

# GET YOUR HEAD IN THE CLOUDS

## HIGH-LEVEL CLOUDS

High-level clouds occur above 20,000 feet and are given the prefix "cirro." Because of cold temperatures at these levels, the clouds contain ice crystals and often appear thin, streaky and white. The three main types of high clouds are cirrus, cirrostratus and cirrocumulus.

Cirrus clouds are wispy, feathery and contain only ice crystals. They often are

the first sign of an approaching warm front or upper-level jet streak also known as a contrail.

Cirrostratus clouds form more of a widespread, veil-like layer. When sunlight or moonlight passes through the ice crystals of cirrostratus clouds, it's dispersed or refracted like light passing through a prism, forming a "ring" or "halo." As a

warm front approaches, cirrus clouds tend to thicken into cirrostratus clouds, which may thicken and lower into altostratus, stratus and even nimbostratus clouds.

Cirrocumulus clouds are layered clouds filled with some lumpiness. They also may line up in rows of clouds across the sky showing localized areas of ascent and descent. □

## MID-LEVEL CLOUDS

Mid-level clouds appear between 6,500 and 20,000 feet and are given the prefix "alto." Depending on the altitude, time of year and temperature structure at these heights, the clouds contain water droplets, ice crystals or both. The two main types of mid-level clouds are altostratus and altocumulus.

Altostratus clouds have a flat, uniform texture. They frequently indicate

the approach of a warm front and may thicken and lower into stratus, then nimbostratus clouds resulting in rain or snow. Altostratus clouds themselves don't produce much precipitation at the surface, although sprinkles or light showers may occur from a thick altostratus deck.

Altocumulus clouds display a heap-like appearance with up-and-down

motion. They may align in rows, with breaks in the clouds showing areas of ascending, moist air and clear zones between rows suggesting descending, drier air. Altocumulus clouds can predict instability, especially in the morning, which could become boundary-layer based and result in the vertical transfer of heat in the afternoon or evening. □

## LOW-LEVEL CLOUDS

Low-level clouds aren't given a prefix, although their names are derived from "strato" or "cumulo," depending on their characteristics. Low clouds occur below 6,500 feet, and normally contain water droplets except during cold winter storms when ice crystals (and snow) comprise much of the clouds.

The two main types of low clouds include stratus, which develop horizontally, and cumulus, which develop vertically. Stratus clouds are uniform and flat, producing a gray layer of cloud cover that may be precipitation-free or may cause periods of light rain or drizzle. Low stratus decks are common in winter,

especially behind a storm system when cold, dismal, gray weather can linger for several hours or even a day or two.

Think of stratocumulus clouds as a layer of cloud clumps with thick and thin areas. They appear frequently in the atmosphere, either ahead of or behind a frontal system. Thick, dense stratus or stratocumulus clouds producing steady rain or snow often are called nimbostratus clouds.

Cumulus clouds are more cellular (individual) in nature, have flat bottoms and rounded tops, and grow vertically. In fact, their name depends on the degree of vertical development. For instance, scat-

tered cumulus clouds showing little vertical growth on an otherwise sunny day used to be called "fair weather cumulus." A cumulus cloud that has a lot of vertical development (but is not yet a thunderstorm) is called a "towering cumulus."

If enough atmospheric instability, moisture and lift are present, then strong updrafts can develop in the cumulus cloud leading to a mature, deep cumulonimbus cloud, i.e., a thunderstorm producing heavy rain. In addition, electrification occurs within cumulonimbus clouds when charged water droplet and ice crystal particles collide, resulting in lightning and thunder. □

