My NASA Data - Mini Lesson/Activity

An Island Forms and Changes

Grade Band

- 3-5
- 6-8

Time

- < 15 minutes

Overview

Students examine satellite images of a recently formed island to identify areas of erosion and deposition.

Student Directions

Explore the underwater Volcanic Island of Hunga Tonga-Hunga Ha'apai found in Tonga in the South Pacific along the highly active Ring of Fire.

Review the short video (multiple times if needed) and answer the following questions:

1. Explore the underwater Volcanic Island of Hunga Tonga-Hunga Ha'apai found in Tonga in the South Pacific along the highly active Ring of Fire by reviewing the Youtube video.

Video: A New Time-lapse of an Island Forming in Tonga

A New Time-lapse of an Island Forming in Tonga | https://www.youtube.com/watch?v=sIXyxvSEKFY | Source: NASA Goddard

1. Review the short video (multiple times if needed) and answer the following questions:
    1. Why is NASA interested in studying the Hunga Tonga-Hunga Ha'apai volcano?
    2. What other planet, besides Earth, are the processes at work on this volcano possibly related to?
    3. What major process is causing such rapid change during the three years of being monitored by satellite?
2. Review the NASA Blog, Land Ho! Visiting a Young Island, to help you answer the questions below:
    1. What evidence do you find for how the volcano 's coastline and size (above sea level) changes over time?
    2. What evidence of erosion and deposition do you observe? Optional: Distribute the before and after images for the island to students to observe.
        - Areas of Erosion -
        - Areas of Deposition -
3. Extension:
    - Have students review the before and after images and answer the following questions.
        - Use a colored pencil or crayon to color areas of erosion on the original image that eroded.
        - Use a different colored pencil or crayon to color areas of deposition on the original image that were deposited.
        - Use the scale on the image and a ruler to measure and estimate the area of erosion.
        - Use the scale on the image and a ruler to measure and estimate the area of deposition.

Sources:

- NASA's Scientific Visualization Studio
- Satellite image of the Tongan Island courtesy of Pleiades-1A ©2015 CNES Distribution Airbus DS
- Photo of the tephra cliffs on the island is courtesy of NASA/Damien Grouille/Cecile Sabau

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

- ESS2A: Earth Materials and Systems

Crosscutting Concepts

- Cause and Effect
- Scale, Proportion, and Quantity

Science and Engineering Practices

- Analyzing and Interpreting Data

Document Resources

- Hunga Tonga-Hunga Ha'apai Images