

WIND

Temperature and barometric pressure differences over large geographic areas create winds. In thunderstorms two additional types of damaging winds can occur. The most common are downbursts, which are areas of intense winds that arise immediately below storms. These “straight line winds” can reach speeds of over 100 mph and may be accompanied by heavy rains. Dust storms are another form of dangerous wind. They can deposit large amounts of sand in unwanted areas, reduce visibility for drivers, and in some parts of the country disseminate infectious diseases. An example of this is tularemia, which is endemic in ground squirrels in the southern part of the San Joaquin Valley in California.

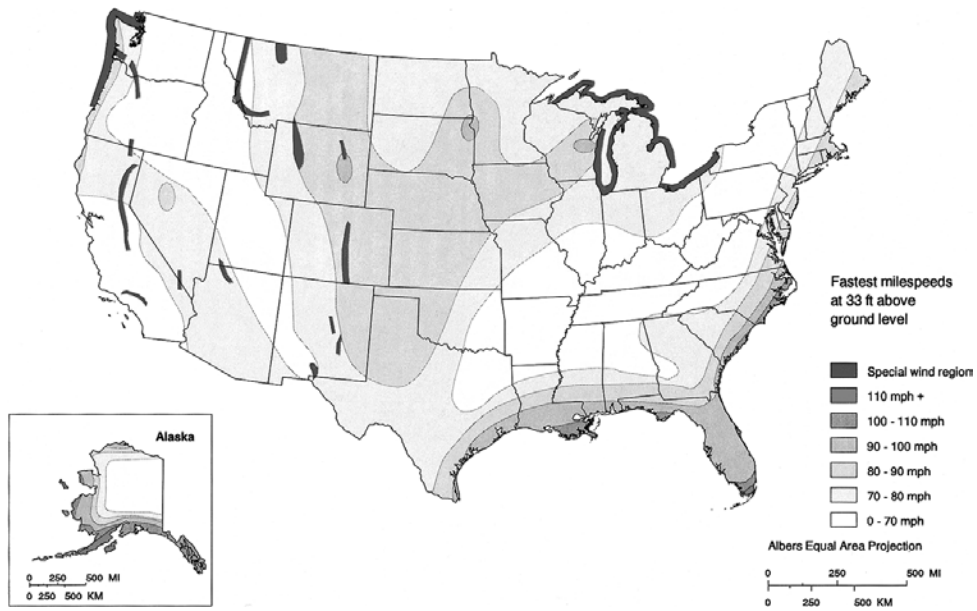
Table 4-2 Assessment of wind speeds using visible features

Wind speed (mph)	Noticeable effects over land	Noticeable effects over water
1-3	Calm; smoke rises vertically	Ripples are soft with appearance of fish scales
4-7	Smoke drifts, indicating direction of wind	Small wavelets with crests of glassy appearance develop
8-12	Wind felt on face; weather vanes start to move	Large wavelets develop; on some the crest will break
13-18	Leaves and small twigs are in constant motion	Small waves develop with numerous white caps
19-24	Dust, leaves, and loose paper are blown up from the ground	Moderate size waves develop
25-31	Small trees begin to sway	Larger waves form, and white caps occur nearly everywhere
32-38	Large branches on trees sway, and whistling can be heard from wind blowing past wires	Water heaps up, and white foam blows in streaks
39-46	Twigs and small branches may be broken off trees	Moderately high waves of noticeable length develop
47-54	Minor structural damage occurs because of slate blown off roofs	High waves begin to roll, and spray reduces visibility
55-63	Structural damage significant; trees broken off	Very high waves with overhanging crests develop
64-72	Significant structural damages common	Exceptionally high waves develop, and water covered with white foam
>72	Violent action and massive destruction occur	Air filled with foam, water is white, and visibility is very poor

How to estimate the time (minutes) it will take until an approaching storm will arrive

Wind speed	Distance from storm (miles)							
	5	10	15	20	25	30	35	40
10	30	60	90	120	150	180	210	240
20	15	30	45	60	75	90	105	120
30	10	20	30	40	50	60	70	80
40	7.5	15	23	30	38	45	53	60
50	6	12	18	24	30	36	42	48

If the distance from the storm and the wind speeds are known, the number of minutes until the storm can be determined by finding the number where the columns (distance) and rows (wind speed) intersect.



Wind hazards in the United States. (From Federal Emergency Management Agency: *Multi-hazard identification and risk assessment: a cornerstone of the national mitigation strategy*, Washington, DC, 1997, FEMA.)