



# Haboob

---

A **haboob** (Arabic: هَبُوب, romanized: *habūb*, lit. 'blasting/driftin'g') is a type of intense dust storm carried on an atmospheric gravity current, also known as a weather front. Haboobs occur regularly in dry land area regions throughout the world.

## Description

---

During thunderstorm formation, winds move in a direction opposite to the storm's travel, and they move from all directions into the thunderstorm. When the storm collapses and begins to release precipitation, wind directions reverse, gusting outward from the storm and generally gusting the strongest in the direction of the storm's travel.<sup>[1][2][3]</sup>



Haboob in Big Spring, TX

When this downdraft of cold air, or downburst, reaches the ground, it blows dry, loose silt and clay (collectively, dust) up from the desert, creating a wall of airborne sediment that precedes the storm cloud. This wall of dust can be up to 100 km (62 mi) wide and several kilometers in elevation. At their strongest, haboob winds often travel at 35–100 km/h (22–62 mph), and they may approach with little or no warning. Often rain does not appear at ground level as it evaporates in the hot, dry air (a phenomenon known as virga). The evaporation cools the rushing air even further and accelerates it. Occasionally, when the rain does persist, it can contain a considerable quantity of dust. Severe cases are called *mud storms*. Eye and respiratory system protection is advisable for anyone who must be outside during a haboob. Moving to shelter is highly advised during a strong event.

## Occurrence

---

### Middle East

Haboobs have been observed in the Sahara, Sahel (typically Sudan, where they were named and described), as well as across the Arabian Peninsula, throughout Kuwait, and in the most arid regions of Iraq.<sup>[4]</sup> Haboob winds in the Arabian Peninsula, Iraq, and Kuwait are frequently created by the collapse of a thunderstorm.

### North Africa

African haboobs result from the northward summer shift of the Intertropical Convergence Zone into North Africa, bringing moisture from the Gulf of Guinea.

### Australia

Haboobs in Australia may be frequently associated with cold fronts. The deserts of Central Australia, especially near Alice Springs, are particularly prone to haboobs, with sand and debris reaching several kilometers into the sky and leaving up to 30 centimetres (1 ft) of sand in the haboob's path.



Small boat in River Nile Sudan

## North America

As with haboobs in the Middle East, haboob occurrences in North America are often created by the collapse of a thunderstorm. This is a local or mesoscale event, and at times of extreme drought they can originate in agricultural regions. Some of the most famous dust storms of the Dust Bowl and similar conditions later were in fact synoptic scale events typically generated by a strong cold frontal passage, with storms on 11 November 1911, 9–11 May 1934, 14 April 1935, and 19 February 1954 having been particularly vivid examples.

The arid and semiarid regions of North America—in fact, any dry region—may experience haboobs. In North America, the most common terms for these events are either dust storm or sandstorm. In the U.S., they frequently occur in the deserts of Arizona, including around the cities of Yuma and Phoenix;<sup>[5][6]</sup> in New Mexico, including Albuquerque, eastern California, and Texas. They also occur with moderate frequency in other states of the west and in the Great Plains.<sup>[7]</sup> Per the Washington State Department of Ecology they also occur in the Columbia Basin of Eastern Washington, and can impact on the cities such as Walla Walla<sup>[8]</sup> and Spokane.<sup>[9]</sup> though its noted that improved farming practices has led to a decline in large duststorms and haboobs since the 1990s,<sup>[10]</sup> with the largest likelihood of formation between late March through April, corresponding to the beginning of field tilling in Eastern Washington.<sup>[11]</sup> In Mexico, they occur in the northern part of the country in the Sonoran and Chihuahuan Desert. Most recently, a haboob impacted the cities of Guaymas, San Carlos, and Empalme, Sonora on 20 July 2023.<sup>[12]</sup>

## Mars

Global dust storms on Mars have been compared to haboobs on Earth.<sup>[13]</sup>

## Titan

Dust storms of Titan observed in 2009 and 2010 have been compared to haboobs.<sup>[14][15]</sup> However, the convective storm clouds are composed of liquid methane droplets, and the dust is likely composed of organic tholins.<sup>[15]</sup>

