



Beaufort Wind Force Scale

An empirical scale for observing and classifying wind force at sea and used in marine forecasts

The Beaufort Scale depicts the force of the wind by a series of numbers – from 0 to 12 that relates to the observed effects of the wind force on the sea state.

In fact, the scale goes all the way up to 17 but the last five numbers only apply to tropical typhoons.

Irish hydrographer Captain Francis Beaufort first defined his own scale in 1805 to standardise observed wind forces. Prior to that date naval officers made regular weather observations, but there was no standard scale, so they could be very subjective – one man's "stiff breeze" might be another's "soft breeze".

The scale that carries Beaufort's in fact name had a long and complex evolution from the previous work of others (including Daniel Defoe the century before) to when Beaufort was a Hydrographer of the Navy in the 1830s when it was adopted officially and first used during the voyage of HMS *Beagle* under Captain Robert FitzRoy, later to set up the first Meteorological Office (Met Office).

We don't know who first devised a scale of wind force - but it would be surprising if medieval Arab seafarers didn't use one. By the late 15th century, they had classified in detail virtually every aspect of the weather that had any navigational significance.

Force	Wind	Knots	Wave height (m)	Description
0	Calm	<1	0	Flat
1	Light air	1–3	0–0.2	Ripples with appearance of scales are formed, without foam crests
2	Light breeze	4–6	0.2–0.5	Small wavelets still short but more pronounced; crests have a glassy appearance but do not break
3	Gentle breeze	7–10	0.5–	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses
4	Moderate breeze	11–16	1–2	Small waves becoming longer; fairly frequent white horses
5	Fresh breeze	17–21	2–3	Moderate waves taking a more pronounced long form; many white horses are formed; chance of some spray
6	Strong breeze	22–27	3–4	Large waves begin to form; the white foam crests are more extensive everywhere; probably some spray
7	Moderate gale (or near gale)	28–33	5–5.5	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind; spindrift begins to be seen
8	Fresh gale (or gale)	34–40	5.5–7.5	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	Strong gale	41–47	7–10	High waves; dense streaks of foam along the direction of the wind; sea begins to roll; spray affects visibility
10	Whole gale (or storm)	48–55	9–12.5	Very high waves with long overhanging crests; resulting foam in great patches is blown in dense white streaks along the direction of the wind; on the whole the surface of the sea takes on a white appearance; rolling of the sea becomes heavy; visibility affected
11	Storm (or violent storm)	56–63	11.5–16	Exceptionally high waves; small- and medium-sized ships might be for a long time lost to view behind the waves; sea is covered with long white patches of foam; everywhere the edges of the wave crests are blown into foam; visibility affected
12+	Hurricane	64 and above	14 +	The air is filled with foam and spray; sea is completely white with driving spray; visibility very seriously affected

Sea state



BEAUFORT FORCE 1
WIND SPEED: 1-3 KNOTS

BEAUFORT FORCE 2
WIND SPEED: 4-6 KNOTS

BEAUFORT FORCE 3
WIND SPEED: 7-10 KNOTS



BEAUFORT FORCE 4
WIND SPEED: 11-16 KNOTS

BEAUFORT FORCE 5
WIND SPEED: 17-21 KNOTS

BEAUFORT FORCE 6
WIND SPEED: 22-27 KNOTS



BEAUFORT FORCE 7
WIND SPEED: 28-33 KNOTS

BEAUFORT FORCE 8
WIND SPEED: 34-40 KNOTS

BEAUFORT FORCE 9
WIND SPEED: 41-47 KNOTS



BEAUFORT FORCE 10
WIND SPEED: 48-55 KNOTS

BEAUFORT FORCE 11
WIND SPEED: 56-63 KNOTS

BEAUFORT FORCE 12
WIND SPEED: 64 KNOTS

Alternative descriptions!

Force	Skipper's view	Crew's view
1	Drifting conditions	Boredom
2	Set large sail to catch wind.	Mild pleasure.
3	Large headsail and full mainsail	Pleasure
4	Reduce headsail and mainsail	Great pleasure
5	Reduce headsail and reef mainsail	Delight
6	Ditto	Delight tinged with anxiety
7	Reefed mainsail and small jib	Anxiety tinged with fear
8	Deep reefed mainsail	Fear tinged with terror
9	Set storm jib and trysail	Great terror
10	Survival conditions	Panic