



The constellation of Earth-orbiting satellites

When deciding how to organize their time around the lessons in this chapter, students and teachers might want to combine the next two lessons (the lesson on basemaps and the one on scale and resolution) as an activity.

In this activity, you will use an app that maps about 14,000 man-made objects orbiting the earth. You will use the app to research various types of satellites and their properties. The satellites and their positions are mapped by space-track.org, which is an organization designed to promote space flight safety by sharing space situational awareness services for both US and international satellites.

What you need

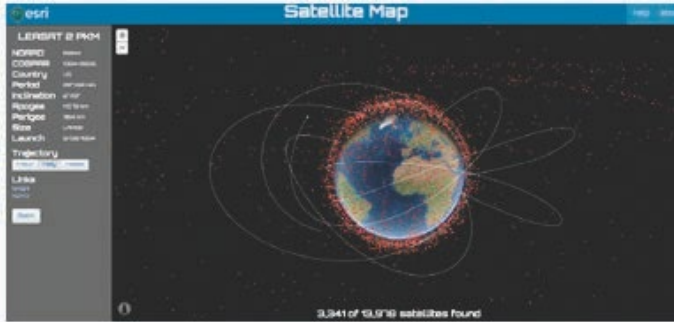
- Account not required
- Estimated time: under 30 minutes

Account not required



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1. Open the [Satellite Map](#).

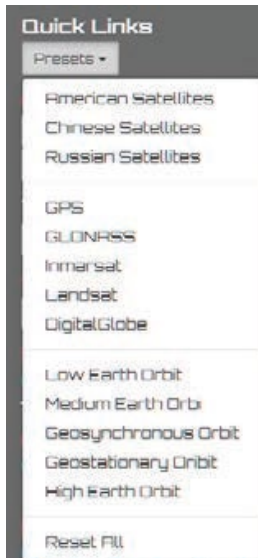


Whoa! 14,000 is a lot of man-made objects. Notice that you can not only zoom in and out, but you can rotate the Earth. The application comes with buttons and slides below preset dropdown menus, which allow you to build your own selections. There are 13,925 satellites loaded in the application. First deal with the preset quick links.

2. Click the Present tab to investigate the Quick Links.

The first three quick links are self-explanatory country links.

3. Identify by number the country satellites
 - a. American Satellites
 - b. Chinese Satellites
 - c. Russian Satellites



The next set of Quick Links illustrates different satellite orbits.

Before you complete the chart below you should define the following words.

- Elliptical orbit
- Perigee
- Apogee
- Geosynchronous orbit
- Geostationary orbit

Orbit Name	Shape	Distance from Earth	Number of Satellites
Low Earth			
Medium Earth			
Geosynchronous			
Geostationary			
High Earth			

Remember the application also comes with buttons and slides that allow users to build their own selections. Below are some topics that you might want to explore.

Q1 How many man-made objects are junk? Junk consists of spent rocket boosters or debris from satellite collisions. Calculate the percentage of manmade objects that are junk.

Q2 List the countries in order of the number of satellites they have launched.

Q3 How many satellites have been launched by decade that are considered Not Junk?

- 1950-1960
- 1960-1970
- 1970-1980
- 1980-1990
- 2000-2010
- 2010-2020

Q4 Identify the following types of orbits:

- Geosynchronous
- High
- Geostationary
- Low
- Medium

4. Go to Quick Links and select Landsat.

5. Zoom in and find one of the two Landsat satellites.
6. Click the satellite to see its path projection.

By exploring the satellite map you have learned about the history of satellites, the types of satellites, and their orbits.



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