

What are the complexities of forecasting snow?

Public forecasts show how much snow is forecast to fall, but gritters need to know how much snow will settle (accumulate). During winter the Met Office produces site specific forecasts for how much snow will fall and daily snow accumulation maps for the winter maintenance, gritting and snow clearance industry. Forecasting how much snow will settle in a particular location can be tricky. Below are some common factors that influence how much snow will settle.

1
Freezing level: The freezing level is where the temperature of the air is below 0 °C. As snow falls through the air, if the snow falls through warmer air below the freezing level the snow will melt and turn into sleet or rain. For snow forecasts, it is key to understand where the freezing level is.



Other common factors that influence how much snow will settle:



2
Altitude: In general, higher sites tend to be colder than sites at lower altitudes. Snow is more likely to settle at higher altitude sites as they are more likely to be above the freezing level.



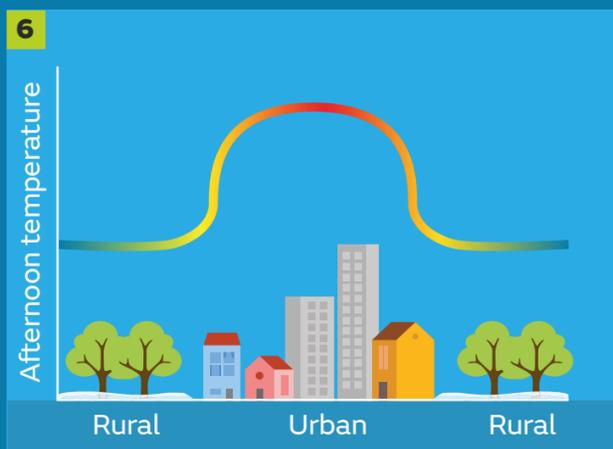
3
Distance From Coast: Inland sites are more prone to snow than coastal sites. In winter the temperature of the land is cooler than the sea. This means at inland sites, the freezing level is likely to be close to the surface. This makes it easier for snow to settle inland.



4
Snowfall Intensity: Any snow that melts as it falls through the air cools the surrounding air. This gradually brings the freezing level closer to the surface. Therefore, intense snowfall cools the surrounding air and makes it more likely for snow to reach the surface.



5
Valleys: Valleys become cooler at night as cold air sinks into the valley from the hills. This is why you can often see snow melting on the hills but staying longer in the valleys. Any further snowfall could easily settle in valleys and be deeper than at hilltops.



6
Urban Heat Island Effect: Any snow falling over the city centre will fall through warmer air for longer than in rural areas. Therefore snow is less likely in urban areas compared to rural areas.



7
Sub-Zero Layers: This is a layer of air close to the surface that is below freezing. Any melting snow can re-freeze, making freezing precipitation at the surface more likely.

Additional local factors such as **shadows**, **tree cover** and **surface type** (e.g. grass or tarmac) also influence how much snow will settle.

To find out more about our site specific forecasts for the winter maintenance, gritting and snow clearance industry contact transport@metoffice.gov.uk or visit www.metoffice.co.uk/gritting.