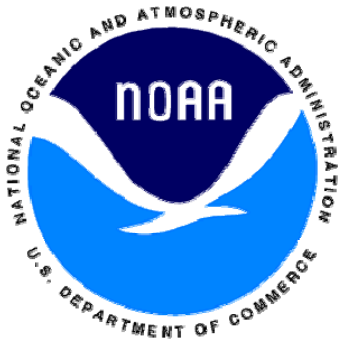


The Intermountain Observer

National Weather Service—Salt Lake City



Inside this issue:	
Experimental Lightning Products	2
CoCoRaHS In Utah	2
Record Fire Season 2007	3
Flash Flooding	4
Record Heat and Safety	5



Lightning Awareness

By Alex Tardy and Kevin Barjenbruch

Governor Jon Huntsman, Jr. declared June 22-28, 2008 as Lightning Safety Awareness Week in Utah.

Summer is the **peak** season for one of the nation's deadliest weather phenomena, lightning. During the past 30 years, lightning has killed an average of 62 people per year in the United States. In Utah, lightning has claimed the lives of 61 people since 1950, more than any other thunderstorm related hazard. In August of 2005, a lightning strike claimed the life of an Eagle Scout and injured 3 other scouts in the Uinta Mountains. In October of this past year, a lightning strike claimed the life of an individual camping in the Uinta Mountains. The frequency of lightning is highest across the Uinta Mountains and Wasatch Plateau (see image), as well as parts of southwest Utah. In 2007, 45 people were struck and killed by lightning in the U.S.; hundreds of others were injured. Of the victims who were killed by lightning:

- 98% were outside
- 89% were male
- 30% were males between the ages of 20-25
- 25% were standing under a tree
- 25% occurred on or near the water

The reported number of injuries is likely far lower than the actual total number because many people do not seek help or doctors do not record it as a lightning injury. People struck by lightning suffer from a variety of long-term, debilitating symptoms, including memory loss, attention deficits, sleep disorders, numbness, dizziness, stiffness in joints, irritability, fatigue, weakness, muscle spasms, depres-



Cloud to ground lightning strike near Herriman



sion, and an inability to sit for long.

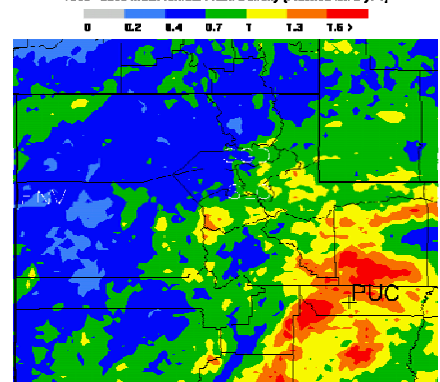
[Lightning Safety](http://www.lightningsafety.noaa.gov/overview.htm)
(<http://www.lightningsafety.noaa.gov/overview.htm>)

When someone is struck by lightning...

People struck by lightning carry no electrical charge and can be handled safely.

- Call for help. Get someone to dial 9-1-1 or your local Emergency Medical Services (EMS) number.
- The injured person has received an electrical shock and may be burned, both where they were struck and where the electricity left their body. Check for burns in both places. Being struck by lightning can also cause nervous system damage, broken bones, and loss of hearing or eyesight.
- Give first aid. If breathing has stopped, begin rescue breathing. If the heart has stopped beating, a trained person should give CPR. If the person has a pulse and is breathing, look and care for other possible injuries. Learn first aid and CPR by taking a Red Cross first aid and/or CPR course.

1989 - 2000 Mean Annual Flash Density (Flashes km⁻² yr⁻¹)



Courtesy of the Lightning Project at Texas A&M University

Experimental Lightning Potential Product

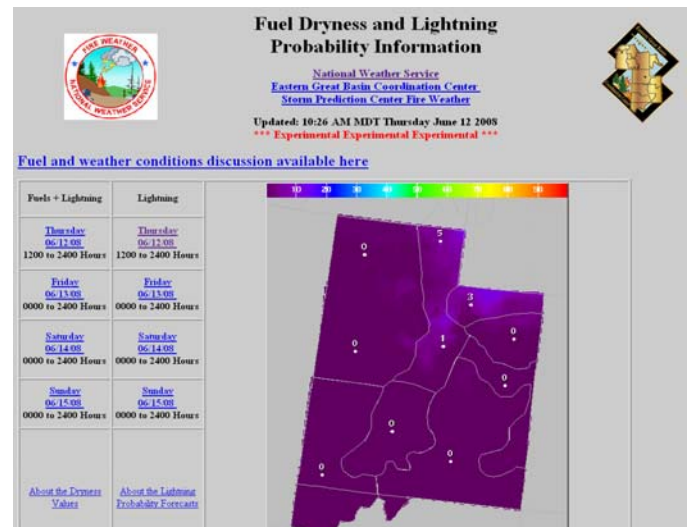
By Alex Tardy

The National Weather Service (NWS) in Salt Lake City will be issuing **experimental lightning graphics** in support of the Fire Weather Program. Most wildfires are started by lightning and the need for better lightning forecasts has increased. Lightning strikes that occur with rainfall can still cause grass and forest fires if fuels are dry.

