Atmospheric Deserts: Detection and Consequences

Supplementary Material

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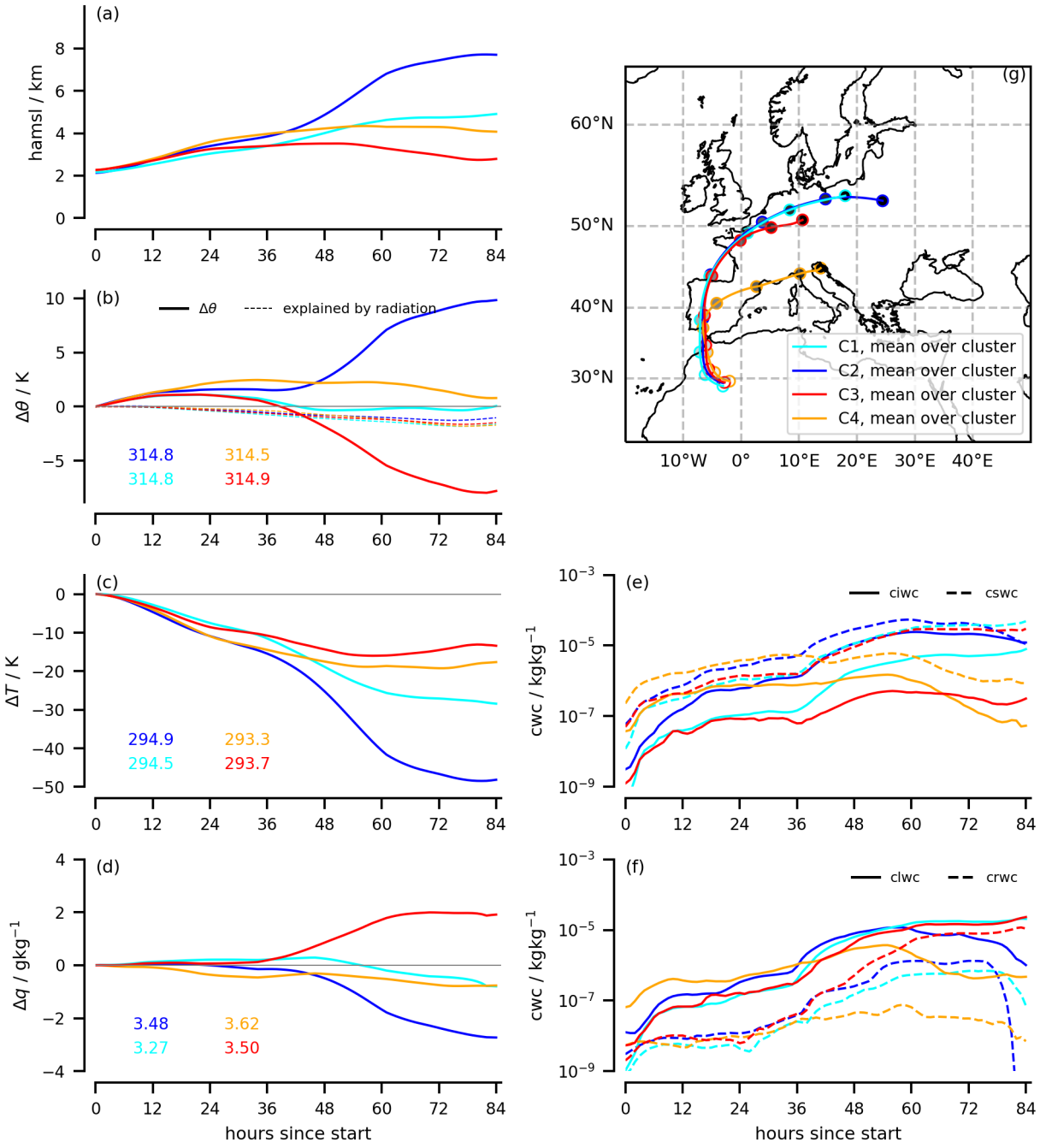

