My NASA Data – Data Literacy Cubes

The tools in this guide are resources to support data literacy in your instructional setting with My NASA Data Earth science materials. These flexible resources may be used with graphs, data tables, and mapped images of NASA Earth science data. To access NASA data, visit the My NASA Data visualization tool, Earth System Data Explorer (https://mynasadata.larc.nasa.gov).

The Data Literacy Cube set includes:
- Cube templates (Gaming dice may be substituted for the cubes.) Each cube type has an icon associated with it. Icons are displayed on the right side of My NASA Data pages to indicate which cubes could be used with the content on the page. It is also possible to search content by cube type.
- Leveled question sheets to help you differentiate your instruction

  Note: This guide provides a labeled version identifying the different question sheets, as well as an unlabeled version for you to use at your discretion. See the bottom left for this designation on each labeled question sheet.

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How to use the Data Literacy Cubes and leveled questions:
2. Differentiate your lesson based on your students’ needs and abilities. See versions A-D to select the leveled question sheets and distribute to students.
3. Instruct students to roll cube (or numbered die) to answer appropriate question/s.
4. Visit the Maps, Graphs, and Data sections on My NASA Data to access mini lessons and resources from each of the following spheres:
   - Atmosphere https://mynasadata.larc.nasa.gov/atmosphere
   - Biosphere https://mynasadata.larc.nasa.gov/biosphere
   - Cryosphere https://mynasadata.larc.nasa.gov/cryosphere
   - Geosphere https://mynasadata.larc.nasa.gov/geosphere
   - Hydrosphere https://mynasadata.larc.nasa.gov/hydrosphere
   - Earth as a System https://mynasadata.larc.nasa.gov/earthsystem
Map Cube

1. Examine the map.

2. Where on Earth is this map?

3. Summarize the map.

4. Analyze the map.

5. When were the data on this map collected?

6. Ask a question about the map.
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 _______.
   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 values is/are _____. This means ________.
   B. The area/s with the lowest values is/are _____. This means ________.

5. When were the data on this map collected?
   A. The date/s 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…
   C. How is ________________ the same as? Different than?
   D. How many...? How long...? How often...?
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 __________.

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   A. A place I know on the map is ________________.
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   A. How does…?
   B. I wonder if…
   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 area/s with the highest values is/are ______. This represents ______.
   B. The area/s with the lowest values is/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 if…
   B. 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 area/s with the highest values is/are ______. This represents ______.
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   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 if...
   B. How many...? How long...? How often...?
Map Cube Questions

1. Examine the map.
   A. What do the colors that show the most represent?
   B. What do the colors that show the least represent?
   C. What pattern do you observe?

2. Where on Earth is this map?
   A. What is the latitude and longitude range?
   B. Identify a place you recognize and its approximate latitude and longitude.
   C. What type of map projection is this?

3. Summarize the map.
   A. What is the scale on the map?
   B. What variable is represented?
   C. What is the range and unit for the scale?

4. Analyze the map.
   A. What patterns are there for the high values?
   B. What patterns are there for the low values?
   C. How do the values change by area?

5. When were the data on this map collected?
   A. What time frame is represented?
   B. Compare this map to a map for a different time frame for the same variable.
   C. What are the similarities and differences?

6. Ask a question about the map.
   A. Form a hypothesis about the data displayed on the map.
   B. What inference can you make about the cause of the data displayed?
   C. Compare this map to another map for a different variable for the same area.
      What are the similarities and differences?
1. Examine the map.
   A. What do the colors that show the most represent?
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Map Cube Questions

1. Examine the map.
   A. The color ________ shows the most. It means __________.
   B. The color ________ shows the least. 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 ___. 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 ______ in _____ to ______ in _____.
      (value)  (area)  (value)  (area)

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/week/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.
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