A new graphic will be updated daily which will combine lightning potential with current fuel conditions and historical fire behavior. The lightning probability is the chance of 10 cloud-to-ground lightning strikes in a 40 km X 40 km box. The goal is to assist fire suppression managers in determining where fire fighting resources are most needed.

[NWS Fire Weather Page](http://www.wrh.noaa.gov/slc/fire/)

(<http://www.wrh.noaa.gov/slc/fire/>)



CoCoRaHS comes to Utah July 1st by Mike Seaman

The Community Collaborative Rain, Hail, and Snow (CoCoRaHS) network, a grassroots volunteer network of weather observers, will expand into the state of Utah beginning July 1st, 2008. Since it's inception in 1998, CoCoRaHS has spread to over 30 states, and includes over 9,000 volunteer observers. These volunteers, of all different ages and backgrounds, have a common interest in weather reporting.

Heavy rainfall associated with thunderstorms is often localized, and the most intense rainfall and largest hail is often missed by weather observing networks. The goal of CoCoRaHS is to greatly increase the density of weather observations, with the ultimate organizational goal of having one weather observer per square mile. The need for a dense network of weather observations was never more apparent than during the Ft Collins, Colorado flash flood of 1997, which killed 5 people. Because of the localized, yet very intense nature of the rainfall during this event, many people were caught off guard as flood waters rushed into the city. Following this event, the Colorado Climate Center, located at Colorado State University in Ft Collins, established the CoCoRaHS network, in hopes of increasing the number of rainfall reports available to forecasters, emergency managers, and other decision makers.

The goals of CoCoRaHS include: 1) provide accurate high-quality precipitation data for our many users on a timely basis; 2) increasing the density of precipitation data available throughout the country by encouraging volunteer weather observing; 3) encouraging citizens to have fun participating in meteorological science and heightening their awareness about weather; 4) providing enrichment activities in water and weather resources for teachers, educators and

the community at large.

The non-profit CoCoRaHS network is sponsored in part by the National Weather Service (NWS) and other individual contributors and organizations. Locally, the effort to bring CoCoRaHS to Utah is being led by Dr. Esmail Malek of the Utah Climate Center at Utah State University in Logan. In a press release, Dr. Malek states "Utah is a large state, and there is a shortage of precipitation measurement sites across the state from the mountains to the deserts. Official precipitation measurement sites across Utah are generally thinly distributed, and so precipitation is often not reported in sufficient detail, particularly in sparsely populated counties. We are confident that CoCoRaHS volunteers can help us fill the gaps and gather this lacking, but important data."

The NWS in Salt Lake City encourages its trained spotters to participate in CoCoRaHS. However we also ask that spotters remember to continue reporting significant weather including snowfall, high winds, flash flooding, hail, etc..., to the Salt Lake City forecast office, via either the toll-free spotter line at 800-882-1432 x1, or by sending their reports to utah.spotter@noaa.gov. For additional information on CoCoRaHS, including how to join, please check out [their website](http://www.cocorahs.org) at <http://www.cocorahs.org>.



*Spotters
can Join
CoCoRaHS*

We want to hear from you! by Mike Seaman

One of the key points emphasized during storm spotter training sessions is the importance of timely and accurate storm reports. Remember, reports from trained storm spotters are a key part of the NWS mission. These reports not only help forecasters determine whether additional communities in the path of a storm are at risk, but also serve as motivation for those people in the path of severe weather to take shelter and protect their property.

Don't assume that forecasters at the NWS already know heavy rain or large hail is occurring. Although tools such as Doppler radar give forecasters clues to what a storm is capable of doing, forecasters rely heavily on real-time spotter reports for ground truth. Timely, accurate storm reports are very important to us, and we want to hear from you!

Tornadoes, funnel Clouds, and wall Clouds

Flooding and/or rapidly rising water, even in a dry wash

Strong and/or damaging winds and hail of any size

New wildland fires, especially if threatening life or property

Snowfall, snow depth, and freezing Rain

Tip You can send us your report:

Toll-free spotter hotline: **800-882-1432 x1**

Email: utah.spotter@noaa.gov



Severe thunderstorms rip through the Salt Lake Valley.

