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 = DLESE Reviewed Collection

#### Contrails Applet (title provided or enhanced by cataloger)

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<http://profhorn.aos.wisc.edu/wxwise/contrails/t3.html>

This applet explores what causes **contrails** to develop by flying a plane through user-manipulated atmospheric conditions. There are three aspects to control: the degree of supersaturation, which impacts the density of the contrail; the relative humidity, which impacts the rate of dissipation; and the wind speed, which impacts the rate of spreading.

[Full description.](#)

*Grade level:* High (9-12), College (13-14)

*Resource Type:* Computer activity, Illustration - scientific

*Subject:* Atmospheric science

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#### Contrail Education Website

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<http://asd-www.larc.nasa.gov/GLOBE>

This product is a website developed to support the GLOBE Contrail Protocol. It is a website that contains the latest information pertaining to **contrails**. It includes the history of **contrails**, the science behind **contrails**, and their importance to society. In addition, it also contains examples of imagery available from satellite in a contrail gallery. It provides learning resources for teachers like ... [Full description.](#)

*Grade level:* Intermediate (3-5), Middle (6-8), High (9-12)

*Resource Type:* Classroom activity, Computer activity, Lesson plan, Presentation / Demo, Project, Imagery - remotely sensed, Photograph, Visualization - scientific, Glossary, Journal article, Abstract / Summary, Ask an expert, Remotely sensed dataset

*Subject:* Atmospheric science, Biology, Climatology, Cryology, Environmental science, History and philosophy of science, Hydrology, Physical oceanography, Physics, Space science, Technology

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#### GLOBE Contrail Chart

[Comment on this resource](#)

[http://asd-www.larc.nasa.gov/GLOBE/resources/efs\\_cloud\\_id.pdf](http://asd-www.larc.nasa.gov/GLOBE/resources/efs_cloud_id.pdf)

This contrail ID chart is a two-page, full-color identification chart distributed as a hard copy or Adobe Acrobat file that is translated into six languages; English, French, Spanish, Russian, Chinese, and Arabic. The chart is intended as a basic guide to observing **contrails** for scientific investigations being conducted by NASA scientists. Participants of the program will develop a clear understanding ... [Full description.](#)

*Grade level:* Primary (K-2), Intermediate (3-5), Middle (6-8), High (9-12)

*Resource Type:* Classroom activity, Computer activity, Field activity, Module / Unit, Project, Illustration - artistic, Photograph, Glossary, Ref. material, Abstract / Summary

*Subject:* Atmospheric science, Climatology, Cryology, Environmental science, Hydrology, Physical oceanography, Physics

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#### Elementary GLOBE: To Spread or Not To Spread

[Comment on this resource](#)

[http://www.globe.gov/fs/elementaryglobe/docs/EGLOBE\\_CloudActivity3.pdf](http://www.globe.gov/fs/elementaryglobe/docs/EGLOBE_CloudActivity3.pdf)

A learning activity for the "Do You Know That Clouds Have Names?" book in the Elementary GLOBE series. Students will explore the difference between the three types of **contrails**, make observations of **contrails** outside, and record their observations. Fifteen minutes later they will make follow-up observations to see how the **contrails** they observed have changed. The purpose of the activity is to help ... [Full description.](#)

*Grade level:* Primary (K-2), Intermediate (3-5)

*Resource Type:* Classroom activity, Guide for instructor, Lesson plan, Illustration - artistic, Illustration - scientific, Glossary, Book - text

*Subject:* Atmospheric science, Environmental science, Human geography, Physical geography

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#### Cloud Protocols

[Comment on this resource](#)

<http://www.globe.gov/tctg/clouds.pdf?sectionId=8>

This PDF document discusses a field activity for K-12 students. The purpose of the activity is to observe type and cover of clouds including **contrails**. Students will observe ten types of clouds and how many of three types of **contrails** are visible, how much of the sky is covered with clouds, and how much is covered by **contrails**. The PDF is an instructor guide with detailed advice for administering ... [Full description](#).

