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K-4:Man-Made Clouds

Glossary

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There are many types of clouds in the sky. Did you know that some of them are man-made? "Contrails" are the long, thin clouds that are left by airplanes as they fly past.

Contrails is short for "**condensation** trails." They are clouds that planes make. Contrails are man-made. They have a cousin that almost everyone has seen. Have you ever gone outside on a cold day? Have you seen a cloud come out of your mouth? That little cloud is made by water vapor

that is usually invisible. In cold weather, the vapor **condenses** into a cloud you can see.

Contrails are made the same way. A plane has an engine. The **exhaust** from the engine has water vapor. Temperatures are colder at higher **altitudes**. Water vapor condenses into ice crystals. This leaves the white lines you see behind planes. Sometimes, there is water in the air around the plane. This can make the contrail even bigger. If there is not a lot of water in the air, the contrails will not last long.

When there is a lot of water in the air, the contrails will last longer. Ice from the plane will join water in the atmosphere. This will make a long contrail behind the airplane. It will stay in the sky long after the plane is gone. They can last for hours! They can even grow. They can get as big as football fields. They can spread until



they turn into cirrus clouds.

Contrails are made of water vapor. They do not hurt humans. NASA is trying to see if contrails may hurt the **environment**. Contrails are man-made clouds. They add to the Earth's cloud coverage. They might change temperatures and climates. We see a lot of contrails wherever there is heavy plane traffic.



Air traffic keeps getting busier. Scientists are looking into what contrails might do. NASA might find that contrails hurt the environment. NASA wants to stop this from happening. One way would be to have planes fly away from problem areas. Another way is to make better engines. NASA is working with partners to make better jet engines. Someday, you might not even see contrails behind planes!

*Courtesy of NASA's Aeronautics Mission Directorate  
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## Create A Cloud

**Subject:** Art, Science

To learn three basic cloud formations.

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## From Contrails To Clouds

**Subject:** Science

To compare formation of clouds to formation of contrails.

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## Types Of Clouds

**Subject:** Earth Science

To identify the three primary types of clouds, and to observe a cloud demonstration.

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