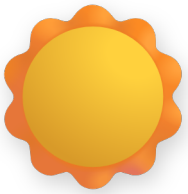
Galaxy Deep Dive

Grade 6 Name: _____

Read the space science story carefully. Then answer each question below in a full sentence.

Look for the cause — the discovery or event — and trace each effect it produced. Space events can have surprising effects right here on Earth!

Sun's Fury, Earth's Response



"Did you hear about the solar flare?" asked Maya, pointing at her tablet. "It says it caused major problems for planes!"

In 2024, a powerful solar flare erupted from the Sun's surface, hurtling a burst of energy and charged particles towards Earth. This event, officially classified as an X-class flare by NASA's Space Weather Prediction Center , triggered a severe geomagnetic storm upon arrival. While beautiful auroras danced across the night sky in unusual locations, the storm also had a more disruptive side.

The surge of energy interfered with Earth's magnetosphere, causing significant disturbances to radio communications and, more critically, to GPS satellite signals. Pilots relying on precise GPS navigation for flight paths and landing procedures found their systems experiencing temporary outages or inaccuracies. This immediate effect meant that air traffic controllers had to quickly reroute flights, leading to delays and increased fuel consumption as planes took longer, less direct paths.

Recognizing the global impact, international space agencies, including ESA (European Space Agency) and JAXA (Japan Aerospace Exploration Agency), swiftly collaborated with NASA. They shared real-time data from various solar observatories and Earth-orbiting satellites to better track the storm's progression and predict its effects. This collaborative effort helped mitigate further disruptions, but it also highlighted a critical vulnerability in modern technology.

> As a direct consequence, governments and private companies worldwide began investing heavily in more resilient satellite navigation systems and advanced space weather forecasting models. New research focused on developing radiation-hardened electronics and alternative navigation methods that wouldn't rely solely on GPS. The 2024 solar flare served as a stark reminder of our planet's interconnectedness with the cosmos and spurred a new era of international cooperation in space weather preparedness. 🛰️

COMPREHENSION QUESTIONS

(1) Which of these BEST explains what caused the geomagnetic storm in 2024? 🌎

(A) A powerful solar flare from the Sun. (B) A new type of rocket launch.

(C) Increased air traffic. (D) A meteor shower near Earth.

(2) Complete the sentence: Because the geomagnetic storm interfered with GPS signals, _____. ✈️

➡ continue writing on the lines below

(3) What action did international space agencies take in response to the solar flare's effects? 🤝

(4) Describe how the 2024 solar flare led to international collaboration and then to new technological developments. 💡

(5) What might have happened if international space agencies had NOT collaborated during the geomagnetic storm? Explain. 📡

(6) What was a long-term consequence of the 2024 solar flare event? 🚀

(A) A decrease in space exploration funding.

(B) A shift away from satellite technology entirely.

(C) Increased investment in resilient satellite systems and space weather forecasting.

(D) A decision to stop all air travel permanently.