



Dust and Sandstorms Events in March 2024

Executive Summary:

This report presents a comprehensive analysis of dust events across Saudi Arabia during March 2024, benchmarked against both March 2023 and the long-term climatological average (2003–2023). A total of 235 dust hours distributed over 18 days were recorded, confirming March as one of the peak dust activity months. Compared to March 2023 (168 hours; 21 days), this reflects a +39% increase in dust hours but a -14% decrease in dust days. However, relative to the long-term average (619 hours; 25 days), March 2024 exhibited a substantial decline of -62% in dust hours and -29% in dust days, reinforcing the ongoing below-normal trend.

On the event scale, several intense and localized cases were observed. A notable event occurred on March 11, where Al-Kharj and Dammam recorded strong winds of 29 and 26 knots from southwesterly (210°) and northwesterly (330°) directions, respectively, accompanied by a sharp drop in visibility to 100 meters—marking one of the most severe dust episodes of the month.

Regionally, dust activity was concentrated in the Central, Eastern, and Southern regions, although all regions remained below their climatological averages. In the Eastern Region, Al-Ahsa (5 d; 43 h) showed a decline relative to its historical average (-19 h; -4 d), while Dhahran (2 d; 17 h) and Dammam (3 d; 17 h) also recorded reduced activity. In the Central Region, Wadi Al-Dawasir (5 d; 29 h), Al-Kharj (3 d; 17 h), and Riyadh (3 d; 10 h) were the most notable stations, with Riyadh showing a marked reduction (-17 h; -3 d) compared to its long-term average. In the Southern Region, Najran (6 d; 15 h), Sharorah (5 d; 16 h), and Bisha (6 d; 14 h) exhibited extended durations, making them among the most impacted stations during the month. In contrast, the Northern Region showed weaker activity, with Rafha (2 d; 9 h) and Turaif (3 d; 7 h) recording significant declines, particularly Rafha (-32 h; -5 d). Western and coastal stations remained largely inactive or recorded minimal dust activity.



At the station level, Al-Ahsa further highlights this declining trend, recording 43 hours over 5 days compared to its long-term average of 62 hours over 9 days, representing a -31% decrease in hours and -44% decrease in days.

Overall, March 2024 can be classified as an active dust month in terms of event intensity and spatial distribution, with several localized severe cases, particularly in the Central and Eastern regions. However, despite the increase in dust hours compared to 2023, the month remained significantly below the long-term climatological baseline, consistent with the broader pattern of reduced dust activity observed throughout the year.