Overview

Use the Data Literacy Cubes to guide students’ exploration of mapped data of the Earth System to enrich their observations and inferences. This is a flexible resource that may be used with a variety of mapped images. This activity requires a map of Earth data for students to evaluate.

Learning Objectives
• observe and interpret physical characteristics of the Earth System using maps of NASA data
• analyze how the phenomena changes of time and space
• brainstorm the phenomena connects to other parts of the Earth System
• identify patterns and relationships in data

Essential Questions

• How are the data represented in the model?
• How do we identify a change in these data?
• Where on Earth were these data collected?
• When were these data collected?
• What areas have high and low values? Why?
• What other questions do you have about the map?

Materials Required

• 1 Map Cube per group/student
• 1 differentiated Map Cube Question Sheet per student
• 1 sheet of paper per student
• Pencil
• *Dataset:
  ○ Vegetation Map in December
  ○ Vegetation Map in June

• *MND offers a variety of Earth System maps to integrate with the Data Literacy Cube tool.

  Look for the icon which indicates that activities have an appropriate map. To access and download mapped data, visit the MND Data Visualization Tool, Earth System Data Explorer.

• Teacher Preparation:

  ○ Print copies of the cube on cardstock and cut out. Assemble the cube with glue. Note: consider laminating after you cut these out for multiple uses. (Gaming dice may be substituted for the cubes.) Also, print off copies of the differentiated Map Cube Questions. Distribute to students for group or independent work

Procedure

1. Distribute one Map Cube per group, as well as the differentiated Map Cube Question sheets, and mapped images.
2. Students roll the cube and find the matching question on the Map Cube Question sheet.
3. Answer one question found under matching question on a sheet of paper, labeling the question with the number and letter of the question.
4. Repeat Steps 2-4 until at least 10 are answered.
Map Cube Questions

1. Examine the map.
   A. The color that shows the most is ________ It means ________
   B. The color that you do not see much is ________ It means ________

2. Where on Earth is this map?
   A. A place I know on the map is ________
   B. Another place I know on the map is ________

3. Summarize the map.
   A. The different colors stand for the variable ________ It is measured in ________ (unit)
   B. The color with the biggest value/number is ________
   C. The color with the smallest value/number is ________
   D. The color in the middle is ________ Its value is ________

4. Analyze the map.
   A. The area/s with the highest value/s is/are ________ This means ________
   B. The area/s with the lowest value/s is/are ________ This means ________

5. When were the data on this map collected?
   A. The dates shown on the map is/are ________
   B. A key word in the title that tells me the time frame of this map is ________

6. Ask a question about the map.
   A. How does...? ________
   B. I wonder if... ________ the same as? Different than?
   C. How is ________ the same as? Different than?
   D. How many...? How long...? How often...?
Map Cube Questions

1. Examine the map.
   A. The colors that show the most represent ______.
   B. The colors that show the least represent ______.
   C. I observe a pattern which shows ______.

2. Where on Earth is this map?
   A. A place I recognize on the map is ______. The longitude is ______.
   B. Another place I know on the map is ______. The latitude is ______.
   C. A region I recognize is ______.

3. Summarize the map.
   A. The scale of the colors represents the variable ______.
   B. The unit for the variable is ______.
   C. This variable explains ______.

4. Analyze the map.
   A. The areas with the highest values is/are ______. This represents ______.
   B. The areas with the lowest values are ______. This represents ______.
   C. The values change from ______ to ______ in the ______ hemisphere.

5. When were the data on this map collected?
   A. The time frame for the map is ______.
   B. If the time frame/area etc., changes to ______, then the variable will ______.

6. Ask a question about the map.
   A. I wonder ______.
   B. How many...? How long...? How often...?
Map Cube Questions

1. Examine the map.
   A. The color ________ shows the mood. It means ________.
   B. The color ________ shows the trend. It means ________.
   C. A pattern shows the color ________ in the areas that are ________.

2. Where on Earth is this map?
   A. The latitude goes from ________ to ________.
   B. The longitude goes from ________ to ________.
   B. This is a ________ map.

3. Summarize the map.
   A. The colors stand for the variable ________.
   B. The unit used for the variable is ________.

4. Analyze the map.
   A. The highest values show up in ________ areas.
   B. The lowest values show up in ________ areas.
   C. The values change from ________ to ________.

5. When were the data on this map collected?
   A. The word in the title that tells me the time frame is ________.
   B. The time frame shows the data for a day/month/quarter/year, etc. ________.

6. Ask a question about the map.
   A. How will ________ change when ________ changes?
   B. I wonder ________.
   C. Ask a question that starts with why, when, or where.