Cyclone Vardah

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| **Very Severe Cyclonic Storm Vardah** | |
| **Very severe cyclonic storm (IMD scale)** | |
| **Category 3 tropical cyclone (SSHWS)** | |
| [Vardah 2016-12-11 0515Z (gallery).jpg](https://en.wikipedia.org/wiki/File:Vardah_2016-12-11_0515Z_(gallery).jpg)  Vardah at peak strength on 11 December | |
| **Formed** | December 6, 2016 |
| **Dissipated** | December 19, 2016 |
| ([Remnant low](https://en.wikipedia.org/wiki/Post-tropical_cyclone) after December 18) | |
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|  | |
| **Highest winds** | [*3-minute sustained*](https://en.wikipedia.org/wiki/Tropical_cyclone_scales#Wind_speed_conversions)*:* 130 km/h (80 mph) [*1-minute sustained*](https://en.wikipedia.org/wiki/Tropical_cyclone_scales#Wind_speed_conversions)*:* 185 km/h (115 mph) |
| **Lowest pressure** | 975 [hPa](https://en.wikipedia.org/wiki/Pascal_(unit)" \o "Pascal (unit)) ([mbar](https://en.wikipedia.org/wiki/Bar_(unit))); 28.79 [inHg](https://en.wikipedia.org/wiki/Inch_of_mercury" \o "Inch of mercury) |
|  | |
|  | |
| **Fatalities** | 47 total |
| **Damage** | $3.37 billion (2016 [USD](https://en.wikipedia.org/wiki/United_States_dollar)) |
| **Areas affected** | [Thailand](https://en.wikipedia.org/wiki/Thailand), [Sumatra](https://en.wikipedia.org/wiki/Sumatra), [Malaysia](https://en.wikipedia.org/wiki/Malaysia), [Andaman and Nicobar Islands](https://en.wikipedia.org/wiki/Andaman_and_Nicobar_Islands), [Sri Lanka](https://en.wikipedia.org/wiki/Sri_Lanka), [South India](https://en.wikipedia.org/wiki/South_India), [Somalia](https://en.wikipedia.org/wiki/Somalia) |
|  | |
| Part of the [**2016 North Indian Ocean cyclone season**](https://en.wikipedia.org/wiki/2016_North_Indian_Ocean_cyclone_season) | |

**Very Severe Cyclonic Storm Vardah** was the fourth cyclonic storm, as well as the most intense [tropical cyclone](https://en.wikipedia.org/wiki/Tropical_cyclone) of the [2016 North Indian Ocean cyclone season](https://en.wikipedia.org/wiki/2016_North_Indian_Ocean_cyclone_season). The system struck the [Andaman and Nicobar Islands](https://en.wikipedia.org/wiki/Andaman_and_Nicobar_Islands), as well as [South India](https://en.wikipedia.org/wiki/South_India), before later affecting [Somalia](https://en.wikipedia.org/wiki/Somalia).

Originating as a low pressure area near the [Malay Peninsula](https://en.wikipedia.org/wiki/Malay_Peninsula) on December 3, the storm was designated a depression on December 6. It gradually intensified into a Deep Depression on the following day, skirting off the Andaman and Nicobar Islands, and intensified into a Cyclonic Storm on December 8. Maintaining a generally westward track thereafter, Vardah consolidated into a Severe Cyclonic Storm on December 9, before peaking as a Very Severe Cyclonic Storm, with 3-minute sustained winds of 80 mph (130 km/h), and a minimum central pressure of 975 hPa (28.8 inHg), on December 11. Weakening into a Severe Cyclonic Storm, Vardah made landfall close to [Chennai](https://en.wikipedia.org/wiki/Chennai) on the following day, and degenerated into remnant low on December 13.

