



Dust and Sandstorms Events in March 2025

Executive Summary:

This report presents a detailed analysis of dust and sandstorm (SDS) events across Saudi Arabia during March 2025, benchmarked against the 21-year climatological average (2003–2024). A total of 142 dust hours distributed over 17 days were recorded, reflecting a 75% decrease in dust hours and a 29% decrease in dust days compared to the long-term mean of 575 hours and 24 days. Regional patterns were uneven. The Central and Western regions (notably Dawadmi, Madinah, Sharorah, and Wadi Al-Dawasir) reported the highest activity, ranging from 9 to 23 hours across 3–5 days. In contrast, Eastern stations such as Al-Ahsa and Dammam registered sharp declines (–68% to –89%), while Northern and Central sites like Rafha, Turaif, Riyadh, and Hafar Al-Batin recorded minimal events (1–5 hours over 1–2 days), representing anomalies of –20 to –38 hours and –3 to –7 days. Notably, Jeddah dropped to zero events (–100%), while Madinah showed a slight positive anomaly (+1 hour). On the event scale, blowing dust dominated with 132 cases (93%), although substantially below the historical average of 555 cases (97%). Interestingly, dust storms increased to 8 cases (vs. none historically), while sandstorms decreased to 2 cases (vs. 20 historically). This reflects a shift in SDS intensity patterns, with storm-scale events emerging sporadically despite an overall suppressed activity. Case studies from March 20, 2025, highlighted two severe events: a dust storm in Dawadmi, driven by southwesterly winds of 27 knots, low pressure, and temperatures of 30°C, which reduced visibility to 200 meters; and a sandstorm in Wadi Al-Dawasir, fueled by northwesterly winds of 28 knots and high temperatures (31°C), where visibility dropped to just 50 meters. Both cases underscore the role of synoptic drivers—low-pressure systems, strong wind regimes, and elevated thermal gradients—in shaping SDS severity. These findings demonstrate that March 2025 was characterized by a sharp decline in overall SDS activity relative to climatology, but with localized surges in dust and sandstorms. The results underscore evolving SDS dynamics across the Kingdom, likely linked to climatic or environmental shifts affecting storm genesis and distribution.