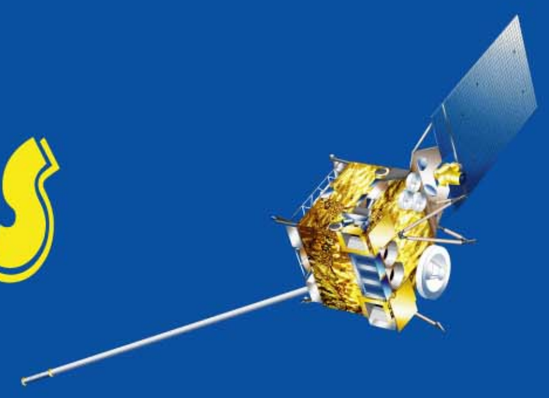
THE GOES POES
WILD WORLD OF CLOUDS



The GOES and POES Satellites

Satellites in orbit high above Earth provide images and other data about the atmosphere that enable weather forecasters and scientists who study long-term climate to do their jobs. The National Oceanic and Atmospheric Administration (NOAA) builds and launches (with NASA's help) and operates two different types of weather satellites. One is called a GOES (for Geostationary Operational Environmental Satellite). The other is called a POES (for Polar-orbiting Operational Environmental Satellite). The GOES and POES work together, each carrying a different set of instruments to collect different types of data and from different points of view.

Reading the Clouds

Clouds, which are collections of water droplets, are beautiful and fun to watch. If we learn to "read" them, we can know what is happening at different levels of the atmosphere and what kind of weather may be on the way. Clouds are classified by their shape or appearance and their height above the ground.

High clouds start above around 6,000 meters (20,000 feet). They often look thin and patchy or feathery. Their names start with "cirro," which means "curl of hair" in Latin:

- **Cirrus** clouds look like delicate strands or hooks. They are made mostly of ice crystals.
- **Cirrocumulus** are thin, patchy clouds that may have rippled or wavelike patterns.
- **Cirrostratus** are thin, sheet-like clouds that cover most of the sky.

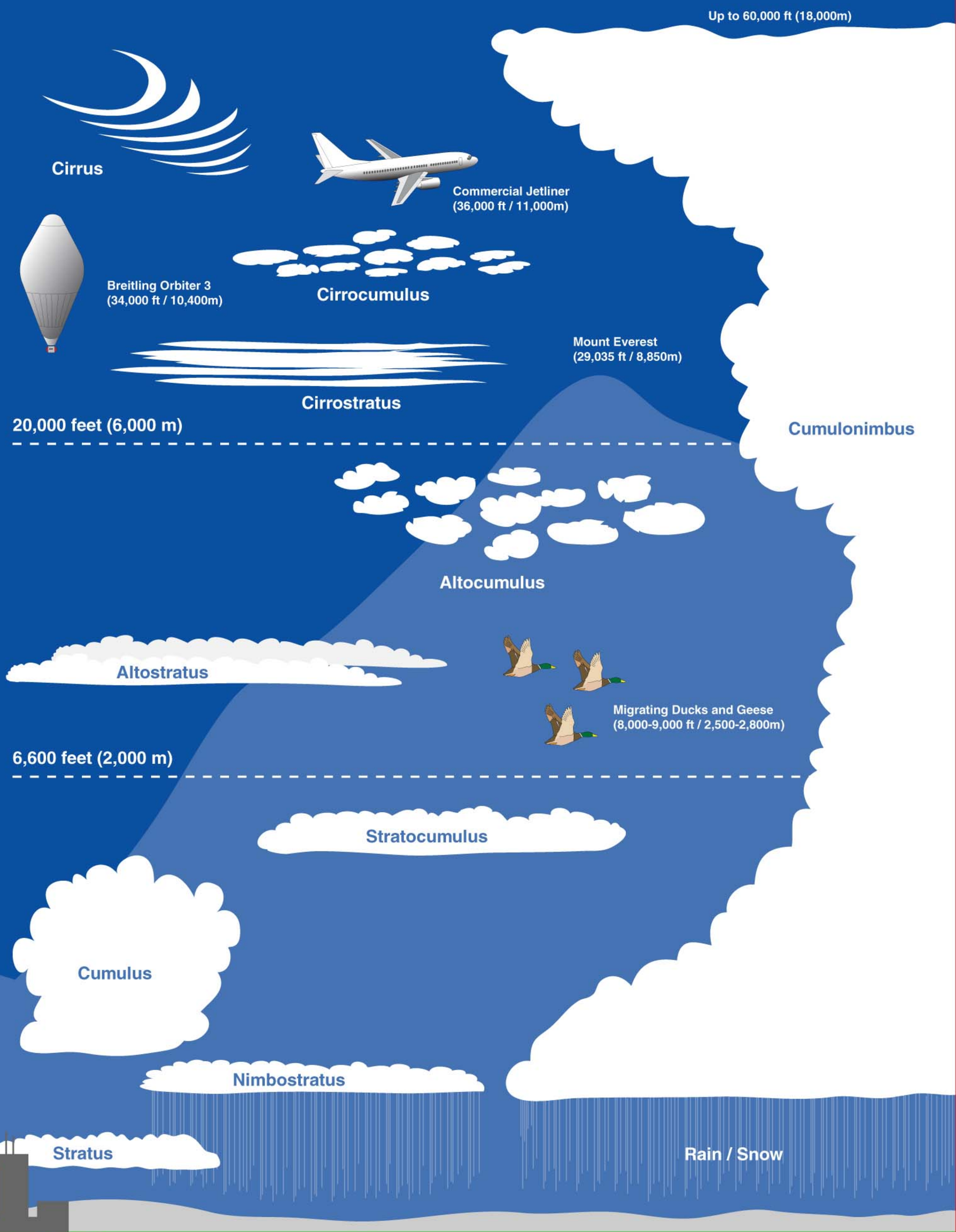
Mid-level clouds form from 2,000 meters (6,500 feet) to 6,000 meters (20,000 feet). They usually look rather flat and layered, because the air at these altitudes doesn't move very much vertically. Their names always start with "alto":

- **Altocumulus** are white or gray puffy, patchy clouds with spaces between them. They may appear to be lined up in rows.
- **Altostratus** form a gray or bluish-gray uniform-looking layer that covers much or most of the sky.

Low-level clouds are found below about 2,000 meters (6,500 feet). They are either flat and layered or rounded on top, with flat bases:

- **Stratocumulus** have distinct gray or whitish rounded patches. They may look rolling or puffy, but are often merged together into layers with no spaces between them.
- **Cumulus** clouds are fluffy and cauliflower-like, with rounded white tops and flat grayish bases.
- **Stratus** form a flat, thin, uniform cloud layer. They usually contain insufficient water to produce significant rain or snow. Stratus clouds that reach down to the ground we call fog.
- **Nimbostratus** are dark, gray clouds that are dropping rain or snow. They usually cover the entire sky. Sometimes nimbostratus are found higher in the atmosphere, in the mid-altitudes.

Cumulonimbus clouds are the kings of all clouds, rising from low altitudes to more than 20,000 meters (60,000 feet) above ground level. They grow due to rising air currents called updrafts, with their tops flattening out into an anvil shape. Cumulonimbus are a sure sign of severe weather, with heavy rain and possibly hail.



National Aeronautics and Space Administration

http://goespoes.gsfc.nasa.gov