Record Fire Season in 2007 by Alex Tardy



After a dry 2006-07 winter season across the Great Basin, the fire season brought extreme fire behavior and a record amount of acres burned, beginning late June and early July. Extremely dry fuels (i.e., dead and live vegetation and trees) and the combination of lightning, record heat, and low humidity and strong winds brought about the severe fire weather conditions.

The Milford Flat Fire was the largest wildfire in Utah history. It was started by lightning on July 6, 2007 near Milford Utah. Before full containment the fire burned 363,052 acres (567 square miles) according to the [National Interagency Fire Center \(NIFC\)](#) and caused large stretches of I-15 to be temporarily closed. Many veteran firefighters had stated this was the fastest moving fire they had ever seen and by July 10 there were 400 firefighters battling the blaze. On July 7, smoke caused numerous wrecks on I-15, including a 5 car pile-up, and a fatal accident that involved 2 motorcyclists. The fire also caused 10 truckers to abandon their cargo trailers and destroyed 1 home and 2 other structures. 2007 also recorded the largest fires on record in the states of Georgia and Florida and follows previous years that have seen increased fire activity.

Other major fires across Utah included Salt Creek and Neola. The Salt Creek Fire started July 19 about five miles east of Nephi, UT along State Route 132. The fire then burned north and south

of the highway. The fire also spread to the north-east in the direction of Indianola Valley. This fire burned about 25,500 acres and its expense was estimated at around \$4 million. The deadliest fire for Utah was in Neola and began June 29, 2007. There were 3 fatalities attributed to the fire, \$7.3 million in cost and the complex consumed nearly 44,000 acres until fully contained on July 11.

The 2008 fire season has started off quickly in parts of the United States and as of May 7, there have been over 21,000 wildland fires and more than 1.3 million acres burned. The year 2008 ranks second behind 2006 in quantity of acreage burnt to date, and is nearly twice the 2001-2008 average.

The National Weather Service provides weather support for fire incidents and an onsite Incident Meteorologist (IMET) for the larger wildfires.

Tip

Spotters can help the NWS by providing information on observed wildfires, lightning, and strong winds.

ragging Milford Flat blaze in July 2007.

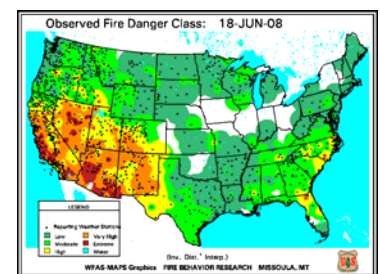


Forest fires can kill and cost millions of dollars to put out each year



Rapid forest fire development near Nephi in July 2007 (above).

Fire Danger Map on June 18 2008 (below).



Flash Flooding During Monsoon Season in Utah

By Alex Tardy

Flash Flooding

Flash flooding occurs every year in Utah, especially in National Parks which have thousands of visitors each summer. Heavy rain that occurs with thunderstorms during the “monsoon” season can cause flash flooding in any part of the region including the Salt Lake Valley which had a couple flash flood events in 2007. However, areas that are most prone to flash flooding include slot canyons and dry washes which are commonly found throughout parts of Utah. The same amount of rainfall intensity and duration will have different results depending on the topography. The NWS issues a Flash Flood Potential Rating product twice a day for southern Utah.

[NWS Flash Flood Information](http://www.wrh.noaa.gov/slc/river/)

(<http://www.wrh.noaa.gov/slc/river/>)

Statistics

- Nationwide average of nearly 100 fatalities each year
- 29 fatalities in Utah since 1950
- The number one cause of deaths associated with thunderstorms, nationwide
- Flooding causes more damage in the United States than any other severe weather related hazard, an average of just over \$5 billion a year
- Nearly half of all flash flood fatalities are vehicle-related
- Six inches of fast-moving water can knock you off your feet
- A water depth of two feet will cause most vehicles to float

[Monitoring Rivers](http://ahps2.wrh.noaa.gov/ahps2/index.php?wfo=slc)

(<http://ahps2.wrh.noaa.gov/ahps2/index.php?wfo=slc>)

Tip

Weather spotters can assist the National Weather Service and protect lives and property by reporting significant weather such as flash flooding.

Examples of dry wash flooding in southern Utah (near Kanab) and suburban flooding (Salt Lake Valley).



*Annually flooding
causes more deaths
and damage than
other weather
hazards*



All Hazards NOAA Weather Radio is a great source for flash flood information.