The name *Vardah*, suggested by [Pakistan](https://en.wikipedia.org/wiki/Pakistan), refers to the [red rose](https://en.wikipedia.org/wiki/Rose).[[1]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-1)

history[[edit](https://en.wikipedia.org/w/index.php?title=Cyclone_Vardah&action=edit&section=1" \o "Edit section: Meteorological history)]

[](https://en.wikipedia.org/wiki/File:Vardah_2016_track.png)

Map plotting the track and the intensity of the storm, according to the [Saffir–Simpson scale](https://en.wikipedia.org/wiki/Saffir%E2%80%93Simpson_scale" \o "Saffir–Simpson scale)

Under the influence of a persistent area of convection, a low-pressure area formed over the [Malay Peninsula](https://en.wikipedia.org/wiki/Malay_Peninsula), adjoining north Sumatra, in early December 2016. The low pressure area gradually organized into a tropical disturbance over the next several days, as it slowly moved towards the southeast Bay of Bengal. On December 6, The IMD classified the system as Depression BOB 06, as the system had sufficiently organized itself, with winds of 45 km/h (30 mph).[[2]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-2) Owing to low wind shear and favorable sea surface temperatures, the storm gradually intensified into a Deep Depression on the following day.[[3]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-3) Skirting off the [Andaman and Nicobar Islands](https://en.wikipedia.org/wiki/Andaman_and_Nicobar_Islands) as a Deep Depression, BOB 06 was upgraded to a Cyclonic Storm by the IMD and JTWC, in the early hours of December 8, and was assigned the name *Vardah*.[[4]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-4)

With conditions favorable for further development, Vardah intensified into a Severe Cyclonic Storm on December 9.[[5]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-5) Although predicted to maintain its intensity, Vardah strengthened further, as it followed a generally west-northwestwards track, prompting the IMD to upgrade its intensity to Very Severe Cyclonic Storm status, on December 10.[[6]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-6) Gradually intensifying as it moved westward, Vardah reached its peak intensity on December 11, with maximum 3-minute sustained winds of 130 km/h (80 mph), and a minimum central pressure of 975 mbar (28.79 inHg).[[7]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-7)

On December 12, Vardah weakened into a Severe Cyclonic Storm, before making landfall over the eastern coast of India, close to [Chennai](https://en.wikipedia.org/wiki/Chennai), [Tamil Nadu](https://en.wikipedia.org/wiki/Tamil_Nadu), with winds of 65 mph (105 km/h).[[8]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-8) Afterward, it rapidly weakened into a depression, due to land interaction, on 13 December.[[9]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-9) The depression caused overnight rainfall in Southern Karnataka on December 13. Due to land interaction, Vardah degenerated into a well-marked low on December 13, at around midday, local time.

The remnants of Cyclone Vardah crossed the Indian Subcontinent and entered the Arabian Sea on December 14.[[10]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-10) Owing to warm sea surface temperatures, the system regenerated into a depression on December 17, with the IMD assigning the storm a new identifier, *ARB 02*.[[11]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-11)[[12]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-12) On the next day, the system entered an area marked by colder sea surface temperatures and high wind shear, causing it to rapidly weaken into a well-marked low-pressure area, just off the coast of [Somalia](https://en.wikipedia.org/wiki/Somalia), before moving ashore and dissipating on December 19.[[13]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-13)[[14]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-14)

Preparations and impact[[edit](https://en.wikipedia.org/w/index.php?title=Cyclone_Vardah&action=edit&section=2" \o "Edit section: Preparations and impact)]

**Thailand**[[edit](https://en.wikipedia.org/w/index.php?title=Cyclone_Vardah&action=edit&section=3" \o "Edit section: Thailand)]

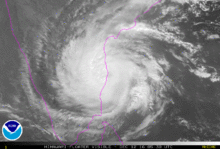
The precursor low of Cyclone Vardah caused severe flooding in [Thailand](https://en.wikipedia.org/wiki/Thailand), affecting half a million residents in the country's southern provinces. By the end of the week, more than 300 millimetres (12 in) of rainfall was observed in [Nakhon Si Thammarat Province](https://en.wikipedia.org/wiki/Nakhon_Si_Thammarat_Province" \o "Nakhon Si Thammarat Province) of the country.[[15]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-15) 21 people were reported to be killed due to the floods, and the damage were about US$25 million.[[16]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-16)[[17]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-17)

**South India**[[edit](https://en.wikipedia.org/w/index.php?title=Cyclone_Vardah&action=edit&section=4" \o "Edit section: South India)]

