Satellites, Weather and Climate
Activity: Introduction to satellites & imagery

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Grade Level: 11 (Honors Physics)
Curriculum Target Benchmarks:
Subject keywords:

Directions: Visit the websites listed and answer the questions. You must read the information and then record the answers on notebook paper. You may not cut and paste from the webpage. Your answers should be complete yet concise. This is an individual effort.

SATELLITE HISTORY

http://www.nasa.gov/missions/science/f-satellites.html

1. a. What was the name of the first US Satellite?
   b. When was it launched?
   c. What was its purpose?

2. a. What was the name of the first NASA communications satellite?
   b. When was it launched?
   c. What was its purpose?

3. a. What was the name of the first NASA meteorological satellite?
   b. When was it launched?
   c. What was its purpose?

4. a. What was the name of the first NASA manned space satellite?
   b. When was it launched?
   c. What was its purpose?
   d. How long did it last?
   e. Follow the links to learn more about the International space station. Describe one of the current research projects. If the links don't work, go to: http://www.nasa.gov/mission_pages/station/main/index.html

ARTIFICIAL SATELLITES

http://www.nasa.gov/worldbook/artificial_satellites_worldbook.html

5. a. Define artificial satellite.

b. What are some uses of artificial satellites?
c. What is the Earth's natural satellite?
d. What was the first artificial satellite? Who launched it? When?
e. How many useful satellites orbit Earth today? Give examples.
f. How much junk orbits Earth today? Give examples.

6. a. Why does a satellite stay in orbit?
b. List the four types of satellite orbits and describe each one.

7. List the six types of artificial satellites. Next to the name of each one, describe its orbit and explain the purpose of the satellite.

8. a. What types of instruments are placed on satellites?
b. How is a satellite launched?
c. How are satellites operated during a mission? What happens if they break?
d. What causes a satellite to fall? What happens to it when it enters the Earth's atmosphere?

WEATHER SATELLITES

GOES
http://history.nasa.gov/weathsat.html as well as: http://www.oso.noaa.gov/goes/

9. a. For what does GOES stand?
b. What is the purpose of these satellites? Be specific.
c. What type of orbit do GOES satellites follow? What does this mean?

10. Click on real-time images at http://www.oso.noaa.gov/goes/
. Select the little camera under "East Conus" for visible. Zoom in on Vermont and describe what you see. How does this compare to today's weather (look outside)?

Types of Images
http://www.weather.gov/sat_tab.php?image=ir

11. Click on the Satellite tab and then on infrared.
Describe what you see and explain what it means that this is an infrared image.
12. Stay on the Satellite tab and now click on visible. Describe what you see and explain what it means when an image is created using visible light.
13. Stay on the Satellite tab and click on water vapor. Describe what you see and explain what it means for image to show water vapor.

POES
http://www.oso.noaa.gov/poes/index.htm

14. For what does POES stand?
15. What is the purpose of POES satellites?

http://history.nasa.gov/weathsat.html and

16. a. For what does TIROS-N/NOAA stand?
    b. What is the purpose of these satellites today? Be specific.

NOAA-N Prime
http://www.osd.noaa.gov/POES/NOAA-N_Prime_Booklet_12-16-08.pdf

This booklet contains a lot of information. Read through it and record
17. The characteristics of the satellite.
18. The data the satellite collects and the instruments used to collect the data.
19. How the satellite is used for search and rescue.
20. Anything else interesting you read in the booklet.

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