

Hoar frosts



Digging deeper...

Some frosty facts...

Frost forms from water in the air that deposits as ice on cold surfaces. Optimal frost forming conditions require moist air and little or no air movement.

Cold air is denser than warm air so, in calm weather, it pools at ground level. This is called surface temperature inversion. In prolonged calm spells during the winter the layer of cold air sitting on the ground can get very thick.



Stat attack

Ophi in Central Otago gets the award for the coldest place in New Zealand (during the winter anyway!) It holds the record for the lowest temperature ever recorded in New Zealand of -21.6°C on 3 July 1995.

A cold, crisp, clear winter's day followed by a cold, crisp, clear winter's night. And another. And another. This means only one thing – a hoar frost!

In cold winters, the ground, trees and buildings become covered in thick hoar frosts, and you would be hard pressed to find a better place to take postcard-worthy snapshots. Many of the smaller bodies of water completely freeze over, giving locals and visitors the opportunity to try out some distinctly winter pursuits such as ice skating and curling.

So, why does Central get such severe frosts? Unlike much of New Zealand, Central Otago's weather has a more continental flavour. Protected by the mountains to the west, parts of Central Otago receive as little as 350mm of rain per year – as much as 20 times less than on the west side of the mountains. This protective effect provides very settled weather, resulting in a temperature inversion layer many metres above the ground. This allows frost to settle on fences, houses and trees. Repeated frosts lead to build ups of ice crystals – resulting in the visual spectacular of a hoar frost.

Aside from their obvious natural beauty, frosts can do a serious amount of damage. Frozen water pipes during heavy frosts can leave households without a water supply. Freezing also causes water to expand, leading to some water pipes bursting. The 2007 winter, which was a particularly cold one, provided plenty of work for Otago's plumbers. Many burst pipes cause water leaks and flooding once the ice thaws.



A build up of ice crystals through repeated frosts



A boardwalk and trees covered with a thick hoar frost

