

and sometimes hail, it is associated with thunder, lightning and heavy showers.

cyclone — a windstorm with a violent, whirling movement; another term for a tornado or hurricane.

desiccated — completely dried out; preserved by drying.

monsoon — in India, the season from April to October during which a wind from the Indian Ocean and South Asia blows from the southwest, bringing heavy rains.

thunderstorm — created when a lower layer of warm air rises into a layer of cold air, resulting in a powerful updraft of warm, moist air and violent downdraft of rain and possible hail.

tidal wave — a large wave caused by strong winds and not actually related to the tides; the non-technical term for a tsunami.

troposphere — the atmospheric zone below the tropopause (the atmospheric transition zone located between the troposphere and the stratosphere, six to twelve miles above the Earth); at increasing altitudes, the troposphere is characterized by water vapor, vertical winds, weather and decreasing temperatures.

Things to think about

* Which of the "extreme" places—hottest, wettest, etc.— could you consider living in or visiting? Which ones would you definitely not want to live in or visit?

* In addition to having the highest wind speed in the world, Mount Washington in New Hampshire experiences dense fog, thick ice, heavy snow and bitter cold. Yet there are many hikers on the mountain each year. What safety precautions do they need to take?

* If you were "marooned" in your home during a blizzard, such as the one that hit New York and New England in 1888, what would you need to do to stay warm and safe until you got dug out?

* It's August 1992, you live in Florida, and Hurricane Andrew is approaching. You've got some valuable computer files that you don't want to lose. What do you do?

* Why does low humidity make very hot places, such as Death Valley, almost bearable?

Internet Resources

http://www.harcourtschool.com/activity/extreme/html_docs/Weather.html

Lists the places that hold records for extreme weather.
<http://explorezone.com/weather/index.htm>

News stories on extreme weather, divided into types of storms and disasters.

<http://www.cnn.com/fyi/interactive/specials/weather/>
News, FAQs and coverage on a variety of topics including people's impact on weather and climate
<http://www.usatoday.com/weather>

News information about a variety of climates and weather situations.

<http://www.antarcticconnection.com/antarctic/weather/>
Interesting facts about the weather in Antarctica, including a digital readout of the current temperature.

<http://www.wildwildweather.com/>
Billed as "Dan's Wild, Wild Weather Page."

Other Resources

For students:

Allen, Missy, and Michel Piessel. *Dangerous Natural Phenomena*. Chelsea House Publishers, 1993.

Kahl, Jonathan D.W. *National Audubon Society, First Field Guide: Weather*. Scholastic, Inc., 1998.

Ludlum, David M., Ronald L. Holle, and Richard A. Keen. *National Audubon Society Pocket Guide to Clouds and Storms*. Alfred A. Knopf, 1995.

For adults:

Allaby, Michael. *A Chronology of Weather*. Facts on File, Inc., 1998.

Stevens, William K. *The Change in the Weather: People, Weather, and the Science of Climate*. Delacorte Press, 1999.

Wade, Nicholas, Ed. *The Science Times Book of Natural Disasters*. The Lyons Press, 2000.

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WORLD ALMANAC® —VIDEO— EXTREME WEATHER

Although "you can't do anything about the weather," as the old saying goes, people are fascinated with it. Extreme climates, such as the frigid, desolate plains of Antarctica, attract adventurers who pit their stamina against the unrelentingly harsh environment. Armchair weather-watchers are curious about the oddities: the hottest place on Earth, the driest, the rainiest. Episodes of violent weather—tornadoes, hurricanes, blizzards, turbulent thunderstorms—remind us that much in the natural world is still outside of human control. This series explores many types of extreme weather, from inhospitable locations such as the completely arid Atacama Desert in northern Chile to killer storms that can destroy a town in minutes. It also discusses how meteorologists use increasingly sophisticated technology to track approaching storms and issue life-saving warnings before "nature takes its course."

A GEOGRAPHICAL GUIDE TO EXTREME WEATHER

Today, weather stations around the world make it possible to establish records for all of nature's extremes. They document where it's wettest, driest and hottest, where it's coldest, windiest and foggiest. And where people suffer the world's worst storms. Mount Washington, New Hampshire, for example, is home to the highest wind speed measured anywhere on Earth: 231 miles per hour. At the coldest place, the Vostok land mass on Antarctica, the temperature once reached minus 126.9 degrees Fahrenheit. The hottest place is the Sahara Desert, at 136° in the shade. At the rainiest, Mount Waialeale, Hawaii, it rains 335 days a year. Discover why some regions are nicknamed Furnace Creek, Lightning Alley and Hurricane Alley. Learn about the most deadly hurricane in the United States, and the worst blizzard. And see the largest hailstone ever recorded in the U.S.: 1.67 pounds.



Nature's Extremes

The wettest and wildest weather swirls around us all the time, setting one new record after another. Nature's extremes can even threaten our lives. The weather creates dangers for those who visit or must work in these places, and even more for those who have no choice but to live with nature's record-breaking extremes. Here's where to find some of those extremes.

