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 20,000 feet (6,000 meters). 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 6,500 feet (2,000 meters) to 20,000 feet (6,000 meters). 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 6,500 feet (2,000 meters). 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 flat layers with no spaces between them.
- **Cumulus** clouds are fluffy and cauliflower-like, with rounded white tops and flat grayish bases. They form a flat, thin, uniform cloud layer. They usually contain insufficient water to produce significant rainfall. When they grow too large, they may form a thundercloud called a cumulonimbus, with their tops flattening out into an anvil shape. Cumulonimbus are a sure sign of severe weather, with heavy rain and possibly hail.
- **Stratus** form a flat, thin, uniform cloud layer. They usually contain insufficient water to produce significant rainfall. When they grow too large, they may form a thundercloud called a cumulonimbus, with their tops flattening out into an anvil shape. Cumulonimbus are a sure sign of severe weather, with heavy rain and possibly hail.

Reading the Clouds
CloudSat, a NASA Earth-observing satellite, uses radar to see inside the clouds from top to bottom. CloudSat measures their thickness, their altitude set up and set bottom, their reflective properties, and their water and ice content. Data from CloudSat is used to improve our ability to accurately forecast the weather and improve long-term global climate predictions.

GOES-R is a new satellite, the first one planned for launch in 2016. Geostationary Operational Environmental Satellites (GOES) orbit 22,300 miles (35,888 kilometers) above Earth’s equator. They orbit once per day as Earth rotates. Thus the GOES lock down upon the same part of Earth all the time. One GOES primarily watches the east coast of the U.S., and one GOES watches the west coast. They observe weather developments, including ocean temperatures, and help forecasters warn people of developing disasters, such as hurricanes. The new GOES-R will replace the current GOES. GOES-R will be able to do everything the GOES can, and more. GOES-R will gather more detailed, accurate images and other data faster than ever. It will be able to map where lightning strikes are occurring, even in the daytime.

Studying Clouds from Space
Satellites in orbit above Earth provide images and other information about the atmosphere and forecast weather conditions to do their jobs.

CloudSat, a NASA Earth-observing satellite, uses radar to see inside the clouds from top to bottom. CloudSat measures their thickness, their altitude set up and set bottom, their reflective properties, and their water and ice content. Data from CloudSat is used to improve our ability to accurately forecast the weather and improve long-term global climate predictions.

GOES-R is a new satellite, the first one planned for launch in 2016. Geostationary Operational Environmental Satellites (GOES) orbit 22,300 miles (35,888 kilometers) above Earth’s equator. They orbit once per day as Earth rotates. Thus the GOES lock down upon the same part of Earth all the time. One GOES primarily watches the east coast of the U.S., and one GOES watches the west coast. They observe weather developments, including ocean temperatures, and help forecasters warn people of developing disasters, such as hurricanes. The new GOES-R will replace the current GOES. GOES-R will be able to do everything the GOES can, and more. GOES-R will gather more detailed, accurate images and other data faster than ever. It will be able to map where lightning strikes are occurring, even in the daytime.

Satellites in orbit above Earth provide images and other information about the atmosphere and forecast weather conditions to do their jobs.

CloudSat, a NASA Earth-observing satellite, uses radar to see inside the clouds from top to bottom. CloudSat measures their thickness, their altitude set up and set bottom, their reflective properties, and their water and ice content. Data from CloudSat is used to improve our ability to accurately forecast the weather and improve long-term global climate predictions.

GOES-R is a new satellite, the first one planned for launch in 2016. Geostationary Operational Environmental Satellites (GOES) orbit 22,300 miles (35,888 kilometers) above Earth’s equator. They orbit once per day as Earth rotates. Thus the GOES lock down upon the same part of Earth all the time. One GOES primarily watches the east coast of the U.S., and one GOES watches the west coast. They observe weather developments, including ocean temperatures, and help forecasters warn people of developing disasters, such as hurricanes. The new GOES-R will replace the current GOES. GOES-R will be able to do everything the GOES can, and more. GOES-R will gather more detailed, accurate images and other data faster than ever. It will be able to map where lightning strikes are occurring, even in the daytime.

Studying Clouds from Space
Satellites in orbit above Earth provide images and other information about the atmosphere and forecast weather conditions to do their jobs.

CloudSat, a NASA Earth-observing satellite, uses radar to see inside the clouds from top to bottom. CloudSat measures their thickness, their altitude set up and set bottom, their reflective properties, and their water and ice content. Data from CloudSat is used to improve our ability to accurately forecast the weather and improve long-term global climate predictions.

GOES-R is a new satellite, the first one planned for launch in 2016. Geostationary Operational Environmental Satellites (GOES) orbit 22,300 miles (35,888 kilometers) above Earth’s equator. They orbit once per day as Earth rotates. Thus the GOES lock down upon the same part of Earth all the time. One GOES primarily watches the east coast of the U.S., and one GOES watches the west coast. They observe weather developments, including ocean temperatures, and help forecasters warn people of developing disasters, such as hurricanes. The new GOES-R will replace the current GOES. GOES-R will be able to do everything the GOES can, and more. GOES-R will gather more detailed, accurate images and other data faster than ever. It will be able to map where lightning strikes are occurring, even in the daytime.

Studying Clouds from Space
Satellites in orbit above Earth provide images and other information about the atmosphere and forecast weather conditions to do their jobs.

CloudSat, a NASA Earth-observing satellite, uses radar to see inside the clouds from top to bottom. CloudSat measures their thickness, their altitude set up and set bottom, their reflective properties, and their water and ice content. Data from CloudSat is used to improve our ability to accurately forecast the weather and improve long-term global climate predictions.

GOES-R is a new satellite, the first one planned for launch in 2016. Geostationary Operational Environmental Satellites (GOES) orbit 22,300 miles (35,888 kilometers) above Earth’s equator. They orbit once per day as Earth rotates. Thus the GOES lock down upon the same part of Earth all the time. One GOES primarily watches the east coast of the U.S., and one GOES watches the west coast. They observe weather developments, including ocean temperatures, and help forecasters warn people of developing disasters, such as hurricanes. The new GOES-R will replace the current GOES. GOES-R will be able to do everything the GOES can, and more. GOES-R will gather more detailed, accurate images and other data faster than ever. It will be able to map where lightning strikes are occurring, even in the daytime.