

# Mountain weather hazards

Every year people go and enjoy the wonders of the mountain scenery but for some the experience isn't so pleasant as they venture onto the mountain unaware of the weather they may meet. Every year, even in the UK people die on mountains as a consequence of the weather.



Some underestimate the mountain weather; some are unaware of the mountain weather and some leave decisions on the weather too late when on the mountainside.

## Clouds on the mountains

Mountain tops are often hidden by clouds, which can result in people getting lost. But why does this happen? Clouds are formed by the condensation of water vapour in rising air. Air is very moist (holds lots of water) when it is near the sea or when there is persistent rain. In the UK the cloud base (i.e. the bottom of the clouds) is often below 1000m, so low in fact that much of the time the clouds cover the mountain tops. Cloud cover on the mountains is particularly common in the west of the UK where the moist air blows in across the Atlantic. Clouds can be *supercooled* i.e. water remains as a liquid even when the temperature is below freezing (0°C)! these droplets of water freeze when they hit solid objects such as fences and even people. The soft ice can build up into a thick layer, known as *rime* which can cause as much difficulty for walkers as lying snow.



The rain and snow which falls over mountains tends to come from nimbostratus clouds, and occasionally cumulonimbus clouds, tend to be heavier and longer lasting than over nearby low lying areas. This is because the air is forced to rise over the mountains, causing the air to cool as it rises condensing the water from a gas to liquid; forming more clouds. However strong winds at the mountain top can blow the heavier rain over the mountain top, so the heaviest rain will not necessarily be at the highest point.

Waterproof clothing and footwear on mountains is essential as there can be heavy rain, driving winds and mountain streams can become deep quickly. Deep depressions coming in from across the West coast of the UK can bring heavy rain and strong winds to the UK. Snow combined with wind can be life-threatening on a mountain top.

**Wind chill on the mountains**

The higher up the mountain we climb, the colder and windier it usually gets so that the wind chill factor increases. Warm clothing on the top of mountains is definitely needed. On the Munros (the Scottish mountains with tops above 3000m) it can be 10°C cooler at the top of the mountain in comparison to the valley bottom below. In fact air can cool by 6°C in every 1000m and sometimes as much as 10°C. But why does the air get cooler and windier? It is windy high up in the atmosphere as the effect of gravity is reduced and cooler because air temperatures decrease as you get closer to the poles. Therefore gale force winds are stronger and more common at the top of mountains than at sea level. Winds also get faster around mountains as they do around tall buildings in our towns and cities. Over the Himalayas winds of 150km/hr (approximately 42 metres per second) are not uncommon!

**What is a whiteout?**

Snow combined with poor visibility in cloud also causes problems because shadows disappear. Navigation becomes almost impossible and can lead to blundering into dangerous places ' even over the edges of cliffs. This is known as a 'whiteout'. If there is already much lying snow and a risk of the cloud base descending onto the hills, many climbers often consider it wise to abandon the trip.