*Grade level:* Primary (K-2), Intermediate (3-5), Middle (6-8), High (9-12), College (13-14)

*Resource Type:* Field activity, Guide for instructor

*Subject:* Atmospheric science, Chemistry, Climatology, Environmental science, Human geography

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### Applets for Atmospheric Science Education

[Comment on this resource](#)

<http://profhorn.meteor.wisc.edu/wxwise/index.html>

This is a collection of Java applets that can be run through web browsers. Each applet is designed to present a concept generally related to atmospheric science and is highly interactive to encourage discovery. Topics include satellite image interpretation, the formation of **contrails**, a hurricane model and solar radiation intensity as it varies with latitude and time of year. [Full description](#).

*Grade level:* Middle (6-8), High (9-12), College (13-14)

*Resource Type:* Computer activity, Visualization - scientific

*Subject:* Atmospheric science, Climatology, Space science

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### Feature Identification From Environmental Satellites

[Comment on this resource](#)

<https://www.meted.ucar.edu/loginForm.php?urlPath=npoess/nrlsat#>

This Webcast, presented by Tom Lee of the Naval Research Laboratory, focuses on feature identification using a combination of high-resolution multi-spectral polar and geostationary satellite imagery products. It is made up of five short sections focus on a set of particularly challenging feature identification problems including: clouds over snow; **contrails**/thin cirrus; fires, hot spots, and smoke; ... [Full description](#).

*Grade level:* Graduate / Professional

*Resource Type:* Module / Unit

*Subject:* Atmospheric science

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### Plymouth State College Meteorology Program Cloud Boutique

[Comment on this resource](#)

<http://vortex.plymouth.edu/clouds.html>

The Plymouth State College (PSC) Meteorology Program has developed this server to provide explanations of and access to detailed pictures of some basic cloud forms. The cloud images are relatively large (640x480) in order to show detailed structure and features. All of these pictures were taken in the local area around Plymouth, New Hampshire and most from the weather observation deck on the roof ... [Full description](#).

*Grade level:* Intermediate (3-5), Middle (6-8), High (9-12), College (13-14), General public

*Resource Type:* Photograph, Video, Ref. material

*Subject:* Atmospheric science

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### MY NASA DATA Contributed Lesson 11: Seasonal Cloud Cover Variations

[Comment on this resource](#)

[http://mynasadata.larc.nasa.gov/L11\\_Bosiak.html](http://mynasadata.larc.nasa.gov/L11_Bosiak.html)

This lesson is designed to help students gain knowledge in using the MY NASA DATA Live Access Server (LAS) to specify and download a microset of data, then to use the data to determine the seasonal cloud coverage and the occurrence of different cloud types, by percent, in the North Carolina (or their local area). Students will identify different cloud types and determine their seasonality. They will ... [Full description](#).

*Grade level:* High (9-12)

*Resource Type:* Lesson plan

*Subject:* Atmospheric science, Chemistry, Climatology, Environmental science

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### S-COOL Flyer

[Comment on this resource](#)

<http://asd-www.larc.nasa.gov/SCOOL/brochure.html>

The S-COOL flyer is a two-page overview of the Student Cloud Observations On-Line (S-COOL) education project.- It covers the projects unique educational contributions, societal benefits, educational outgrowths, and scientific findings.- The flyer shows the numbers and locations of S-COOL participation and regional observation coverage. It also contains URLs for online resources (e.g., GLOBE contrail ... [Full description](#)).

*Grade level:* Intermediate (3-5), Middle (6-8), High (9-12)

*Resource Type:* Classroom activity, Computer activity, Field activity, Lesson plan, Module / Unit, Presentation / Demo, Project, Tutorial, Illustration - artistic, Map, Photograph, Visualization - scientific, Glossary, Abstract / Summary, Lecture, Educational portal, Ask an expert

*Subject:* Atmospheric science, Climatology, History and philosophy of science, Physical oceanography, Technology

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