



Dust and Sandstorms Events in December 2025

Executive Summary:

This report provides a comprehensive assessment of dust and sandstorm (SDS) activity across Saudi Arabia during December 2025, benchmarked against the 21-year climatological average (2003–2024). In contrast to the exceptionally calm conditions observed in November, December 2025 marked a return to an active early-winter dust regime, particularly over the Eastern and Northern regions, while large portions of the western and southern sectors remained largely dust-free.

At the national scale, the Kingdom recorded 124 dust hours across 12 dusty days, compared with a climatological mean of 146 hours over 10 days. This corresponds to an overall 15% decrease in cumulative dust hours but a 20% increase in the number of dusty days relative to the long-term average. Operationally, this means that dust events were more frequent but generally shorter in duration, producing less total exposure time despite occurring on more days.

Spatially, dust activity was strongly concentrated in the Eastern Province and the northern corridor. Dhahran registered the highest activity, with 20 dust hours, followed by Al-Ahsa (16 hours), Al-Jouf (14 hours), and Dammam (13 hours). Moderate activity (4–6 hours) occurred at several northern and interior stations including Gassim, Rafha, Qurayyat, Turaif, and Najran. In contrast, many western and southern stations—such as Jeddah, Madinah, Taif, Yanbu, Al-Wejh, Gizan, and Abha—reported 0 dust hours and 0 dusty days, indicating negligible impact in these regions during December.

Anomaly maps for SDS days and hours reveal a mixed but regionally coherent pattern: positive anomalies dominate parts of the Eastern Province, northeastern Saudi Arabia, and sections of the Red Sea coast, while negative anomalies are apparent across the central plateau and southwestern highlands. Event-type classification shows a decline in Blowing Dust (BLDU) hours from 146 to 124, an increase in Dust Storm (DS) events from 1 to 3, and a reduction in Sandstorms (SS) from 3 to 1. This combination indicates a weakening of persistent background blowing-dust conditions, fewer very intense sandstorms, but a greater occurrence of discrete, organized dust-storm episodes associated with frontal passages and Shamal surges.

These findings highlight an evolving December dust regime over Saudi Arabia: dust events are becoming more intermittent, less persistent, and more spatially focused, especially in the Eastern and Northern regions. The results provide essential guidance for aviation operations, health and air-quality management, transportation safety, and the optimization of SDS early-warning systems during the early winter season.

Keywords: Dust storms, Blowing dust, December 2025, Saudi Arabia, Dust anomaly, Shamal winds, Eastern Province, Atmospheric circulation.