Highest wind speed: Mount Washington, New Hampshire — Mount Washington is home to the highest wind speed measured anywhere on Earth, 231 miles per hour, recorded on April 12, 1934. The wind, funneled between Mount Washington and the top of the troposphere six miles above, regularly blows around ice chunks at over 100 miles an hour. For protection, the weather station here has bullet-proof Lexan windows.

Windiest place on Earth: Antarctica — The record for the highest average wind speed belongs to the coast of west Antarctica, which has an average wind speed of 40 miles per hour all year long. The most violent winds of up to 300 miles per hour are found in tornadoes.

Iciest place on Earth: Antarctica — Antarctica is also the iciest place on Earth, with an ice cap up to two miles thick. More than 90 percent of the world's fresh water is frozen here.

Coldest place on Earth: Antarctica — On August 24, 1960, Soviet scientists at the Vostok land mass on Antarctica — aptly named the Pole of Inaccessibility — measured the cold at minus 126.9 degrees Fahrenheit.

Largest area of drought: Antarctica — The Antarctic is a huge desert, receiving only five inches of precipitation a year, mostly in the form of fine ice crystals. There are even remote valleys where it's so dry there is no ice at all.

Most lightning: Australia/Indonesia — The greatest number of thunderstorms anywhere in the world can be found in a region between Australia and Indonesia, which gets 322 days of thunderstorms each year. The most lightning in North America is recorded in "Lightning Alley," Florida.

World's worst cyclones: Bangladesh — Bangladesh has been deluged by seven of the nine most deadly storms anywhere on Earth. During cyclones, waves surge up to 23 feet high, and winds blow up to 155 miles an hour, swamping and smashing everything in their path. In a 1970 cyclone, half a million people drowned.

Timeline of Natural Disasters

March 11, 1888 — A huge blizzard buries New York and New England, killing 400 people. The drifts blow up to 50 feet high, and thousands are marooned for days.

September 1900 — In Galveston, TX, a hurricane strikes early one morning, sending a five-foot tidal wave through the city. Up to 12,000 people drown, the most deaths from any hurricane.

March 18, 1925 — The most violent tornado on record sweeps across Missouri, Indiana and Illinois, killing 689 people and injuring 2,000; 11,000 are left homeless.

September 3, 1970 — A 1.67-pound hailstone falls at Coffeyville, Kansas.

April 3, 1974 — A super outbreak of tornadoes rips through 13 states from Alabama to Ontario, Canada: 148 tornadoes in 21 hours; 315 people are killed and 6,000 injured.

August 1992 — Hurricane Andrew sweeps across the Virgin Islands, Puerto Rico, Florida and Louisiana, causing over \$20 billion in damage—the most costly natural disaster ever. Thankfully, there are only 13 deaths.

Hottest place on Earth: Sahara Desert — The Sahara has 4,300 hours of sunshine blazing down each year—that's nearly 12 hours every day. On September 13, 1922, at Arizizia, inland from Tripoli on the Libyan Sahara, it reached over 136 degrees Fahrenheit—in the shade!

Highest sustained temperature: Death Valley — The heat in Death Valley, in eastern California and southern Nevada, is created partly by the long and narrow canyon that forms the valley. In 1913, it stayed over 134 degrees for several hours at Furnace Creek, in the center the valley.

Driest place on Earth: Atacama Desert — The Atacama, in northern Chile, is reported to have gone without rain for 400 years. The official figure is one inch of rain in 100 years. In most of this desert, there's not even cactus. Nothing grows—no plants, no animals. When ancient tribesmen were buried here, their desiccated bodies did not rot but were transformed into natural mummies.

World's foggiest place: Newfoundland — Argentina in Newfoundland has an average of 206 days of fog each year. The record was set in 1966, with 230 foggy days in one year.

Rainiest place on Earth: Mount Waiale'ale, Kauai — Located on the island of Kauai in Hawaii, Mount Waiale'ale held the record for the rainiest place—39 feet, 11 inches of rain per year—until 1996. Since then, the yearly rainfall has dropped by two-and-a-half feet, but it's still the rainiest place anywhere in the U.S. Mount Waiale'ale also claims the record for the greatest number of rainy days a year, 335 days on average.

Wettest town on Earth: Cherrapunjee, India — During the wet monsoon season in 1861, Cherrapunjee set the world record for six months: 73 feet, eight inches of water fell from April to September. That year also set the 12-month record: 86 feet, nine inches, enough to cover a 10-story building.

Vocabulary

aerovane — a combination device that measures the force or speed and direction of the wind.

anemometer — a gauge for determining the force or speed of the wind, and sometimes its direction; also called a wind gauge.

cumulonimbus cloud — a giant thundercloud. This type of dense cloud develops vertically through all cloud levels; consisting of water droplets, ice crystals