Figure S1: Time series of thermodynamic variables (panels (a–f)) and map of the cluster paths (g) for the cluster mean for C1 (cyan), C2 (blue), C3 (red), and C4 (orange). Clusters are based on 13.16 million trajectories started on 16.06.2022: 3.3 million in C1, 5.5 million in C2, 1.5 million in C3, and 2.8 million in C4. The mean is calculated in the trajectory relative time frame, the x-axis of the time series shows hours since the trajectory initialization. Panel (a): height above mean sea level (*hamsl*). Panel (b): Difference in potential temperature (θ) since initialization and cumulative mean temperature tendency due to short- and longwave radiation (dashed). Panel (c): Difference in temperature (T) since initialization. Panel (d): Difference in specific water content (q). Panel (e): cloud ice water content (*ciwc*, solid) and cloud snow water content (*cswc*, dashed). Panel (f): cloud liquid water content (*clwc*, solid) and cloud rain water content (*crwc*, dashed). Panel (g) shows a map of the mean trajectory path. Dots mark every 12th one-hour time step (which corresponds to the x-ticks in the other panels), the colour gradient of the dots represents progression in time, with white being the time of initialization. The coloured numbers is panels (b–d) denote the initial value of the respective variables and clusters in K (b,c) and gkg^{-1} (d). Panels (e–f) have a logarithmic scale on the y-axis.

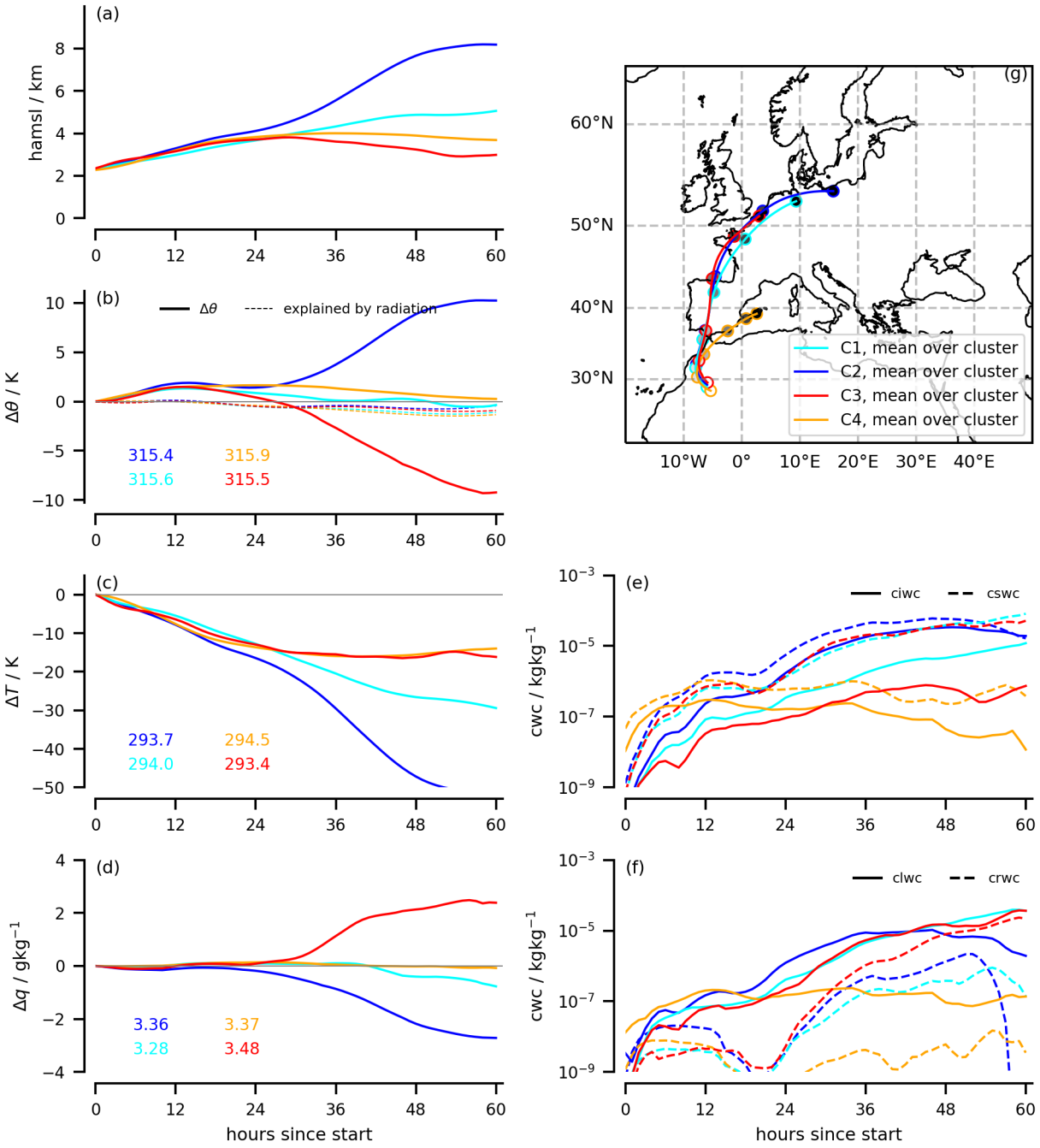

Figure S2: Time series of thermodynamic variables (a–f) and map of the cluster paths (g) for the cluster mean for C1 (cyan), C2 (blue), C3 (red), and C4 (orange). Clusters are based on 4.77 million trajectories started on 17.06.2022: 1.1 million in C1, 1.4 million in C2, 0.3 million in C3, and 2.0 million in C4. As in Fig. S1.

