

What weather forecasts really mean

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Meteorologists preparing weather forecasts and warnings compress a lot of information into brief messages, summarising information using standardised, consistent terminology.

The following definitions of some common forecasting terms will help you extract the maximum information from forecasts.

Forecasting terms

Fine: No rain or other precipitation (hail, snow, etc). The use of fine is generally avoided in excessively cloudy, windy, foggy or dusty conditions.

Note that fine means the absence of rain or other precipitation such as hail or snow – not 'good' or 'pleasant' weather.

Dry: Free from rain. Normally used when preceding weather has also been relatively dry, and dry weather is expected to continue for at least a day or so.

Cloud cover terms

Clear: Free from cloud, fog, mist or dust haze.

Sunny: Little chance of the sun being obscured by cloud. (Note: High level cirrus clouds are often thin and wispy, allowing a considerable amount of sunlight to penetrate them, sufficient to produce shadows. In this case the day could be termed 'sunny' even though more than half the sky may be covered in cirrus cloud.)

Cloudy: Predominantly more cloud than clear sky. For example, during the day the sun would be obscured by cloud for substantial periods of time.

Overcast: Sky completely covered with cloud.

Forecasts of cloud cover normally *give an average*, if no significant variations are expected. A clear day, for example, may at some times see a few cloud patches.

Forecasters expecting significant variations in cloud amount may use such terms as sunny periods, sunny breaks, cloudy periods, cloudy at times, mostly/mainly sunny, mostly/mainly cloudy. If expecting a major change in cloud cover, they usually indicate a distinct trend, e.g. becoming sunny or cloud increasing.

Description of phenomena

Fog: Suspension of very small water droplets in the air, reducing visibility at ground level to less than a kilometre.

Smog: (contraction for 'smoke fog') is a fog in which smoke or other forms of atmospheric pollutant have an important part in causing the fog to thicken, and have unpleasant and dangerous physiological effects.

Mist: Similar to fog, but visibility remains more than a kilometre.

Frost: Deposit of soft white ice crystals or frozen dew drops on objects near the ground; formed when surface temperature falls below freezing point.

Precipitation: *Any or all* of the forms of water particles, whether liquid (e.g. rain, drizzle) or solid (e.g. hail, snow), that fall from a cloud or group of clouds and reach the ground. (See Drizzle, Rain)

Drizzle: Fairly uniform precipitation composed exclusively of very small water droplets (less than 0.5 mm in diameter) very close to one another.

Rain: Precipitation of liquid water drops *greater than 0.5 mm in diameter*. In contrast to showers, it is steadier and normally falls from stratiform (layer) cloud.

Showers: Usually begin and end suddenly. Relatively short-lived, but may last half an hour. Often, but not always, separated by blue sky.

Thunderstorms: Thunderstorms are one or more convective clouds in which electrical discharge can be seen as lightning and heard as thunder by a person on the earth's surface. A severe thunderstorm produces one or more of:



- hail at the ground with diameter of 2 cm or more;
- wind gusts at the ground of 90 km/h or more;
- tornadoes; or
- very heavy rain likely to cause flash flooding.

Tornado: A tall, rapidly rotating column of air between 5 and 1000 metres in diameter which is attached to the base of a cumulonimbus or large cumulus cloud and which is capable of producing damage at the earth's surface.

Precipitation duration

Brief: Short duration.

Intermittent: Precipitation which ceases at times.

Occasional: Precipitation which while not frequent, is recurrent.

Frequent: Showers occurring regularly and often.

Continuous: Precipitation which does not cease, or ceases only briefly.

Periods of Rain: Rain is expected to fall most of the time, but there will be breaks.

Precipitation intensity

Slight or light:

- Rain: Individual drops easily identified, puddles form slowly, small streams may flow in gutters.
- Drizzle: Can be felt on the face but is not visible. Produces little run off from roads or roofs. Generally visibility is reduced, but not less than 1000 m.
- Snow: Small sparse flakes. Visibility generally reduced but not less than 1000 m.
- Hail: Sparse hailstones of small size, often mixed with rain.

Moderate:

- Rain: Rapidly forming puddles, down pipes flowing freely, some spray visible over hard surfaces.
- Drizzle: Window and road surfaces streaming with moisture. Visibility generally between 400 and 1000 m.
- Snow: Large numerous flakes and visibility generally between 400-1000 m.
- Hail: Particles numerous enough to whiten the ground.

Heavy:

- Rain: Falls in sheets, misty spray over hard surfaces, may cause roaring noise on roof.
- Drizzle: Visibility reduced to less than 400 m.

- Snow: Numerous flakes of all sizes. Visibility generally reduced below 400 m.
- Hail: A proportion of the hailstones exceed 6 mm diameter.

Distribution of showers (or other weather phenomena)

Few: Indicating timing, not an area.

Isolated: Showers which are well separated in space during a given period.

Local: Restricted to relatively small areas.

Patchy: Occurring irregularly over an area.

Scattered: Irregularly distributed over an area. Showers which, while not widespread, can occur anywhere in an area. Implies a slightly greater incidence than isolated.

Sporadic: Scattered or dispersed in respect of locality or local distribution. Characterised by occasional or isolated occurrence.

Widespread: Occurring extensively throughout an area.

A word on probabilities

Probabilities are a way of expressing the chance of something happening. A 20% probability of rain for a district forecast means that for every five times when atmospheric conditions are the same as they are now, there will be rain somewhere in that district in the forecast period only once. The other four times there will be no rain anywhere in the district at all.

It does **not** mean that 20% of the district will get rain and it does **not** include any implication about how much rain there could be. If it does happen, it may be only 0.2mm or it could be over 200mm but 4 out of 5 times there will be none anywhere.

Similarly a 40% chance means only 2 times in 5 will anyone get rain, a 60% chance means 3 in 5, still being 2 in 5 that there will be no rain at all, anywhere in the district. A 60% chance of rain does not imply that any rain that does happen will be heavier than that coming out of a 20% chance forecast.

Wind terms

The wind is a continuous succession of gusts and lulls associated with equally rapid changes of direction over a range which may exceed 30°. The mean wind speed over a period of time is therefore the mean of many gusts and lulls. Usually *only the mean* wind is forecast, unless the gusts are expected to be a significant feature. eg, Fresh, gusty southwest winds indicates that the mean

wind speed will be between 17 and 21 knots and the mean wind direction will be from the southwest, but that there will also be gusts to speeds significantly higher than the mean and from varying directions.

Gust: A gust is any sudden increase of wind of short duration, usually a few seconds.

Squall: A squall comprises a rather sudden increase of the mean wind speed which lasts for several minutes at least before the mean wind returns to near its previous value. A squall may include many gusts.

Table 1. Common wind descriptions.

Wind descriptions	Units in km/h	Units in knots
Calm	0 km/h	0 knots
Light winds	1 - 19 km/h	1-10 knots
Moderate	20 - 29 km/h	11-16 knots
Fresh	30 - 39 km/h	17-21 knots
Strong winds	40 - 50 km/h	22-27 knots
Very strong	51 - 62 km/h	28-33 knot
Gale	63 - 75 km/h	34-40 knots
Strong gale	64 - 87 km/h	41-47 knots
Storm	88 - 102 km/h	48-55 knots Seldom experienced inland

The above was edited from "Weather Words" by the Bureau of Meteorology.

Looking at shaded maps

Shaded maps (as often seen on TV weather reports and some Weather by Fax output) are a visual way of showing the probabilities and the areas with those probabilities at the same time. They are **not** a forecast of a certainty of rain in those areas, with the shading showing the likely amounts but are a probability forecast for getting any rain at all, as described above.

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