

Table 4.5. National Weather Service visual estimates of winds, waves, and sea conditions

Beaufort force	Estimated wind speed (knots)	Wind	Effects observed on land	Estimated wave height (meters)	Sea state	Effects observed on the water
0	0–1	Calm	Calm; smoke rises vertically	0	Ripples	Smooth and mirror-like
1	1–3	Light air	Direction of wind is difficult to tell from wind waves, but can be shown by smoke drift	0.1	Ripples	Scale-like ripples without foam crests
2	4–6	Light breeze	Wind felt on face; leaves rustle	0.2–0.3	Ripples and chop	Small, short wavelets; crests have a glassy appearance and do not break
3	7–10	Gentle breeze	Leaves and small twigs in constant motion; wind will extend a small flag	0.6–1	Ripples and chop	Large wavelets; some crests begin to break; foam has glassy appearance; occasional white foam crests
4	11–16	Moderate breeze	Wind raises dust, loose paper and small branches	1–1.5	Chop	Small waves becoming larger; fairly frequent white foam crests
5	17–21	Fresh breeze	Small trees begin to sway	2–2.5	Chop	Moderate waves take a more pronounced long form; many white foam crests; there may be some spray
6	22–27	Strong breeze	Large branches of trees in motion; umbrellas difficult to use	3–4	Chop	Large waves begin to form; white foam crests are more extensive everywhere; there may be some spray

Table 4.5 (cont). National Weather Service visual estimates of winds, waves, and sea conditions

Beaufort force	Estimated wind speed (knots)	Wind	Effects observed on land	Estimated wave height (meters)	Sea state	Effects observed on the water
7	28–33	Near gale	Whole trees in motion; difficult to walk against wind	4–5.5	Chop	Sea heaps up; white foam from breaking waves begins to be blown in streaks along the direction of the wind
8	34–40	Gale	Breaks branches off of trees	5.5–7.5	Storm waves	Moderately high waves of greater length; edges of crests break into spindrift; foam is blown in well-marked streaks along the direction of the wind.
9	41–47	Strong gale	Slight structural damage can occur	7–10	Storm waves	High waves; dense streaks of foam along the direction of the wind; crests of waves begin to topple, tumble, and roll over; spray may reduce visibility.
10	48–55	Storm	Trees uprooted; considerable structural damage	9–12.5	Storm waves	Very high waves with long overhanging crests; resulting foam in great patches is blown in dense white streaks along the direction of the wind; the surface of the sea is white in appearance; the tumbling of the sea becomes heavy; visibility affected
11	56–63	Violent storm	Wide-spread damage	11.5–16	Storm waves	Exceptionally high waves make it hard to see small and medium sized ships that might be lost to view behind waves; the sea is completely covered with long white patches of foam lying along the direction of the wind; everywhere the edges of the wave crests are blown into froth; visibility reduced
12	64–71	Hurricane	Extreme weather conditions and damage	>16	Storm waves	The air is filled with foam and spray; sea completely white with driving spray; visibility much reduced

<http://www.hpc.ncep.noaa.gov/html/beaufort.shtml>

<http://www.srh.noaa.gov/mfl/?n=beaufort>

Adapted from National Oceanic & Atmospheric Administration (NOAA) data, originally developed by Sir Francis Beaufort in 1805.