Reference card material

Beaufort scale

The Beaufort wind scale measures wind speed according to the impact the wind has on the land and sea. Although the system was first developed in 1805 by Sir Francis Beaufort, it remains a widely used system to measure wind speed today. The table below describes what can be expected for each level of the scale.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Beauf. scale** | **Desc. term** | **Units in km/h** | **Units in knots** | **Description on Land** | **Description at Sea** |
| 0 | Calm | 0 | 0 | Smoke rises vertically | Sea like a mirror. |
| 1-3 | Light winds | 19 km/h or less | 10 knots or less | Wind felt on face; leaves rustle; ordinary vanes moved by wind. | Small wavelets, ripples formed but do not break: A glassy appearance maintained. |
| 4 | Moderate winds | 20 - 29 km/h | 11-16 knots | Raises dust and loose paper; small branches are moved. | Small waves - becoming longer; fairly frequent white horses. |
| 5 | Fresh winds | 30 - 39 km/h | 17-21 knots | Small trees in leaf begin to sway; crested wavelets form on inland waters | Moderate waves, taking a more pronounced long form; many white horses are formed - a chance of some spray |
| 6 | Strong winds | 40 - 50 km/h | 22-27 knots | Large branches in motion; whistling heard in telephone wires; umbrellas used with difficulty. | Large waves begin to form; the white foam crests are more extensive with probably some spray |
| 7 | Near gale | 51 - 62 km/h | 28-33 knots | Whole trees in motion; inconvenience felt when walking against wind. | Sea heaps up and white foam from breaking waves begins to be blown in streaks along direction of wind. |
| 8 | Gale | 63 - 75 km/h | 34-40 knots | Twigs break off trees; progress generally impeded. | Moderately high waves of greater length; edges of crests begin to break into spindrift; foam is blown in well-marked streaks along the direction of the wind. |
| 9 | Strong gale | 76 - 87 km/h | 41-47 knots | Slight structural damage occurs -roofing dislodged; larger branches break off. | High waves; dense streaks of foam; crests of waves begin to topple, tumble and roll over; spray may affect visibility. |
| 10 | Storm | 88 - 102 km/h | 48-55 knots | Seldom experienced inland; trees uprooted; considerable structural damage. | Very high waves with long overhanging crests; the resulting foam in great patches is blown in dense white streaks; the surface of the sea takes on a white appearance; the tumbling of the sea becomes heavy with visibility affected. |
| 11 | Violent storm | 103 -117 km/h | 56-63 knots | Very rarely experienced - widespread damage | Exceptionally high waves; small and medium sized ships occasionally lost from view behind waves; the sea is completely covered with long white patches of foam; the edges of wave crests are blown into froth. |
| 12+ | Hurricane | 118 km/h or more | 64 knots or more | Very rarely experienced - widespread damage | The air is filled with foam and spray. Sea completely white with driving spray; visibility very seriously affected |

Wave and swell scales

# Waves

|  |  |  |  |
| --- | --- | --- | --- |
| **Description** | **Height (metres)** | **Effect** | **WMO Sea State code** |
| Calm (glassy) | 0 | No waves breaking on beach | 0 |
| Calm (rippled) | 0 - 0.1 | No waves breaking on beach | 1 |
| Smooth | 0.1 - 0.5 | Slight waves breaking on beach | 2 |
| Slight | 0.5 - 1.25 | Waves rock buoys and small craft | 3 |
| Moderate | 1.25 - 2.5 | Sea becoming furrowed | 4 |
| Rough | 2.5 - 4 | Sea deeply furrowed | 5 |
| Very rough | 4-6 | Sea much disturbed with rollers having steep fronts | 6 |
| High | 6-9 | Sea much disturbed with rollers having steep fronts (damage to foreshore) | 7 |
| Very high | 9-14 | Towering seas | 8 |
| Phenomenal | over 14 | Precipitous seas (experienced only in cyclones) | 9 |

# Swell

|  |  |  |  |
| --- | --- | --- | --- |
| **Description** | **Wave Length (metres)** | **Period** | **Wave Height (metres)** |
| Low swell of short or average length | 0 - 200 | Less than 11 sec | 0-2 |
| Long, low swell | over 200 | Greater than 11 sec | 0-2 |
| Short swell of moderate height | 0-100 | Less than 8 sec | 2-4 |
| Average swell of moderate height | 100-200 | Greater than 8 sec, < 11 sec | 2-4 |
| Long swell of moderate height | over 200 | Greater than 11 sec | 2-4 |
| Short heavy swell | 0-100 | Less than 8 sec | over 4 |
| Average length heavy swell | 100-200 | Greater than 8 sec, < 11 sec | over 4 |
| Long heavy swell | over 200 | Greater than 11 sec | over 4 |

Visibility scale

|  |  |
| --- | --- |
| **Description** | **Distance of visibility** |
| Very poor | Less than 0.5 nautical miles |
| Poor | 0.5 to less than 2 nautical miles |
| Moderate | 2 to 5 nautical miles |
| Good | Greater than 5 nautical miles |

Info about WWMIWS

The Worldwide Met-Ocean Information and Warning Service (WWMIWS) provides Maritime Safety Information (MSI) to mariners in the form of marine forecast and warning products. The WWMIWS is coordinated across the worlds’ oceans through 21 defined areas, called METAREAs. Ships receive the MSI products via SafetyNET and NAVTEX communication systems, which form part of the [Global Maritime Distress and Safety System (GMDSS)](http://weather.gmdss.org/gmdss.html). See: <http://weather.gmdss.org/index.html>.

METAREA map