## See also

- Bora (wind)
- Dry thunderstorm
- Dust devil
- Intertropical Convergence Zone
- Khamsin
- Mistral (wind)



- Outflow boundary
- Simoom
- Sirocco

## References

---

1. Farquharson, J. S. (1937). "Haboobs and instability in the sudan". *Quarterly Journal of the Royal Meteorological Society*. **63** (271): 393–414. Bibcode:1937QJRMS..63..393F (<https://ui.adsabs.harvard.edu/abs/1937QJRMS..63..393F>). doi:10.1002/qj.49706327111 (<https://doi.org/10.1002%2Fqj.49706327111>).
2. Lawson, T. J. (1971). "Haboob Structure at Khartoum". *Weather*. **26** (3): 105–112. Bibcode:1971Wthr...26..105L (<https://ui.adsabs.harvard.edu/abs/1971Wthr...26..105L>). doi:10.1002/j.1477-8696.1971.tb07402.x (<https://doi.org/10.1002%2Fj.1477-8696.1971.tb07402.x>).
3. Membery, D. A. (1985). "A Gravity-Wave Haboob?". *Weather*. **40** (7): 214–221. Bibcode:1985Wthr...40..214M (<https://ui.adsabs.harvard.edu/abs/1985Wthr...40..214M>). doi:10.1002/j.1477-8696.1985.tb06877.x (<https://doi.org/10.1002%2Fj.1477-8696.1985.tb06877.x>).
4. Sutton, L. J. (1925). "Haboobs". *Quarterly Journal of the Royal Meteorological Society*. **51** (213): 25–30. Bibcode:1925QJRMS..51...25S (<https://ui.adsabs.harvard.edu/abs/1925QJRMS..51...25S>). doi:10.1002/qj.49705121305 (<https://doi.org/10.1002%2Fqj.49705121305>).
5. Idso, S.B.; Ingram, R.S.; Pritchard, J.M. (1972). "An American Haboob" (<https://doi.org/10.1175%2F1520-0477%281972%29053%3C0930%3AAAH%3E2.0.CO%3B2>). *Bulletin of the American Meteorological Society*. **53** (10): 930–935. Bibcode:1972BAMS...53..930I (<https://ui.adsabs.harvard.edu/abs/1972BAMS...53..930I>). doi:10.1175/1520-0477(1972)053<0930:AAH>2.0.CO;2 (<https://doi.org/10.1175%2F1520-0477%281972%29053%3C0930%3AAAH%3E2.0.CO%3B2>).
6. Idso, Carolyn W. (1973). "Haboobs in Arizona". *Weather*. **28** (4): 154–155. Bibcode:1973Wthr...28..154I (<https://ui.adsabs.harvard.edu/abs/1973Wthr...28..154I>). doi:10.1002/j.1477-8696.1973.tb02253.x (<https://doi.org/10.1002%2Fj.1477-8696.1973.tb02253.x>).
7. Chen, W.; Fryrear, D.W. (2002). "Sedimentary characteristics of a haboob dust storm". *Atmospheric Research*. **61** (1): 75–85. Bibcode:2002AtmRe..61...75C (<https://ui.adsabs.harvard.edu/abs/2002AtmRe..61...75C>). doi:10.1016/S0169-8095(01)00092-8 (<https://doi.org/10.1016%2FS0169-8095%2801%2900092-8>).
8. Ellison, Jake (18 September 2013). "Photos: Major 'haboob' – dust and windstorm – strikes eastern Washington" (<https://www.seattlepi.com/local/weather/article/Photos-Major-haboob-dust-and-windstorm-4825842.php>). *Seattle PI*. Retrieved 22 June 2023.
9. Loyd, Nic; Weiford, Linda (12 August 2021). "Weathercatch: Dust-filled drama of past teaches lesson for future" (<https://www.spokesman.com/stories/2021/aug/12/weathercatch-dust-and-drama-in-the-inland-northwest/>). *The Spokesman-Review*. Retrieved 22 June 2023.
10. Vaughn, Kim (1 April 2021). "Get ready, it's haboob season" (<https://ecology.wa.gov/Blog/Posts/March-2021/Central-and-Eastern-Washington>). *Department of Ecology State of Washington*. Retrieved 22 June 2023.
11. Vaughn, Kim (1 April 2021). "What you need to know about dust storms in Washington" (<https://ecology.wa.gov/Blog/Posts/March-2023/What-to-know-about-dust-storms-in-Washington>). *Department of Ecology State of Washington*. Retrieved 22 June 2023.

