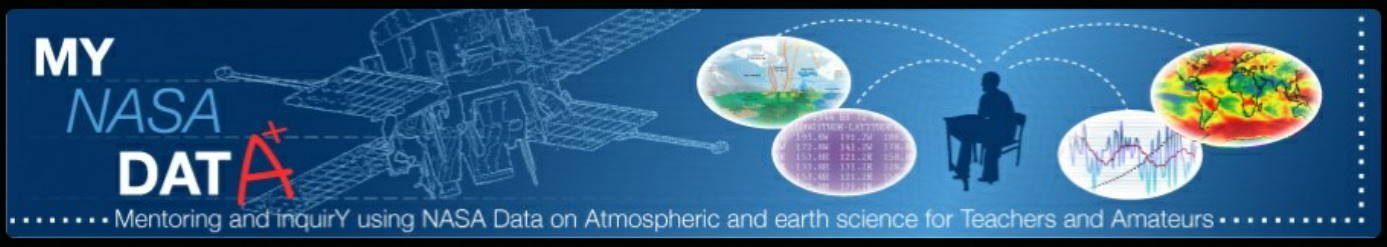

Contrail Watching for Kids

Science Project: Contrail Watching for Kids

Web Id: P3

Purpose: Contrails are long clouds made by high-flying aircraft. Because kids are so good at watching clouds, they can be easily taught to identify contrails.

Age Range: 6 – 10

Time Required: Young children can observe and report on contrails in only a few minutes a day.

Image courtesy Forrest M. Mims III

Background:

Because kids are natural sky watchers, they are curious about both clouds and contrails. It is likely that when contrails are present that young children will notice and pay more attention to them than adults. Here are some basic facts that will interest them:

1. Contrails are long clouds of ice crystals caused by the exhaust from the engines of high-flying aircraft.

2. Contrails can spread into cirrus clouds that reduce sunlight during the day and warm the Earth at night.

3. Contrails are formed when the temperature of the air is around -40 degrees Celsius (which equals -40 degrees Fahrenheit).

4. Contrails do not form when the air is too dry. The length of contrails provides a clue about how dry the sky is where the plane that caused the contrail is flying.

5. Clouds that shade the sun during the day can cause cool weather.

Significance:

Kids know that some clouds signal rain and other mean fair weather. They need to know that contrails are actually manmade clouds and that they can cause measurable changes in the temperature far below where they live and go to school.

Project Links:

- Contrail Education
- SCOOL: Observing Contrails
- GLOBE Contrail Gallery

Real Time Data Source:

MODIS Rapid Response System. Use the highest resolution images to look for contrails.

MY NASA DATA Source:

A related parameter of interest in the LAS is Atmosphere, Clouds, Cloud Coverage, Monthly Cloud Coverage for Cirrus (ISCCP).

Project Ideas:

1. Contrail Identification. Young students should learn the differences between natural clouds and contrails. They should learn the three most basic kinds of contrails: (1) short and transient, (2) long and persistent or (3) spreading. They can find out more about contrail identification by visiting the S'COOL Cloud Chart: Contrails and GLOBE Contrail Resources.

2. Contrail Calendar. Young students can easily add contrail observations to a daily cloud calendar. They might even consider a separate Contrail Calendar. The calendar can be a pocket notebook or a calendar with plenty of white space for each day. If a notebook is used, the student should print the day, month and year at the top of each page. For more ideas, see Science Project 1: Clouds for Kids.

3. Contests. Kids love contests. You can motivate young students to observe contrails by organizing a contest for the highest number of contrails that are observed in a given week or month.

4. Science Fairs. Young students who make a detailed Contrail Calendar for a month or more have the ingredients for a good science fair project.

Analysis Ideas:

Observe the temperature cooling that occurs when a contrail passes in front of the sun and shades the ground.

Related Projects:

The GLOBE Program
The CERES S'COOL Project
Elementary GLOBE

Questions:

1. What makes contrails?

2. Are contrails formed of water droplets or ice crystals?

3. Why are some contrails very short?

4. Why do you think some contrails spread across the sky?

Going Further:

For more information about contrail watching, see Science Project 4. Contrail Studies. Advanced younger students may be able to advance to that project.

Students who have a digital camera can be encouraged to make photographs of contrails and to even make a digital scrapbook of contrail photos. Such photos are ideal for science fair projects.

Project ideas contributed by Forrest M. Mims III, Geronimo Creek Observatory, Texas