SN EDUCATOR GUIDE

November 25, 2017

Mosses Tell Story of Retreating Ice

Cross-Curricular Discussion: Q

Directions: The following list of discussion questions is provided to help you take notes, brainstorm ideas and test your thinking in order to be more actively engaged in class discussions related to this article. All questions in this section are related to topics covered in "Mosses tell story of retreating ice."

PHYSICAL AND CHEMICAL SCIENCES

Discussion questions:

1. What are isotopes, and what are the isotopes of carbon? What carbon isotopes are radioactive?

2. What is beta decay? Write the decay equation for carbon-14.

3. How is carbon-14 formed in the atmosphere?

4. How does carbon dating work?

5. How is carbon-14 measured?

Extension prompts:

6. What are the limitations of carbon-14 dating?

7. What other radioactive decays are useful for dating objects?

BIOLOGICAL AND EARTH SCIENCES

Discussion questions:

1. How do plants use photosynthesis to incorporate atmospheric carbon?

2. What are the major greenhouse gases and why are they called greenhouse gases? How has the level of carbon dioxide changed in recent history?

3. How has the global average temperature and sea level changed in recent history?

Extension prompts:

4. How have human activities affected the climate? How does the speed of the environmental changes today contrast the speed of changes in the past?

ENGINEERING AND EXPERIMENTAL DESIGN

Discussion questions:

1. What types of sensors could detect radiation from carbon-14, and how do they work?

2. What types of sensors could detect carbon-14 directly (without measuring its radiation), and how do they work?

Extension prompts:

3. How might you design a portable carbon-14 dating device that could rapidly determine the age of a fragile, valuable object such as an ancient manuscript?