Images - Washington County flash flooding in late July (top) and major flood markings and debris observed in Washington County on August 1, 2007 (below). Note the mud line on the house.

Record Heat During Summer 2007

By Alex Tardy

The summer of 2007 (June, July, and August) was the hottest on record for Salt Lake City. Some statistics for the summer include:

- Average temperature (highs and lows) of 79.3 °F, compared to a normal of 73.9 °F
- 47 days with a maximum temperature of 95 °F or higher
- 17 days with a high temperature at or above 100 °F

The 2007 summer was the hottest on record for parts of the West. The recent trend of hotter temperatures across the West may have been caused by climate change, but at this point in time, we do not have enough data to statistically make this conclusion.

Heat waves and hot temperatures are common in Utah during the summer months, but related illnesses and incidents still occur. Those that are most vulnerable to the heat include small children, the elderly, those on certain medications, and persons with weight and alcohol problems. During an average summer in the United States there are about 200 deaths attributed to heat and nearly 30 of those are children. Heat is a silent killer that does not have the same visual impact as other weather hazards. Based on data from 1997 to 2006... excessive heat was the top weather-related killer causing more fatalities than lightning, tornadoes, and winter storms combined.

Hot vehicles can be deadly

Facts: Total number of U.S. hyperthermia deaths of children left in cars this year: **6**
 Total number of U.S. hyperthermia deaths of children left in cars, 2007: **35**
 Total number of U.S. hyperthermia deaths of children left in cars, 1998-2007: **367**
 Average number of U.S. child hyperthermia fatalities per year since 1998: **36**

		Temperature (°F)															
		80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
Relative Humidity (%)	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	131	137	
	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
	55	81	84	86	89	93	97	101	106	112	117	124	130	137			
	60	82	84	88	91	95	100	105	110	116	123	129	137				
	65	82	85	89	93	98	103	108	114	121	128	136					
	70	83	86	90	95	100	105	112	119	126	134						
	75	84	88	92	97	103	109	116	124	132							
	80	84	89	94	100	106	113	121	129								
	85	85	90	96	102	110	117	125	135								
90	86	91	98	105	113	122	131										
95	86	93	100	108	117	127											
100	87	95	103	112	121	132											

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity
 ■ Caution ■ Extreme Caution ■ Danger ■ Extreme Danger

Heat Index/Heat Disorders Temperature Ranges and Definitions

Heat is a silent killer

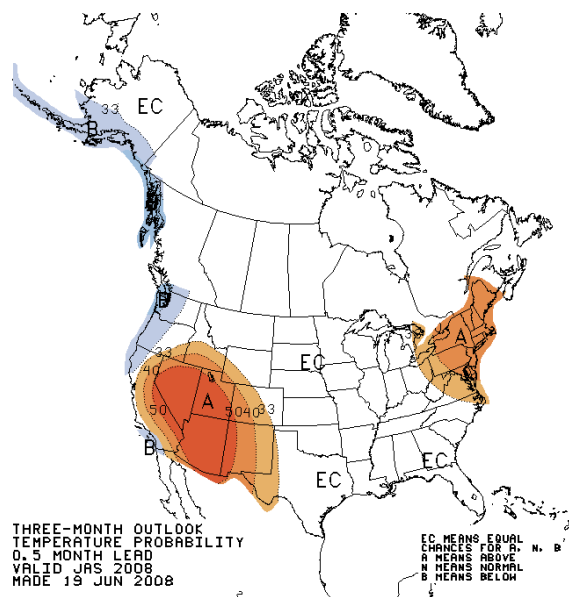
80°- 90° FATIGUE POSSIBLE WITH PROLONGED EXPOSURE AND/OR PHYSICAL ACTIVITY.

90°- 105° SUNSTROKE, HEAT CRAMPS AND HEAT EXHAUSTION POSSIBLE WITH PROLONGED EXPOSURE AND/OR PHYSICAL ACTIVITY.

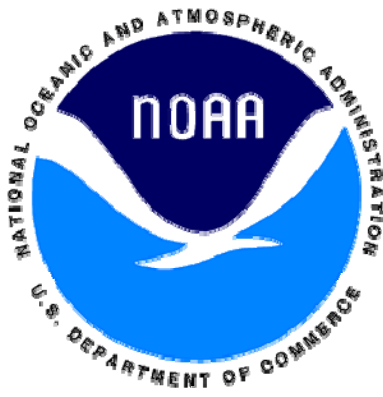
105°- 130° SUNSTROKE, HEAT CRAMPS OR HEAT EXHAUSTION LIKELY, AND HEATSTROKE POSSIBLE WITH PROLONGED EXPOSURE AND/OR PHYSICAL ACTIVITY.

