

## Using NASA's Operation IceBridge Data: Note Catcher

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

Lesson Component	Student Ideas
<p><b>Engage:</b></p> <p>How could we calculate the volume of a mountain?</p> <p>What would you have to know and how could you gather that information? Use the word "relief" and reference to mathematical operations in your answer.</p>	
<p><b>Grapple:</b></p> <p>How will you design a way of collecting student height data?</p> <p>What method will you use to organize the data?</p> <p>What will the resulting image/map look like? Describe or sketch.</p>	
<p><b>Focus:</b> Notes from Video 1</p>	
<p>Notes from Video 2</p>	
<p>Create a login: What username and password did you use?</p>	

<p>Click on the <b>N</b> for northern hemisphere and the <b>S</b> for southern hemisphere. What do you see?</p> <p>Play with the <b>Available Layers</b>. What changes on the map? Be specific.</p> <p>Click on the <b>Temporal Filter</b>, select different dates. Give 2 examples.</p> <p>Use the <b>Bounding Box</b> somewhere within view, and then clear it. What did you choose to “bound”? Describe.</p> <p>Use the <b>Keyword Search</b> and type in “Thickness” and see what comes up. <b>Reset</b> all filters</p> <p>Notice the coordinates scrolling as you move from one location to another. Write down a coordinate to go to, and navigate there with your mouse.</p>	
<p>Go to the very northern tip of Greenland - what are the coordinates?</p> <p>Go to the very tip of the Antarctic Peninsula - what are the coordinates?</p> <p>(optional) Opening and running Google Earth along side the OIB portal page can be useful if it is downloaded on your computer. Check with your teacher.</p>	
<p><b>Apply:</b></p> <p>Navigate to Thwaites Glacier (or your own location if your teacher asks you to do that). What are some immediate observations of your location?</p>	

<p>Build a bounding box around a small part of your location.</p> <p>Select a data set that is lit up white on the left. What did you choose?</p>	
<p>Go to “View Workspace”, “Get Data” and either download to zip or save to Drive. Open your data and take a look. What do you see?</p> <p>Is there anything you think you can graph? This could be a small section of one column of data, for example. If so, save the data to an excel file from Drive. Then, go into the spreadsheet and delete unnecessary columns, and use graphing wizard to make a graph for you.</p> <p>What style of graph did you make? How did it look?</p> <p>Explore the different data sets. There is no “right answer” here, but you can explore different types of data sets, and see some are just numbers, others are photographs, and others are secondary maps. Describe what you see.</p> <p>A second location of your choice will be looked at next. Switch hemispheres and explore the Northern Polar Region.</p>	
<p>As you observe other data from your classmates, write down some notices and wonders you have</p>	<p>I Noticed:</p> <p>I Wondered:</p>

## Presentation Activity

You will prepare a brief presentation of your experience and your product (a graph or map) relating to Thwaites Glacier (or the area that you selected). This should include:

- The coordinates of your data
- The date of the data
- Description of the data - what it includes, what instrument collected it
- Describe the building of your graph, why you chose the data you did, and the graph type
- Explain what the data tells you
- Summarize what you learned through this exercise

Your teacher (or the class) needs to decide on the style of the presentation. One possible presentation style could be 1 student at a time presenting in front of the class. You might rather use a gallery presentation style, with 4-5 students presenting from computers at their desks, while the other students visit several presentations, and then swap roles until all students have shared.

While watching the other presentations, you should gain a basic understanding of how other data compares with your data by noting one thing you NOTICE and 1 thing you WONDER. This might be as general as “I noticed the transects across Greenland showed a similar ice thickness to the transects I looked at across Antarctica” and “I wonder why Crane Glacier and Jakobshavn Glacier seem to have a lot of differences” etc. These comparisons could be pole to pole, or within the same Polar Region. You will write this near the bottom of your note catcher.

## Lesson Scoring Rubric

(Collect and grade Note Catcher for the first 4 elements, and judge the “Synthesize” element as the student presents)

Lesson Element	3 - Meets Expected Level of Proficiency	2 - Beginning Level of Proficiency	1 - Limited Evidence of Proficiency
Engage	Calculation of the volume of a mountain was discussed with clarity using the term “relief”, referencing method of mathematics and measurements	Calculation of the volume of a mountain was discussed with basic ideas that may lack information or the term “relief” and only suggest methods of measurements but shows a starting understanding	The approach to and method of calculating the volume of a mountain was unclear and the student did not offer thoughtful ideas.
Grapple	The steps of the grapple were taken, producing a clear description or image/map that could show the heights of students in the room from two different instruments. The outcome of playing with the concept showed good understanding of how to portion the room and use the data	The steps of the grapple were generally taken but the resulting outcome showed gaps in understanding. The final description or image showed part of the understanding but did not completely satisfy the objective.	Student did not find clarity within the grapple, showing a lack of understanding of how to use the two instruments, portion the room and does not show a dedication to work through the challenge.
Focus	Student moved through the tutorial collecting notes from videos, playing with all the different tools on the portal successfully. At the end of this, the student is ready to use the tools to discover some data.	Student moved through parts of the tutorial playing with some of the different tools on the portal with some success. The student will be able to approach the portal but can not work independently at this point	Student moved through the tutorial in a limited or less than focused manner, resulting in a poor understanding. The student will not be successful within the portal until s/he has completed this first
Apply	Student was able to find Thwaites Glacier and produce a bounding box, locate and select some data, download it and open it. Student is ready to look at the data	Student had difficulty using the tools on the portal to locate and box Thwaites Glacier, or they had trouble selecting and downloading data successfully	Student was not able to work independently through the steps of the lesson
Synthesize	Presentation showed engagement into the lesson, with clarity about the two locations studied and a synthesis of the similarities and differences found between them.	Presentation showed a basic level of understanding of how to maneuver through the portal but an understanding of the locations was lacking	Presentation showed understanding of a basic level of use of the portal but application was lacking.
Extend (optional)	Extended steps were taken, such as the use of ArcGIS or studying the instruments which brought a deeper level of understanding (add in extra points)		

### Written Summary: Final Product

You will write a summary of your learning at the end of this lesson, addressing the following prompts in a smooth, 3+ paragraph essay format. The first draft will be written in class and peer-edited, and the final draft should be prepared for homework and turned in on \_\_\_\_\_. This paper will be graded separately from the lesson's scoring rubric in the manner that suites your teacher.

Include these 3 prompts in your essay:

1. List 3 things you learned about through playing with the OIB Portal
2. Based on the data, how are the 2 poles similar and different from each other?
3. Describe one new understanding about the shape of ice at the poles (sea ice, land ice, ice shelves, etc)

Be sure to use MLA formatting, check for all writing conventions and use proper citation in MLA format.