

## MY NASA DATA Lesson:

### Circle the Earth – Explore Surface Types on a Journey around Earth

**Purpose:**

To use CERES percent coverage surface data with a world map in locating landmasses and bodies of water at Earth's Equator.

**Grade Level:** 4 – 12

**Estimated Time for Completing Activity:**

One 50-minute class period

**Learning Outcomes:**

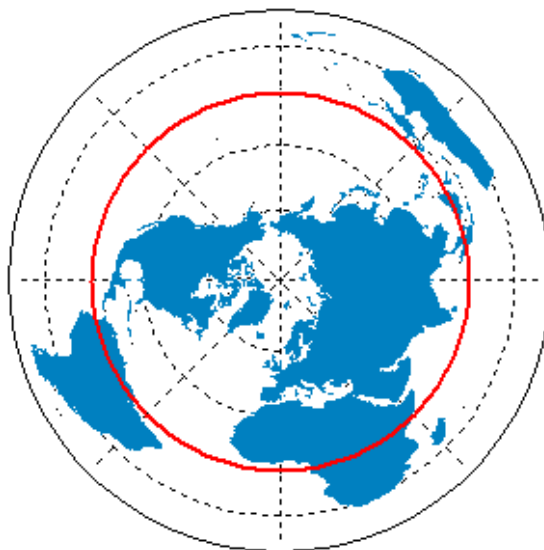
- Locating map locations using latitude and longitude coordinates
- Applying percentage to determine land surface characteristics
- Using a microset of satellite data to investigate surface characteristics

**Prerequisite**

- Familiarity with accessing websites on the Internet
- Familiarity with locating given geographical locations using latitude and longitude and a world map
- Ability to recognize the symbol for and meaning of the term percentage

**Tools**

- Computer with Internet access
- Atlas or world map, with latitude and longitude lines



**Vocabulary:**

- [latitude](#)
- [longitude](#)
- [percentage](#)

**Lesson Links:**

- [Link to full CERES Surface Type Descriptions\(interactive\)](#)
- [40N latitude microset](#)
- [Microset](#)
- [Opening MY NASA DATA Microsets in Excel](#)

**Background:**

When using satellites to study Earth system processes, especially atmospheric processes, it is important to know what is the background that one is seeing on the Earth. This lesson provides an introduction to exploring Earth surface types.

**Procedure:**

Open the microset for the surface type along the Equator. The microset is made available in text format, but may also be imported into a spreadsheet for easier viewing. Beginning with the first data point (Latitude 0.0 deg and Longitude -180.0 deg), locate each successive point on a world map and notice if the location is water or land. You may want to record this for later use.

While going through the list, notice if the percent coverage by bodies of water as observed by the satellite agrees with your observation of the point on the map. Note: As you are looking at the percent of coverage by bodies of water, you are actually looking at a square that is one degree wide and one degree long, with the data point in the top left corner. You are comparing the percent of coverage by bodies of water in this one-degree grid box. At the equator, a 1 degree box is about 100 by 100 km.

As you follow the list of data points, or follow the set of points assigned by the teacher, record the name and percentage water coverage for oceans, continents, rivers, lakes, streams, islands, or other bodies of water.

Also, for these points, as you look at the location on the map or atlas, record an 'A' if you agree with what the satellite data says about the water coverage, and a 'D' if you disagree with what the satellite data says about the water coverage.

**Questions:**

1. For the list of data points, or for the section of data points assigned to your group by the teacher, how does the satellite data on the microset (data table) agree with what you see on the map? Use your notes of Agree and Disagree. List at least two examples which support your answer.
2. For the data points on which your map observation Disagrees with the satellite data, write at least one possible explanation for the disagreement.

**Extensions:**

You have been given the task of reporting the amount of coverage by bodies of water and land mass on this newly discovered planet called Earth. You decide to use CERES data around the equator to make your report. What would you tell the researchers anxiously awaiting your report?

Would the data along the Equator represent the entire Earth? How would you suggest composing a more detailed report of how much water there is on Earth?

Open the microset for the surface cover for 40N latitude. What other types of surface coverage data do you notice? How might these data be used in your report about Earth?

Explore the link for CERES Surface Type descriptions to see maps of where various surface types occur on the Earth.

*Lesson plan contributed by Susan Moore, Education Specialist (SSAI)*

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