My NASA Data - Lesson Plans

Data Literacy Cube: Graph Data using Soil Moisture Data

Grade Band

- 3-5
- 6-8

Time

• 30 minutes

Overview

Use the Data Literacy Cube to guide students' exploration of data to enrich their observations and inferences. This is a flexible resource that may be used with a variety of graphical representations of data. This activity requires a graph for students to evaluate. For the purposes of this lesson, students will analyze a graph of the Monthly Soil Moisture of the Mojave National Preserve, south of Las Vegas, NV shown in mm.

Materials Required

- 1 Cube per group/student
- 1 matching differentiated Graph Question Sheet
- 1 Sheet of paper per student
- Pencil
- Graph

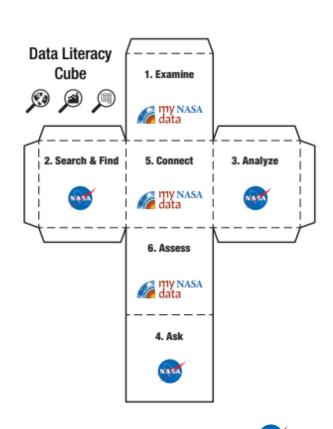
Teacher Preparation:

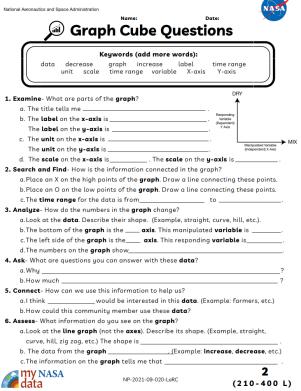
Print copies of the cube on cardstock and cut out. Assemble the cube with glue. Note: consider laminating after you cut these out for multiple uses. (Gaming dice may be substituted for the cubes.) Also, print off copies of the differentiated Graph Cube Questions. Distribute to students for group or independent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

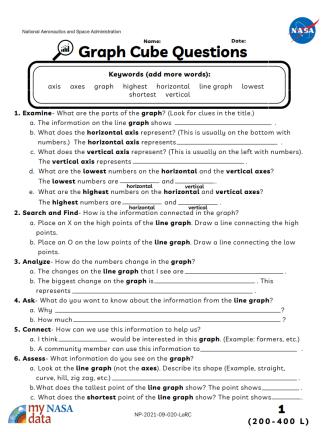
Procedure

1. Distribute one Cube per group, as well as the related differentiated Graph Cube Questions

- and the graph.
- 2. Students roll the cube and find the matching question on the Graph 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 all 6 are answered.







a. As the **independent variable** ____, the **dependent variable** will ____. increase(s), decrease(s), stay(s) the same increase(s), decrease(s), stay the same b. Based on what you know about these science variables, explain the data.

NP-2021-09-020-LaRC

b. What do you think may cause these events? c.What community members may need these data? Why? 6. Assess- What information do you see on the graph?

my NASA

(410-600 L)





1. Examine- What are parts of the graph?

- a. What variable is represented on the x-axis? What is the range of values?
- b. What variable is represented on the y-axis? What is the range of values?
- c. What are the units of measurement for the x and y axes?
- d. What geographic location does the data on the graph represent?
- 2. Search and Find- How is the information connected in the graph?
 - a.Place X on the high points of the line graph. Draw a line connecting the points.
 - b.Place O on the low points of the line graph. Draw a line connecting the points. c.Do the data repeat in recognizable ways? Explain.
 - d. What kinds of patterns or trends do you see in the distribution of the data?
 - Explain. e. How do the patterns you see in the graph relate to other things you know?
- 3. Analyze- How are the data in the graph related?
 - a. Describe the relationship between the variables: positive, negative, or none
 - b.Brainstorm one science variable that you predict to be directly proportional.
- c.Brainstorm one science variable that you predict to be inversely proportional. 4. Ask- What are science questions you can answer with these data?
 - a.What are the attributes of _ b. What would happen to _
 - c. How does _ _compare/contrast with
- 5. Connect- How can we use this information to help us?
- a. I think___ would be interested in these data because
 - b. What real-world problems could this community member use these data to
- c. What parts of the Earth System are involved in this/these events?
- d. What other science processes are related to this event? **6. Assess**- What information do you see on the graph?
 - a. What is the numerical range of the data? Mean? Median? Mode?
 - b. How is the mean different from the mode in these data?
 - c. Are there any outliers? If so, what are they?



NP-2021-09-020-LaRC

(610-800L)

NGSS Three Dimensional Learning

NGSS Disciplinary Core Ideas

ESS2D: Weather and Climate

NGSS Crosscutting Concepts

Scale, Proportion, and Quantity

NGSS Science and Engineering Practices

Analyzing and Interpreting Data

Learning Objectives

- Observe and interpret physical characteristics of the Earth System using graphs of NASA data
- Characterize the independent and dependent variables
- Analyze graphs values with statistics
- · Research how the phenomena changes of time and space
- Identify relationships among variables
- · Summarize trends in the data

Essential Questions

- How are the data represented in the graph?
- How do we identify changes in these data?
- How does a change in the independent variable affect the other variable?
- What relationships do you claim exists among these variables?

Teacher Background Information

Video: Getting Started with the MND Earth System Data Explorer

Getting Started with the MND Earth System Data Explorer | https://www.youtube.com/watch?v=DX0EGRaAf81 | Source: My NASA Data

Student Resources

Mojave Soil Moisture.png