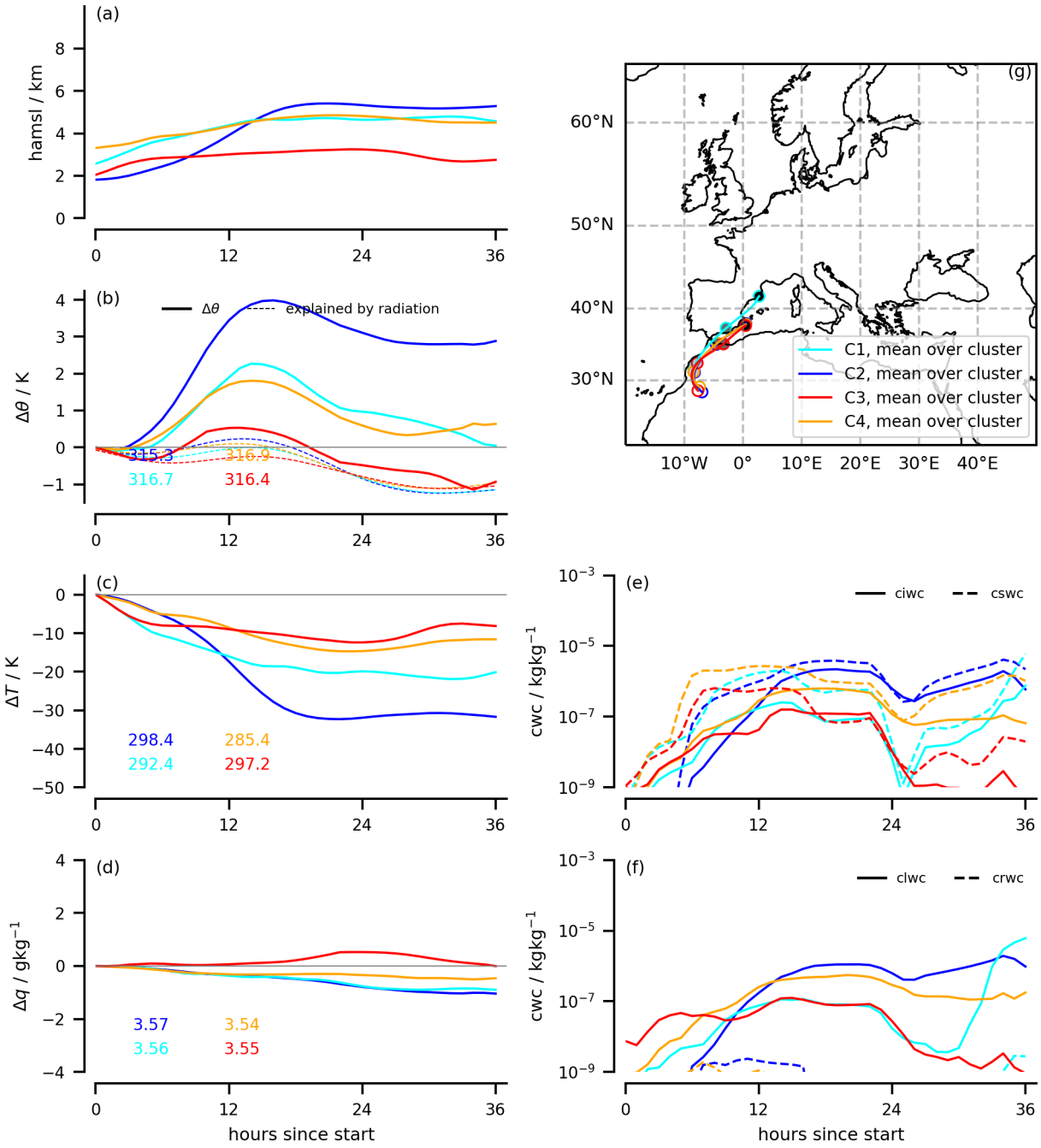

Figure S3: Time series of thermodynamic variables (a–f) and map of the cluster paths (g) for the cluster mean for C1 (cyan), C2 (blue), C3 (red), and C4 (orange). Clusters are based on 0.22 million trajectories started on 18.06.2022: 34 thousand in C1, 71 thousand in C2, 54 thousand in C3, and 61 thousand in C4. As Fig. S1.