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.

How to use the Data Literacy Cubes and leveled questions:

1. Access Earth science data from the My NASA Data website and the Earth System Data Explorer visualization tool (**https://mynasadata.larc.nasa.gov/EarthSystemLAS/UI.vm**).
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**

NP-2019-04-029-LaRC

Data Cube

1. Summarize the data.

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Data Cube

3. Analyze the data.

Data Cube

2. Describe the data.

Data Cube

4. Assess the data values.

Data Cube

5. Create questions using the data.

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Data Cube

6. Apply the data.

Data Cube

NP-2019-10-093-LaRC

Data Cube Questions

1. Summarize the data.

A. The data are displayed in a *(table, chart, etc.)* _____.
B. The title tells me the data are about _____.
C. The data measure...
D. The lowest value is _____.
E. The highest value is _____.

2. Describe the data.

A. The data were collected using _____ *(i.e. thermometer, instrument, etc.)*.
B. The data are collected every _____ *(day, week, month, quarter, year, etc.)*.
C. The unit used to describe the data is _____.

3. Analyze the data.

A. The geographic area of Earth where the data were collected is _____.
B. The time range is from _____ to _____.
C. These data show that _____.

4. Assess the data values.

A. The mean is _____. The median is _____. The mode is _____.
B. The highest value is _____. The lowest value is _____.
C. This variable belongs in the _____ sphere of the Earth System.

5. Create questions using the data.

A. I wonder ...
B. If ___ changed, I think the data would *(increase/decrease/stay the same)* ___.
C. How does....?
D. Why...?

6. Apply the data.

A. These data help us understand _____.
B. These data can explain why _____.
C. Graph the data.

A

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NP-2019-10-093-LaRC

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C. Graph the data.

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Data Cube Questions

1. Summarize the data.

A. The variable is _____. It represents _____.

B. The range of the data is from _____ to _____.

C. The independent variable is _____. The dependent variable is _____.

2. Describe the data.

A. The _____ instrument collected these data.

B. The data are collected every _____ *(day, week, month, quarter, year, etc.)*.

C. The unit used to describe the data is _____.

3. Analyze the data.

A. The geographic area of Earth that is represented is _____.

B. The time range is from _____ to _____.

C. This variable belongs in the _____ sphere of the Earth System.

4. Assess the data values.

A. The average is _____. The median is _____. The mode is _____.

B. The measure of central tendency that best represents the data is the _____ *(mean, median or mode)*. This is because _____.

C. The highest value is _____. The lowest value is _____.

5. Create questions using the data.

A. These data make me wonder _____.

B. I would like to compare _____ with these data because _____.

C. How do these data affect another sphere in the Earth System?

6. Apply the data.

A. These data help us understand _____.

B. These data can explain the phenomenon of _____ because _____.

C. Technology is related to these data because _____.

D. Engineering is connected to these data because _____.

E. Graph the data.

B

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Data Cube Questions

1. Summarize the data.

A. What does the variable represent?

B. What is the range of the data?

C. In which sphere of the Earth System does this variable belong?

2. Describe the data.

A. What instrument/s collected these data?

B. How frequently were the data collected?

C. What unit describes the data?

3. Analyze the data.

A. What geographic area on Earth do the data represent?

B. What time range do these data represent?

C. What area and time data would you like to collect to help you analyze these data?

4. Assess the data values.

A. What is the mean? Median? Mode?

B. Are there any outliers? If so, what are they? Why don't they meet your expectations?

C. Graph the data.

5. Create research questions using the data.

A. Identify a question related to these data that you could research.

B. Identify another scientific variable that you could evaluate with these data.

C. How do you think this area compares to other geographic provinces in your region? *(i.e., coastal plain, highlands, etc.)*

6. Apply the data.

A. What science questions do these data help us understand?

B. Describe how you may use these data to explain a scientific phenomenon.

C. How is Technology connected to these data?

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5. Create questions using the data.

A. I wonder...
B. If _____ changed, then the data would *(increase/decrease/stay the same)* _____.
C. How does...?
D. Why...?

6. Apply the data.

A. These data help us understand _____.
B. These data can explain why _____ happens.
C. Technology was used to get these data by _____.

D

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