130° or higher HEATSTROKE/SUNSTROKE HIGHLY LIKELY WITH CONTINUED EXPOSURE.

Hot Summer Expected



Heat index chart (left) and NOAA's CPC temperature outlook for July through September (right).



Published by the National Weather Service in
Salt Lake City

On the web at:

<http://weather.gov/saltlakecity>

Publisher: Alex Tardy

Email: Alexander.Tardy@noaa.gov

Warning Coordination Meteorologist and
Weather Spotter Coordinator:

Kevin Barjenbruch

Phone: 801-524-5113

Email: Kevin.Barjenbruch@noaa.gov

Tip

A resource is available to storm spotters across Utah and Southwest Wyoming. [The Utah and Southwest Wyoming Weather Spotter homepage](#) is designed to aid storm spotters across the area in identifying threatening weather conditions.

The National Weather Service relies heavily on spotter information during severe weather events. Critical information provided by trained storm spotters, combined with other information such as radar and satellite, aids our forecasters in determining when a storm may be capable of producing severe weather such as large hail, damaging winds, or flash flooding. Additionally, spotters provide important information such as snowfall amounts, snowfall intensity, and precipitation changes during winter weather events.

We are continuously looking for new spotters across the region, particularly in smaller towns and rural communities.

Heat Information continued

- **Heat wave:** Prolonged period of excessive heat and humidity. The National Weather Service steps up its procedures to alert the public during these periods of excessive heat and humidity.
- **Heat index:** A number in degrees Fahrenheit (F) that tells how hot it really feels when relative humidity is factored into the actual air temperature. Exposure to full sunshine can increase the heat index by 15° F.
- **Heat cramps:** Heat cramps are muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe, they are an early signal that the body is having trouble with the heat.
- **Heat exhaustion:** Heat exhaustion typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to the vital organs. This results in a form of mild shock. If not treated, the victim may suffer heat stroke.
- **Heat stroke:** Heat stroke is life-threatening. The victim's temperature control system, which produces sweating to cool the body, stops working. The body temperature can rise so high that brain damage and death may result if the body is not cooled quickly.

Sunstroke: Another term for heat stroke.

Websites with heat related information:

Tips and Safety (<http://www.noaawatch.gov/themes/heat.php>)

US Environmental Protection Agency excessive heat guidebook

(<http://www.epa.gov/heatisland/about/heatguidebook.html>)

The spotter page is available from the National Weather Service in Salt Lake City's homepage by clicking on Weather Spotters on the left hand menu, or simply using the following link: <http://www.wrh.noaa.gov/slc/spotter>

UTAH AND SOUTHWEST WYOMING WEATHER SPOTTER HOME PAGE

The National Weather Service in Salt Lake City maintains a volunteer spotter network with over 400 people assisting our office. Members of this spotter network are trained to observe, observe and report hazardous weather phenomena, and report their findings to the Salt Lake City Weather Service Office. Significant weather events in Utah and southwest Wyoming range from high winds, snow and ice, to hail and severe storms. The services our spotters provide in reporting these events are invaluable to our office. The Utah and Southwest Wyoming Storm Spotter Page is designed to give our spotters access to resources such as training guides and presentations, information about upcoming training sessions, our spotter newsletter, and more. Additionally, those who have a vested interest in weather can use this page to contact us, and begin the process of becoming an official storm spotter.

ROLE OF THE WEATHER SPOTTER

A weather spotter is a person who observes significant weather and relays the information to the National Weather Service (NWS) or appropriate local authority, based on the severity and immediate threat of the event observed.

Spotters provide an invaluable service to their communities and to the National Weather Service. The information they provide helps their community by assisting local public safety officials in making critical decisions about evacuating areas and preparing. During the developing weather event, such as tornadoes and flash flooding, these real-time reports from weather spotters are used to help warn others in their community, as well as those neighboring communities, which may be in their way.

Spotter reports also help National Weather Service forecasters in the critical decision making process of determining what storm poses a risk to their area and people. The National Weather Service uses these critical reports from storm spotters in combination with radar, satellite, and automated surface observations when issuing Tornado, Thunderstorm, Flood, Flash Flood, Heavy Storm, and other types of warnings. Your report becomes part of the warning decision making process, and is combined with radar data and other information and used by NWS forecasters to decide whether or not to:

- Issue a new warning
- Cancel an existing warning
- Continue a warning
- Issue a warning for the next county
- Change the warning type (from severe thunderstorm to tornado, for example)

NWS weather spotters are always needed



WE NEED YOU!