**Andaman and Nicobar Islands**[[edit](https://en.wikipedia.org/w/index.php?title=Cyclone_Vardah&action=edit&section=5" \o "Edit section: Andaman and Nicobar Islands)]

Vardah brought heavy rainfall to [Andaman and Nicobar Islands](https://en.wikipedia.org/wiki/Andaman_and_Nicobar_Islands) as a Deep Depression. [Hut Bay](https://en.wikipedia.org/wiki/Little_Andaman) recorded 166 mm (6.5 in) of rainfall on December 6, while [Port Blair](https://en.wikipedia.org/wiki/Port_Blair) recorded 167 mm (6.6 in) of rainfall on December 7.[[18]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-18) More than 1,400 tourists were stranded on the [Havelock](https://en.wikipedia.org/wiki/Havelock_Island) and [Neil](https://en.wikipedia.org/wiki/Neil_Island) islands of the archipelago, during the storm.[[19]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-19) They were evacuated by the [Indian Navy](https://en.wikipedia.org/wiki/Indian_Navy) on December 9.

**Tamil Nadu**[[edit](https://en.wikipedia.org/w/index.php?title=Cyclone_Vardah&action=edit&section=6" \o "Edit section: Tamil Nadu)]

[](https://en.wikipedia.org/wiki/File:Vardah_2016-12-12_Animation.gif)

Vardah making landfall over the coast of India

More than 16,000 people were evacuated from low-lying areas, as a result of Vardah. The [Indian Armed Forces](https://en.wikipedia.org/wiki/Indian_Armed_Forces) were kept on standby for any relief operations.[[20]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-20) Two warships, [INS Shivalik](https://en.wikipedia.org/wiki/INS_Shivalik) and [INS Kadmatt](https://en.wikipedia.org/wiki/INS_Kadmatt_(P29)), sailed out of [Visakhapatnam](https://en.wikipedia.org/wiki/Visakhapatnam) to [Chennai](https://en.wikipedia.org/wiki/Chennai), carrying medical teams, divers, inflatable rubber boats, an integral helicopter, and material, including food, tents, clothes, medicines, and blankets to aid with relief efforts. Fifteen teams of the [National Disaster Response Force](https://en.wikipedia.org/wiki/National_Disaster_Response_Force) were deployed in various coastal regions.[[21]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-21) The cyclone killed 24 people in the state,[[22]](https://en.wikipedia.org/wiki/Cyclone_Vardah" \l "cite_note-22) and caused [₹](https://en.wikipedia.org/wiki/Indian_rupee)22,573 crore (US$3.35 billion) in damage.[[23]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-23)

Vardah crossed the eastern coast of India close to Chennai in the afternoon hours of December 12, 2016.[[24]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-24) Winds were estimated at 65 mph (105 km/h) during landfall. The cyclone claimed over 18 lives, uprooted about 1 lakh trees in Chennai and its suburbs, and caused extensive damage to roads, supplies, and power infrastructure: over 10,000 electric poles were mangled and 800 transformers damaged. Carcasses of around 77 cows were found afloat in a lake in the [Kancheepuram](https://en.wikipedia.org/wiki/Kancheepuram" \o "Kancheepuram) District. As many as 224 roads were blocked, and 24 huts were also damaged. More than ten people were reported to have been killed, due to events related to the storm.[[25]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-25)

Public transportation was severely affected by Vardah. [Chennai International Airport](https://en.wikipedia.org/wiki/Chennai_International_Airport) was closed at least until 11:00 pm IST (5:30 pm UTC) on December 12, in the wake of the storm, leaving about 500 passengers stranded. The [Indian Railways](https://en.wikipedia.org/wiki/Indian_Railways) suspended operations of all 17 outstation trains originating from Chennai, and [suburban railway](https://en.wikipedia.org/wiki/Chennai_Suburban_Railway) services were also cancelled.[[26]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-26) [Chennai Metro](https://en.wikipedia.org/wiki/Chennai_Metro) services were also affected, after power was cut off, as a precaution by the TNEB.[[27]](https://en.wikipedia.org/wiki/Cyclone_Vardah#cite_note-27)

**Andhra Pradesh**[[edit](https://en.wikipedia.org/w/index.php?title=Cyclone_Vardah&action=edit&section=7)]

Two people were killed in the state.