

# 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.*

Beginner

Intermediate

Advanced

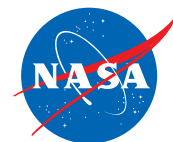
English Language Learners

**A****B****C****D**

## 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>





# Data Cube



1. Summarize  
the data.



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.

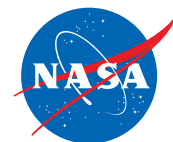


Data Cube

6. Apply the data.



Data Cube



# 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.

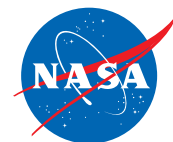
## 5. Create questions using the data.

- 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.





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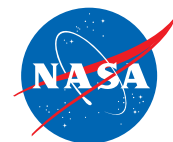
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- A. The variable is \_\_\_\_\_. It represents \_\_\_\_\_.
- B. The range of the data is from \_\_\_\_\_ to \_\_\_\_\_.
- C. The independent variable is \_\_\_\_\_. The dependent variable is \_\_\_\_\_.

## 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.





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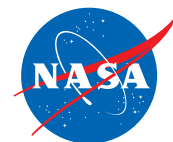
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- A. What does the variable represent?
- B. What is the range of the data?
- C. In which sphere of the Earth System does this variable belong?

## 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.

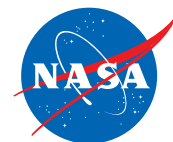
## 5. Create research questions using the data.

- 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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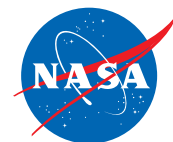
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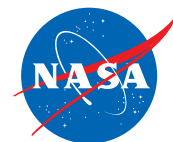
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- B. These data can explain why \_\_\_\_\_ happens.
- C. Technology was used to get these data by \_\_\_\_\_.





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