



## Dust and Sandstorms Events in April 2024

### Executive Summary:

This report presents a comprehensive analysis of dust events across Saudi Arabia during April 2024, benchmarked against the long-term climatological average (2003–2023). A total of 237 dust hours distributed over 18 days were recorded, confirming April as one of the peak dust activity months. However, compared to the long-term average (571 hours; 26 days), this reflects a significant decline of -60% in dust hours and -30% in dust days, indicating a markedly below-normal month.

On the event scale, several notable cases were observed, particularly on April 28, when multiple stations including Hafar Al-Batin, Rafha, Wadi Al-Dawasir, Dawadmi, and Riyadh reported dust activity. The most severe case occurred at Riyadh station, where wind speeds reached 56 km/h (NNW, 330°) and horizontal visibility dropped to 500 meters for three consecutive hours, marking one of the most intense events of the month.

At the station level, variability was pronounced. Wadi Al-Dawasir (9 d; 59 h) exceeded its historical average (34 h; 7 d), showing an increase of +25 hours and +2 days, making it a key hotspot. In contrast, Al-Ahsa (4 d; 14 h) showed a sharp decline relative to its climatology (-38 h; -5 d). Similarly, Rafha (3 d; 8 h) dropped significantly compared to its historical record (-42 h; -6 d), while Riyadh (4 d; 19 h) also recorded a moderate decrease (-6 h; -2 d). On the other hand, Jeddah (3 d; 8 h) and Gizan (3 d; 4 h) showed slight increases compared to their long-term averages.

Regionally, dust activity remained concentrated in the Central, Eastern, and Northern regions. The Central Region recorded the highest activity, led by Wadi Al-Dawasir (9 d; 59 h), followed by Riyadh (4 d; 19 h), Dawadmi (5 d; 17 h), and Al-Kharj (6 d; 12 h). In the Eastern Region, Hafar Al-Batin (4 d; 28 h), Al-Ahsa (4 d; 14 h), and Dhahran (3 d; 4 h) were the most affected stations. The Northern Region showed moderate activity at Rafha (3 d; 8 h) and Arar (3 d; 15 h), though both remained well below their climatological averages. In the Southern Region, Sharorah (7 d;



12 h) and Najran (2 d; 7 h) recorded notable durations, while the Western Region showed localized activity, particularly in Jeddah and Gizan, with most coastal stations remaining relatively quiet.

On the event type scale, blowing dust (BLDU) clearly dominated, accounting for approximately 86% of all recorded events, while sandstorms (SS) showed a marked reduction, with only 3 cases compared to 25 cases in the long-term record.

Overall, April 2024 exhibited a mixed pattern: while total dust activity remained significantly below the climatological baseline, localized increases were observed in select stations such as Wadi Al-Dawasir, Jeddah, and Gizan. The persistence of activity in the Central and Eastern regions highlights their continued vulnerability, while sharp declines in key stations such as Al-Ahsa, Rafha, and Riyadh emphasize strong regional variability in dust behavior.