

Name _____

period _____

Date _____

Write your notes
about what you are
reading in this
space.

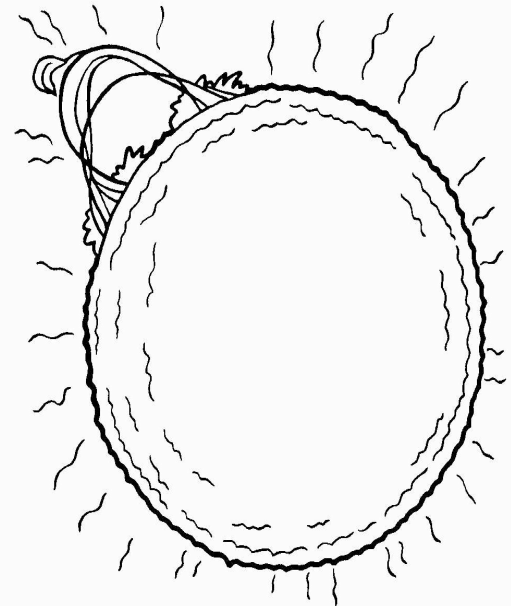
Science Shorts -8

Sun Storms

You know that the sun **sustains** life here on Earth. You know that you should never look directly at the sun because it could blind you. But did you know that the sun has weather? Of course it's nothing like the weather on Earth. In comparison, our most powerful storm seems like a mild breeze. And believe it or not, what it's doing up there on the sun affects us down here!

Our sun is a huge ball of burning plasma—a state of matter where gas is superheated. Most of this plasma is hydrogen gas. The sun has an 11-year cycle. Throughout the cycle, the sun has periods of major storm activity and minor storm activity. During the major storm part of the cycle, the sun has lots of solar flares. Solar flares are plasma eruptions that shoot off the sun's surface, causing solar wind. Just one average-sized solar flare releases enough energy to meet all the current power needs of the U.S. for 10,000 years! The biggest solar flares extend out into space like gigantic clouds. These clouds move a million miles per hour (1,609,344 kph) toward Earth as solar wind. When strong solar winds hit Earth's atmosphere, the night sky glows with colored lights reflecting off the ice at the Earth's North Pole. People call them the Northern Lights.

Unfortunately, solar winds don't just provide interesting sky effects. They can cause harmful magnetic storms. These storms can disrupt phone, TV, and radio signals, the Internet, and e-mail. They can make radar systems crash. They can destroy satellites and kill astronauts working outside the space shuttle. The biggest threat comes from the magnetic storm's ability to knock out electrical power. This happened in 1989 when Quebec, a large region in Canada, lost its entire electrical power service grid in less than 90 seconds. The problem took so long to fix that many people had to go without heat or electricity for a month.



1. The Northern Lights are caused by

- ☐ (a) magnetic storms.
- ☐ (b) solar wind.
- ☐ (c) plasma.
- ☐ (d) hydrogen gas.

2. What happened second in 1989?

- ☐ (a) The sun had one or more major plasma eruptions.
- ☐ (b) People went without electricity for a month.
- ☐ (c) Solar wind created a magnetic storm.
- ☐ (d) Quebec's power grid was heavily damaged.

3. Even small solar flares cause some

- ☐ (a) solar wind.
- ☐ (b) plasma.
- ☐ (c) Northern Lights.
- ☐ (d) hydrogen gas.

4. An antonym for *sustains* is

- ☐ (a) burns.
- ☐ (b) chills.
- ☐ (c) maintains.
- ☐ (d) destroys.

5. What usually protects us from the harmful effects of solar wind?

- ☐ (a) the Northern Lights
- ☐ (b) power grids
- ☐ (c) Earth's atmosphere
- ☐ (d) plasma eruptions

6. Picture a team of scientists discovering a way to collect and use solar flare energy. What is the expression on their faces?

- ☐ (a) excited
- ☐ (b) upset
- ☐ (c) annoyed
- ☐ (d) bored

7. Do you think it's important for scientists to continue studying solar weather? Explain.
