Atmospheric Science

Cloud Types in Art

Grade Level: 3-6

Classroom Time: 45 minutes

Materials:
- Cloud Types
- Clouds in Art
- Cloud Type Photographs
- Introduction to Clouds (NASA)

Objectives:
1. Given instruction and reading materials, students will name and describe the four major types of clouds.
2. Given instruction and pictures, students will identify clouds in art by type of cloud.

Teacher’s introduction to the material:
The Introduction to Clouds and Sky Watcher’s Chart gives students illustrations of types of clouds. The NASA Cloud Type Photographs powerpoint will help students become familiar with the four types of clouds.

Instruction:
1. Read Cloud Types.
2. Direct the students’ attention to the information on the poster, asking questions and discussing the types of clouds students identify.
3. If possible, go outside and identify the type of clouds in the sky.
4. Look at art with clouds and identify the type of cloud in the picture.

Skills: Art Appreciation, Physical Science, Reading comprehension.

Vocabulary: Alto, Cirrus, Condensation, Convective, Cumulus, Hydrologic cycle, Nimbus, Stratus, Transpiration.
Cloud Types

The process of **condensation** results in the formation of clouds. Clouds can happen at any height above the ground. Sometimes clouds are actually touching the ground - we call that fog. If you go up to the top of a mountain or in an airplane, you will be above most of the clouds. After it rains, the clouds disappear, because the water they were made of has all come back down to Earth again. Clouds are classified into four groups with names derived from Latin base words. They are:

<table>
<thead>
<tr>
<th>Latin Root</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>cumulus</td>
<td>heap</td>
</tr>
<tr>
<td>stratus</td>
<td>layer</td>
</tr>
<tr>
<td>cirrus</td>
<td>curl of hair</td>
</tr>
<tr>
<td>nimbus</td>
<td>rain</td>
</tr>
</tbody>
</table>

Further classification identifies clouds by height of cloud base. For example, cloud names containing the prefix "cirr-", as in **cirrus** clouds, are located at high levels while cloud names with the prefix "**alto-**", as in alteostatus, are found at middle levels. High-level clouds form above 20,000 feet and since the temperatures are so cold at such high elevations, these clouds are primarily composed of ice crystals. High-level clouds are typically thin and white in appearance, but can appear in a magnificent array of colors when the sun is low on the horizon. The most common form of high-level clouds are thin and often wispy cirrus clouds. The bases of mid-level clouds typically appear between 6,500 to 20,000 feet. Because of their lower altitudes, they are composed primarily of water droplets except when the temperature is very low. Low clouds are of mostly composed of water droplets since their bases generally lie below 6,500 feet.
Probably the most familiar of the classified clouds is the **cumulus** cloud. Cumulus clouds are puffy clouds that sometimes look like pieces of floating cotton. Generated most commonly through either thermal **convection** or frontal lifting, these clouds can grow to heights in excess of 39,000 feet, releasing incredible amounts of energy through the **condensation** of water vapor within the cloud itself.

**Stratus clouds** are uniform grayish clouds that often cover the entire sky. They resemble fog that does not reach the ground. Nimbostratus clouds form a dark gray, "wet" looking cloudy layer associated with continuously falling rain or snow. **Nimbus** clouds often mean that a thunder storm is brewing. Nimbus really just means a cloud that already has rain or snow falling out of it. So you often see the names of clouds combined: a cumulonimbus cloud is a cumulus cloud, a puffy thick cloud, with rain falling out of it, and a stratonimbus cloud is a stratus cloud, a gray blanket cloud, with rain falling out of it.

![Common types of clouds in the troposphere](image-url)