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Auroras

Purpose

The purpose of these activities is to investigate the phenomena known as auroras, including the nature of the colorful "night lights" and their possible origins.

Students will be able to

1. Define aurora and related terms.
2. Point out on a map the geographic locations where auroras are seen.
3. Understand the mechanism by which auroras occur.
4. Describe what auroras look like, and reflect on it in writing.
5. Create artistic representations of auroras.

Important Vocabulary

aurora	electromagnetic spectrum	ion
ionosphere	magnetic field	solar corona
solar wind	plasma	borealis
australialis		

What Lights Are These?

Students view images of auroras, either via computer slideshow, in books or posted around the room. Then they discuss what they think the images show. After this brief discussion, the students learn that the images are of auroras. They discuss what they believe the origins of auroras might be, brainstorming ideas as a class.

Auroras: Key Terms

Students complete a crossword puzzle, in order to become more familiar with vocabulary/key terms related to the topic of auroras. Students may use dictionaries, textbooks, the internet, etc. to help them. (Note: Vocabulary terms and definitions taken from the Newton's Apple website, for which a link is given in the "Helpful Resources" section below.)

*(** See below for printable activity sheet.)*

Night Lights

Students write a brief description of an aurora, followed by a written reflection, which can be in any style (e.g. essay, poetry…). Students then create artistic representations of an aurora, using watercolors, oil pastels, or any other suitable medium.

Helpful Resources

The following resources are especially helpful, with many lesson plans and activity ideas relating to auroras.

1. http://www.ktca.org/newtons/10/aurora.html
2. http://www.alaskascience.com/aurora.htm
3. http://www.thursdaysclassroom.com/index_18may00.htm
4. http://sprg.ssl.berkeley.edu/aurora_rocket/intro/
5. http://www.exploratorium.edu/learning_studio/auroras/
6. http://www.oulu.fi/~spaceweb/textbook/auroras.html

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AURORAS
VOCABULARY

aurora
rapid and irregular displays of colorful lights in the night sky, created when the solar wind causes beams of electrons from the magnetosphere to strike the upper atmosphere, causing atoms and molecules to glow

electromagnetic spectrum
arrangement of electromagnetic waves according to wavelength

ion
an atom or group of atoms carrying an electrical charge

ionosphere
part of the earth's atmosphere that contains electrically charged particles that reflect radio waves

magnetic field
a region of space wherein a detectable magnetic force exists at every point

plasma
a state of matter in which all the particles are electrically charged

solar corona
the upper atmosphere of the sun, where the solar wind is created

solar wind
charged particles, mainly protons and electrons, that flow out from the sun and sweep out into space

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AURORAS

DIRECTIONS: Complete the crossword puzzle below, using vocabulary terms.

Down

1. rapid and irregular displays of colorful lights in the night sky, created when the solar wind causes beams of electrons from the magnetosphere to strike the upper atmosphere, causing atoms and molecules to glow
2. arrangement of electromagnetic waves according to wavelength—an electromagnetic _____
3. an atom or group of atoms carrying an electrical charge
4. part of the earth's atmosphere that contains electrically-charged particles that reflect radio waves

Across

1. a region of space wherein a detectable magnetic force exists at every point
2. a state of matter in which all the particles are electrically charged
3. the upper atmosphere of the sun, where the solar wind is created—the solar _____
4. charged particles, mainly protons and electrons, that flow out from the sun and sweep out into space