

U3A Port Fairy
Science...naturally!

Clouds Part 1: Cirrus Clouds

Ross Knudsen, 22 May 2020



This presentation of clouds will be delivered in 3 parts. I shall begin with high-level clouds and descend through mid-level and complete it with low-level clouds over the course of time.

I have prepared this so you are able to look at, and recognise particular cloud types, whether they produce precipitation, and how they fit into the regular weather patterns that we see above us in Port Fairy.

Cirrus Clouds

Earth's highest clouds. Form above 20,000 feet (6,500m) in the troposphere

Composition

Ice crystals and snowflakes. It is too cold at those altitudes for water to remain in liquid form

Precipitation

Nil. You will not get wet from these clouds!

Formation

By 'deposition' which is a change from gas to solid without going through the liquid stage

Crystal Types

Needles, columns, and dendrites (snowflakes)

Visual effects

Variety of stunning shapes, a mackerel sky (small cumuloform layered clouds whose striations resemble the fish's distinctive stripes), halos around the sun and the moon, mare's tails

- The cirrus clouds we see from Port Fairy generally indicate that a change is developing and is usually about to arrive within 24 to 48 hours.
- A cold front could be between 600 to 1000 kilometres away.
- They are the first indicator of a change in the weather.
- From Port Fairy, they are seen approaching from the west or southwest and move very rapidly, blown along by strong upper-level winds.
- There may be cirrus clouds present when we are experiencing low cloud conditions. We just can't see them.

- ‘Mackerel sky’ formations can cover large areas of the sky and suggests there is a lot of moisture at the top of the troposphere. Seeing choppy waves in the formation indicate the winds at this level are strong, implying the approaching change in weather will be a strong one.



Cirrus fibratus clouds form this pleasant view from Port Fair.

Cirrus fibratus is simply seen as long filaments of icy fibres being stretched by upper-level southwesterly winds in this scene.



Cirrocumulus with iridescence. Cirrocumulus is defined by being composed of elements rather than a layer cloud. In this photo the parallel lines or undulations indicate cumuloform cloud. The iridescence is the result of sunlight being refracted through ice crystals. The correct term for this formation is Cirrocumulus undulates with iridescence.



Cirrus to the southwest of Port Fairy in mid-summer

There is no difference between seasons in the formations of, and variation of types of cirrus we see above Port Fairy.

We will see similar formations in Winter, Spring and Autumn.

Did you know?

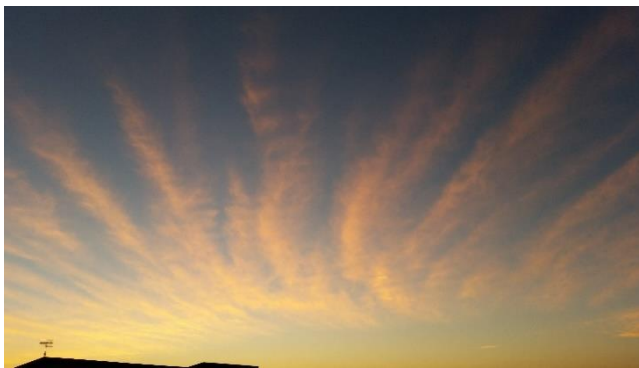
As cirrus form through ‘deposition’, they dissipate through what is called ‘sublimation’.

Sublimation is the process of changing from solid to gas without first melting to liquid form.



Cirrostratus with a halo and a contrail to add another effect. The contrail is higher than the cloud as a shadow is evident on the lower cirrus. A change in the weather is arriving in the next few hours as the cirrus in this photo is in a layer and becoming more dense.

The cirrostratus is the thin layer cloud through which the sunlight is refracting to create the halo. The contrail is the long, narrow cloud formed from a passing jet.



Cirrus clouds at the end of the day – late summer



Cirrus over Port Fairy during late February

Acknowledgements: The Bureau of Meteorology for the photo of Cirrus uncinus on page 4.

Jean Robinson for her photo of the Cirrus clouds at the top of page 4. (I even have my family and extended family sky watching for clouds).

Did you know?

Cirrus clouds are never very dense as there is a lack of ‘condensation nuclei’ in the upper atmosphere. The nuclei take the form of dust, smoke or salt particles suspended up high. The ice or snow then form around these nuclei and we have a cloud.



Cirrocumulus and cirrus fibratus heralding a change in weather.

The cirrocumulus is the blotchy cloud at the top of the photo. The Cirrus fibratus is the longer hair-like formation. Cirrus cloud completes the picture at the bottom.

Beautiful ice crystals at play in our atmosphere.

Cirrus clouds are very regular visitors to our skies in these latitudes of southern Australia. They are, like all clouds, a visible indicator to the presence of moisture in our atmosphere and their types tell us what is happening in the air above us.

Did you know?

What we sometimes recognise as ‘mare’s tails’ are officially known as Cirrus uncinus. They are often referred to as ‘fallstreaks’ due to their distinct form. These cirrus clouds terminate in a hook or a tuft and have the appearance of commas in the sky.

Cirrus uncinus, mare’s tails, fallstreaks, hooks, commas – Wow! All that for one cloud.

A spectacular photo of Cirrus uncinus below with so well-defined mare’s tails



Keep looking up, and over a period of time, you will begin to notice the regularity of these clouds and what they are indicating.

Part 2 – Middle level clouds will be the next chapter