

# AEROSPACE MICRO-LESSON

*Easily digestible Aerospace Principles revealed for K-12 Students and Educators. These lessons will be sent on a bi-weekly basis and allow grade-level focused learning. - AIAA STEM K-12 Committee.*

## IMAGES FROM SPACE

Satellite imagery and photos taken by astronauts from space can often reveal amazing and surprising sights. Share these images with your students and see what you can discover together.

### GRADES K-2

Adam Voiland posted the article “[Reading the ABCs from Space](#)” on finding the shapes of the alphabet in satellite imagery and astronaut photography on December 15, 2015. Share the images with your students and see if the class can find the letter in each one. Beware, some of the letters are upper-case, others are lower-case, and a few are even in cursive script. For all those students who can spend hours poring over an *I Spy* or *Where’s Waldo?* book, this is a refreshing way to use those visual discrimination skills. For more of a challenge, you could have your students visit the hyperlinks below each of the images and see what sorts of geographical features and natural phenomena begin with each of the letters.

### GRADES 3-5

After sharing the article, “[Reading the ABCs from Space](#)” with your class, give your students time to explore the images gathered by author Adam Voiland. Then, generate a list together of famous landmarks, geographical features, cities of interest, local landmarks in your city or town, or even your own school. Have the students see how many of the items from the list they can find, and then compile their own version of the author’s image gallery. This could be shared with other classes, or posted to the class website to share with a wider audience. Creating the captions for each picture could be a wonderful exercise in descriptive writing, as well as an opportunity to write for an authentic audience.

Students who want to explore more may visit NASA’s Gateway to Astronaut Photography of Earth site at <http://eol.jsc.nasa.gov/>.

## **GRADES 6-8**

NASA's Gateway to Astronaut Photography of Earth site has more than just photographs of the earth. A section titled "[Beyond the Photography](#)" has several activities and features. One activity is a "Where in the World" game in which a picture is displayed and three possible locations on the surface of the earth are listed. The player selects one of the three and is told whether the answer is correct and is then given some information about the place and the photograph.

Another section in "[Beyond the Photography](#)" is the "Time-Lapse Video Page." This is a set of videos created from time-lapse images taken from the Space Station, arranged geographically or by topic. Each video is accompanied by a short description of what is being viewed. You can point out on a map the different features that are seen in the video.

## **GRADES 9-12**

Another activity in NASA's "Beyond the Photography" section is the "[Image Detective](#)" page. There are literally hundreds of thousands of photographs that astronauts took of the Earth from the Space Station that are uncatalogued. NASA knows where the Space Station was when each photograph was taken, which tells you more-or-less what part of the Earth was being photographed. NASA also knows the f-stop of the camera, which gives some idea of how large an area was photographed. What NASA does not know, however, is what direction the camera was pointing when the photograph was taken. Thus NASA does not know what the photograph is of; the area being photographed can be hundreds of miles from the position of the space station. If your students would like to make a real contribution to the knowledge of humanity, they can become "Image Detectives" and match the photographs to points on the Earth. NASA has made the "Image Detective" into a game with points and high scores for those with a competitive streak.

Sixty Years Ago in the Space Race:

August 27, 1956: The [Thor intermediate range ballistic missile](#)'s rocket engine went through its first static firing test at Edwards Air Force base.