Clouds

Week 2 Day 4

Read information on https://www.metoffice.gov.uk/weather/learn-about/weather/types-of-weather/clouds/cloud-names-classifications or see below for the texts

Useful online dictionaries: https://www.collinsdictionary.com and https://www.spellzone.com/dictionary/index.cfm

Questions on 'Cloud names and classification'

1. Who was Luke Howard?
2. Find and write down definitions for pharmacist and meteorologist.
3. What determines the classification of the different levels of clouds?
4. What does the term 'genera' refer to?
5. Name 2 cloud types that appear 8.000 ft over the British Isles. What is their cloud level?
6. Look at the 'Names for clouds' section. Using the prefixes and suffixes, write a description of the following two cloud types:
    a) an Altostratus cloud
    b) a Cumulonimbus cloud

Click on the link to Cirrus clouds

Questions on 'Cirrus clouds'

1. Which of the following words is **not** a type of precipitation?
    a. Rain snow vapour hail
2. Look at the paragraph 'What are cirrus clouds?'
    a. Find and copy one word meaning 'a smooth and gentle brightness on a surface'.
    b. What does the word 'detached' tell you about the clouds?
3. True or false?
    a. Cirrus clouds always appear white
    b. Aeroplanes' vapour trails can create clouds
    c. You are most likely to see cirrus fibrates
    d. Cirrus hoaxatus is one of the species of cirrus clouds
4. How do you know that cirrus fibratus is made up of more than one streak of cirrus?
5. If you spotted cirrus clouds above you, would you need an umbrella? Explain your answer.

Cloud names and classifications

The classification of clouds into types was first proposed by Luke Howard in 1802 and we largely use the same system today. This splits clouds into three main types - stratus, cumulus and cirrus.

Clouds are continually changing and appear in an infinite variety of forms. The classification of clouds is based on a book written by Luke Howard, a London pharmacist and amateur meteorologist, in 1803. His book, The Modifications of Clouds, named the various cloud structures he had studied. The terms he used were readily accepted by the meteorological community and are still used across the world today.

The World Meteorological Organization (WMO) has extended Luke Howard's classifications to make 10 main groups of clouds, called genera. These are divided into three levels - cloud low (CL), cloud medium (CM) and cloud high (CH) - according to the part of the atmosphere in which they are usually found.

Cloud level (ft)	Cloud type
High clouds (CH) Base usually 20,000 ft or above, over the British Isles	• Cirrus • Cirrocumulus • Cirrostratus
Medium clouds (CM) Base usually between 6,500 and 20,000 ft over the British Isles.	• Altocumulus • Altostratus • Nimbostratus
Low clouds (CL) Base usually below 6,500 ft over the British Isles.	• Stratocumulus • Stratus • Cumulus • Cumulonimbus

The many possible variations in the shape of clouds and differences in their internal structure have led to the subdivision of most of the cloud genera into species.

Names for clouds

Most of our names for clouds come from Latin and are usually a combination of the following prefixes and suffixes:

Stratus/strato = flat/layered and smooth

Cumulus/cumulo = heaped up/puffy, like cauliflower

Cirrus/cirro = high up/wispy

Alto = medium level

Nimbus/Nimbo = rain-bearing cloud

Where these names are combined, we can often build up an idea of that cloud's character. For example, if we combine nimbus and stratus we get 'nimbostratus' - a cloud which is flat and layered and has the potential for rain.

Cirrus clouds

All high clouds are a type of cirrus, a common cloud that can be seen at any time of the year.

Height of base: 20,000 - 40,000 ft
Shape: layered, tufty or patchy
Latin: cirrus - lock or tuft of hair
Precipitation: none

What are cirrus clouds?

Cirrus clouds are short, detached, hair-like clouds found at high altitudes. These delicate clouds are wispy, with a silky sheen, or look like tufts of hair. In the daytime, they are whiter than any other cloud in the sky. While the Sun is setting or rising, they may take on the colours of the sunset.

How do cirrus clouds form?

Cirrus clouds form from the ascent of dry air, making the small quantity of water vapour in the air undergo deposition into ice (to change from a gas directly into a solid). Cirrus is made up completely of ice crystals, which provides their white colour and form in a wide range of shapes and sizes.

Cirrus clouds can also form through contrails, the vapour trails left by planes as they fly through a dry upper troposphere. These streaks can spread out and become cirrus, cirrostratus and cirrocumulus.

What weather is associated with cirrus clouds?

They often form in advance of a warm front, where the air masses meet at high levels, indicating a change in the weather is on the way.

Technically these clouds produce precipitation but it never reaches the ground. Instead, it re-evaporates, creating virga clouds.

How do we categorise cirrus clouds?

Cirrus clouds have five defined 'species';

Cirrus fibratus - Thin and fibrous, cirrus fibratus are often aligned with the high altitude wind direction, making for white parallel stripes which streak across the sky. These are the most common type of cirrus cloud

Cirrus uncinus - With its trademark hook shape, cirrus uncinus is famous for looking like a horse's tail. These wispy streaks of cirrus cannot be seen without a characteristic 'flick' at the end of its tail

Cirrus spissatus - These clouds sit right at the top of the troposphere. A thick, dense cirrus layer that dominates much of the sky above, often formed by passing warm fronts or the remnants of a cumulonimbus incus

Cirrus floccus - Ragged cirrus patches which are much larger than cirrocumulus floccus. These have a more cotton wool-like appearance than the rest of the cirrus family

Cirrus castellanus - More vertically developed than cirrus floccus, cirrus castellanus have turret-like tops and are taller than they are wide.