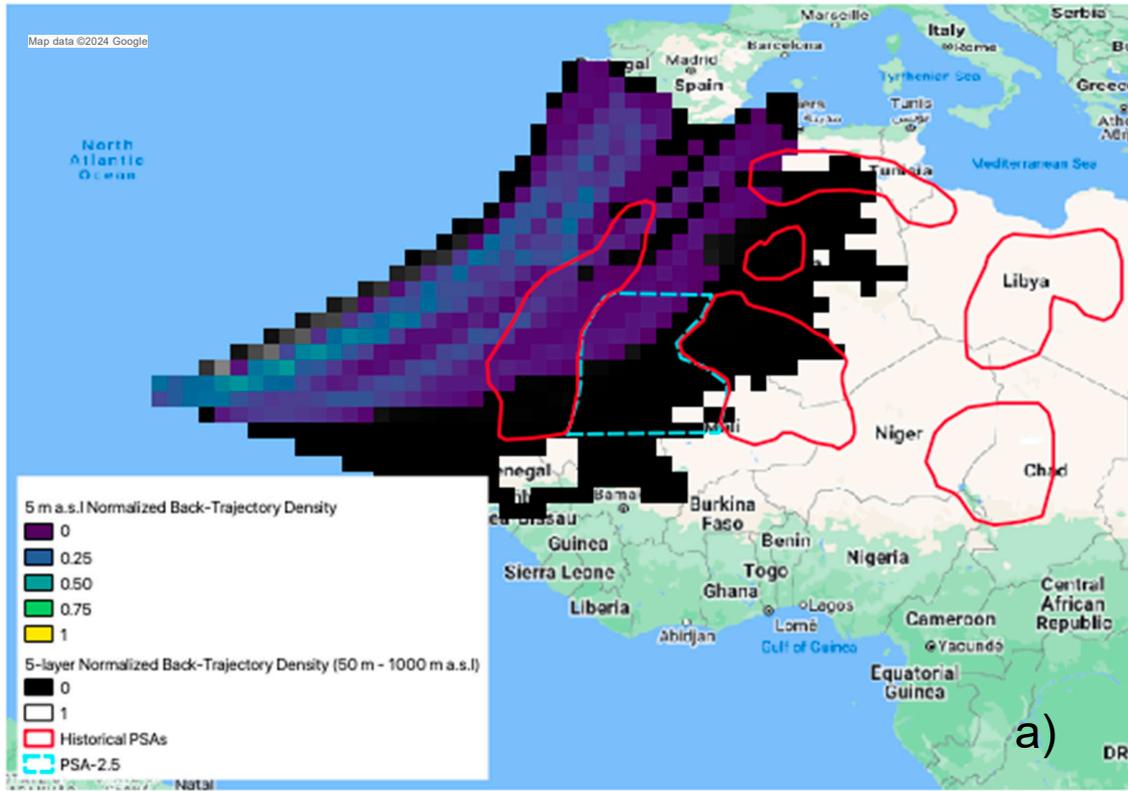
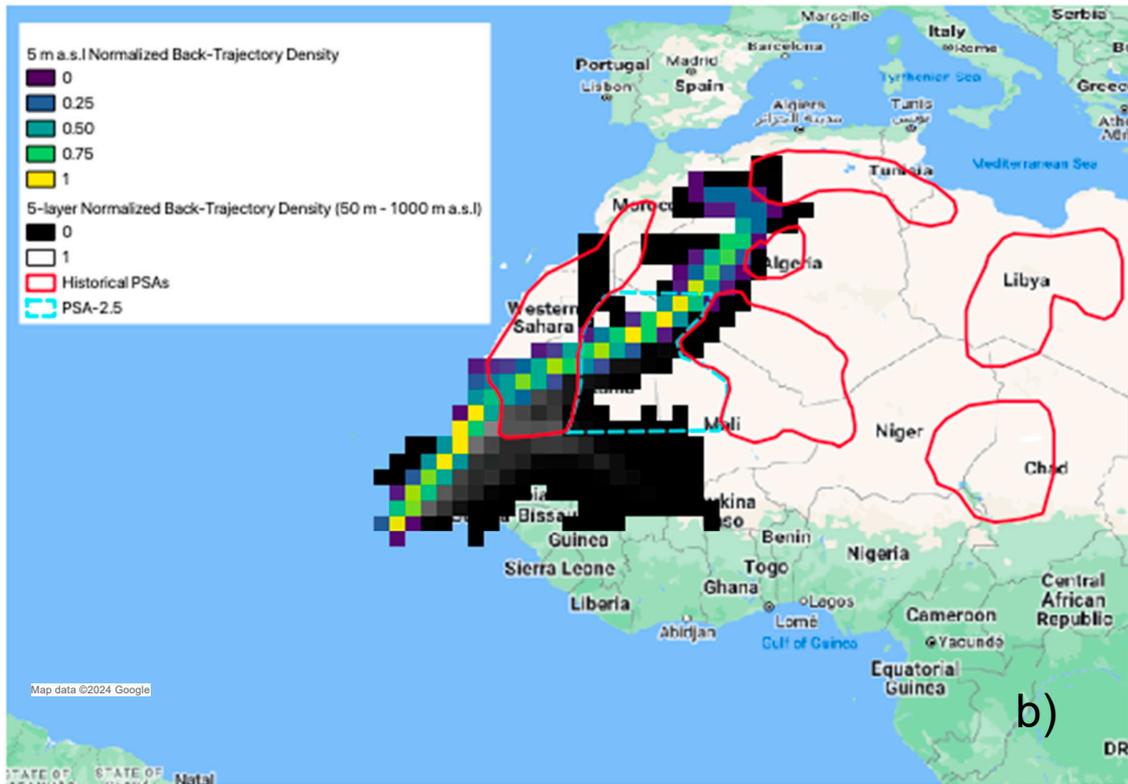


## Back-Trajectory Height Analysis





**Figure S1.** Back-trajectory intersections at 5m and 50m-1000m altitudes were compared during AEROSE DE1 and DE3 periods (Figure S1a and Figure S1b). A normalized 5-layer back-trajectory density (intersections per pixel per total trajectories), shown in black to white gradient, was calculated for DE1 and DE3 timeframes using 50 m a.s.l., 250 m a.s.l., 500 m a.s.l., 750 m a.s.l., and 1000 m a.s.l. starting heights. Back-trajectories were co-located to AEROSE ship locations and simulated over 120 hours at 1-hr initialization increments. Normalized 5 m a.s.l. trajectory densities (purple to yellow gradient) were overlaid against 5-layer trajectory densities. The historical PSAs shown in red represent PSAs 1-5 and PSA-Hoggar; PSA-2.5 is shown in cyan. This analysis shows good spatial agreement in mean back-trajectory densities between 5m and 50m-1000m altitudes when considering PSA intersections. PSA back-trajectory intersection densities that were exclusive to 5-layer mean back-trajectories were near zero and within the 25th percentile.