John Muir Study Guide
Science Lesson Plan
Grade Five

Severe Weather

Severe weather events of one kind or another are experienced in almost every region in the United States. While hurricanes and tornadoes are among the most devastating of these, even localized thunderstorms, blizzards, and flash floods can inflict significant harm on communities. Every year severe storms cause millions of dollars in property damage.

John Muir frequently extolled the power and grandeur of nature's storms in his writings. Throughout his life he had many adventures that brought him in close contact to nature's most severe weather conditions, including thunderstorms, blizzards, and floods. Once he even climbed a tree during a powerful windstorm to experience its energy firsthand!

Objective:

Students will be able to identify the causes and effects of several different kinds of severe weather phenomenon.

California Science Standard Grade Five, Earth Sciences:

4c. Students know the causes and effects of different kinds of severe weather.

Materials:

John Muir on Severe Weather Reading Handout (also provided below)
Library
Internet access

Preparation:

Read the following excerpt from John Muir's book *The Mountains of California*:

"One of the most beautiful and exhilarating storms I ever enjoyed in the Sierra occurred in December, 1874, when I happened to be exploring one of the tributary

valleys of the Yuba River.... When the storm began to sound, I lost no time in pushing out into the woods to enjoy it. For on such occasions Nature has always something rare to show us, and the danger to life and limb is hardly greater than one would experience crouching deprecatingly beneath a roof.

Toward midday...I gained the summit of the highest ridge in the neighborhood; and then it occurred to me that it would be a fine thing to climb one of the trees to obtain a wider outlook and get my ear close to the Æolian music of its topmost needles. But under the circumstances the choice of a tree was a serious matter. ... After cautiously casting about, I made choice of the tallest of a group of Douglas Spruces that were growing close together like a tuft of grass, no one of which seemed likely to fall unless all the rest fell with it. Though comparatively young, they were about 100 feet high, and their lithe, brushy tops were rocking and swirling in wild ecstasy. Being accustomed to climb trees in making botanical studies, I experienced no difficulty in reaching the top of this one, and never before did I enjoy so noble an exhilaration of motion. The slender tops fairly flapped and swished in the passionate torrent, bending and swirling backward and forward, round and round, tracing indescribable combinations of vertical and horizontal curves, while I clung with muscles firm braced, like a bobolink on a reed.

In its widest sweeps my treetop described an arc of from twenty to thirty degrees, but I felt sure of its elastic temper, having seen others of the same species still more severely tried--bent almost to the ground indeed, in heavy snows--without breaking a fiber. I was therefore safe, and free to take the wind into my pulses and enjoy the excited forest from my superb outlook....

I kept my lofty perch for hours, frequently closing my eyes to enjoy the music by itself, or to feast quietly on the delicious fragrance that was streaming past... When the storm began to abate, I dismounted and sauntered down through the calming woods. The storm-tones died away, and, turning toward the east, I beheld the countless hosts of the forests hushed and tranquil, towering above one another on the slopes of the hills like a devout audience. The setting sun filled them with amber light, and seemed to say, while they listened, 'My peace I give unto you.'"

Activity:

Working in groups of 4 or 5, students will research one of the following severe weather phenomena using the Internet and library resources; thunderstorms, blizzards, tornadoes, hurricanes, drought, and flooding. Each student within the group should be assigned a specific topic to research. These may include:

What are the key features of this severe weather phenomenon?

Where does this type of weather condition commonly occur, and what factors are instrumental in creating the severe weather pattern?

What effect does the storm or weather pattern have on the land and people in its path?

How this weather condition affect the activities of humans?

What precautions can be taken to ensure personal safety during this kind of severe weather?

Describe a specific severe weather event that occurred in recent history, where and when it happened, and what the long-term effects of it have been.

Have students first prepare a written report summarizing their research, and then present the material to the rest of the class in the form of an oral report.

Web Site References:

National Weather Service
http://www.nws.noaa.gov/
(Review materials on Severe Weather Safety)

National Severe Storms Laboratory
http://www.nssl.noaa.gov/

The Weather Channel
http://www.weather.com