

Name: _____
Pd: _____ Date: _____

Effects of Arctic Ice Cap Melting:

A polar ice cap is a high-altitude region of land or water that is covered in ice. Ice caps form as snow accumulates year after year. As part of a cyclical process, each year some of the ice melts in the summer, and then reforms in the winter. In the last several decades, scientists have tracked significant changes in the size of the Arctic ice cap. Data analyzed from satellite images show that the area of permanent ice cover is decreasing at a rate of 9% each decade. At this rate, scientists predict that summers in the Arctic will be ice-free by 2030. In this activity, you will investigate the impact of the melting Arctic ice cap on the Earth's spheres and sustainability.

Objective:

To identify how the melting of the Arctic ice cap affects the Earth's spheres and sustainability.

Procedure:

Mrs. Weiss will divide you into groups of four. Each person will be designated a letter from A to D. When you know what your home group is, Mrs. Weiss will ask all A's, all B's, all C's and all D's to form four large groups. In those large groups you will be given your questions to answer. You will then report back to your home groups and share your results with your original group members. And together as a home group you will complete your own charts Data and Observations chart.

A. Research the melting of the Arctic ice cap on the HYDROSPHERE:

1. How will Greenland's ice sheet be affected by the Arctic ice cap melt?
2. What effects will the changes to Greenland's ice sheet have on the hydrosphere?
3. How is the sustainability of the hydrosphere affected by the melting of the Arctic ice cap?

B. Research the melting of the Arctic ice cap on the ATMOSPHERE:

1. How could the melting of the Arctic ice cap affect climate in other parts of the world?
2. How could the melting of the Arctic ice cap suck carbon from the atmosphere?
3. How is the sustainability of the atmosphere affected by the melting of the Arctic ice cap?

C. Research the melting of the Arctic ice cap on the BIOSPHERE:

1. How have animals such as polar bears, whales, walrus and seals been affected?
2. How does the melting ice cap affect hunting and fishing in Aboriginal people?
3. How is the sustainability of the biosphere affected by the melting of the Arctic ice cap?

D. Research the melting of the Arctic ice cap on the GEOSPHERE:

1. How does the melting ice cap affect the extraction of oil, natural gas and minerals?
2. How does the melting ice cap affect the rate of erosion and weathering in coastal areas?
3. How is the sustainability of the geosphere affected by the melting of the Arctic ice cap?

Data and Observations: Fill in the chart that answers the above four sphere's questions

| Sphere | Q.1 | Q.2 | Q.3 |
|-------------|-----|-----|-----|
| HYDROSPHERE | | | |
| ATMOSPHERE | | | |
| BIOSPHERE | | | |
| GEOSPHERE | | | |

Analyze and Apply:

1. How does the melting of the Arctic ice cap show that the Earth's sphere's are interconnected?
2. Do you think the melting of the Arctic ice cap could be considered a global problem? Why or why not (support your answer)?