12. Grupo Healy (July 20, 2023). "Tormenta de arena cubre Guaymas; Protección Civil Sonora emite medidas para la población" (<https://www.elimparcial.com/sonora/sonora/Tormenta-de-arena-cubre-Guaymas-Proteccion-Civil-Sonora-emite-medidas-para-la-poblacion-20230720-0043.html>) [Dust storm covers Guaymas; Protección Civil Sonora issues safety measures]. *El Imparcial* (in Spanish). Retrieved July 21, 2023.
13. Boyle, R. (9 March 2017). "Everything About Mars Is the Worst" (<https://fivethirtyeight.com/features/everything-about-mars-is-the-worst/>). FiveThirtyEight. Retrieved 9 March 2017.
14. Keane, James Tuttle (October 2018). "Haboobs on Titan" (<https://doi.org/10.1038%2Fs41561-018-0240-3>). *Nature Geoscience*. **11** (10): 705. Bibcode:2018NatGe..11..705K (<https://ui.adsabs.harvard.edu/abs/2018NatGe..11..705K>). doi:10.1038/s41561-018-0240-3 (<https://doi.org/10.1038%2Fs41561-018-0240-3>). ISSN 1752-0908 (<https://www.worldcat.org/issn/1752-0908>). S2CID 135135003 (<https://api.semanticscholar.org/CorpusID:135135003>).
15. Rodriguez, S.; Le Mouélic, S.; Barnes, J. W.; Kok, J. F.; Rafkin, S. C. R.; Lorenz, R. D.; Charnay, B.; Radebaugh, J.; Nartea, C.; Cornet, T.; Bourgeois, O. (October 2018). "Observational evidence for active dust storms on Titan at equinox" (<https://www.nature.com/articles/s41561-018-0233-2>). *Nature Geoscience*. **11** (10): 727–732. Bibcode:2018NatGe..11..727R (<https://ui.adsabs.harvard.edu/abs/2018NatGe..11..727R>). doi:10.1038/s41561-018-0233-2 (<https://doi.org/10.1038%2Fs41561-018-0233-2>). ISSN 1752-0908 (<https://www.worldcat.org/issn/1752-0908>). S2CID 134006536 (<https://api.semanticscholar.org/CorpusID:134006536>).

## External links

---

- [Haboob Photos \(http://hikearizona.com/dexcoder.php?PID=2102\)](http://hikearizona.com/dexcoder.php?PID=2102) @ HikeArizona.COM
  - [Haboobs, Arizona Department of Transportation. \(http://www.azdot.gov/CCPartnerships/haboob/index.asp\)](http://www.azdot.gov/CCPartnerships/haboob/index.asp)
  - [The Bibliography of Aeolian Research \(https://data.mendeley.com/datasets/675gwk5jp7/1\)](https://data.mendeley.com/datasets/675gwk5jp7/1)
  - [Haboob on Winds of the World \(http://www.weatheronline.co.uk/reports/wind/Haboob.htm\)](http://www.weatheronline.co.uk/reports/wind/Haboob.htm)
  - [Short Video of the 5 July 2011 Arizona Haboob \(Flash Video software or a web browser supporting H.264/MPEG-4 AVC is necessary to see the content\) \(https://www.youtube.com/watch?v=lbpsxr71VVA\)](https://www.youtube.com/watch?v=lbpsxr71VVA) on YouTube
  - [Time-lapse video of the 5 July 2011 Arizona Haboob \(https://vimeo.com/26045314\)](https://vimeo.com/26045314)
- 

Retrieved from "<https://en.wikipedia.org/w/index.php?title=Haboob&oldid=1176404770>"

▪