My NASA Data - Mini Lesson/Activity

Cause and Effect: How do our forests change over time?

Grade Band

- 6-8

Time

- 15 minutes

Overview

This mini lesson engages students with answering questions on cause and effect relationships by watching a NASA video related to changing forests in the Pacific Northwest from 1984 to 2011.

Student Directions

Review the video, Secret Life of Forests (1984-2011), and answer the following questions.

Video: Secret Life of Forests (1984-2011)

- 16 views

Secret Life of Forests (1984-2011) | https://www.youtube.com/watch?v=ROGy9czx8_Y | Source: NASA Scientific Visualization Studio

Steps:

1. Check with your instructor on how to submit your answers.
2. Describe the phenomenon you observe.
3. What patterns do you notice in this model?
4. What are the limits of this model?
5. What benefits are there in using this model?
6. Predict the future of the phenomenon based on the model you've observed.
7. Describe the evidence for Earth System interaction (among Atmosphere, Hydrosphere, Biosphere, Cryosphere, Geosphere).

Background:

Identifying cause and effect relationships can help us make predictions about the function of natural systems and their impact. These relationships, whether simple or complex, are vital for forecasting weather and predicting Earth events in a new way.

Forests are always changing. The Landsat satellite program, operated by NASA and the U.S. Geological Survey, has monitored those changes from space for over four decades. Scientists are turning Landsat data into maps that show the changes of a landscape. This visualization of the Pacific Northwest from 1984 to 2011 reveals many cause and effect relationships. Some relationships can be obvious. The patchwork of logged land, for example, flickers from mature trees (blue) to clear-cut (red) to regrown shrubs (yellow). Some relationships are also subtle. Bark beetle or western spruce budworm infestations pulse across mountainsides in dark red. Watch as these and other changes come to life in the video.

Sources:

1. Secret Life of Forests (1984-2011). (2018, June 20). YouTube. Retrieved June 9, 2022, from https://www.youtube.com/watch?v=ROGy9czx8_Y

Teacher Note

Teachers, these mini lessons/student activities are perfect "warm up" tasks that can be used as a hook, bell ringer, exit slip, etc. They take less than a class period to complete. Learn more on the "My NASA Data What are Mini Lessons?" page.

Teachers who are interested in receiving the answer key, please complete the Teacher Key Request and Verification Form. We verify that requestors are teachers prior to sending access to the answer keys as we've had many students try to pass as teachers to gain access.

NGSS Three Dimensional Learning

NGSS Disciplinary Core Ideas

- LS2C: Ecosystems Dynamics, Functioning and Resilience
- ESS2A: Earth Materials and Systems
- ESS3B: Natural Hazards

Crosscutting Concepts

- Cause and Effect
- Stability and Change

Science and Engineering Practices

- Developing and Using Models
- Analyzing and Interpreting Data