

Climate-Watch, July 2001

National Climatic Data Center - (last update August 6, 2001)



Cloud to Ground Lightning Stroke

Review - Lightning- A Bolt Out of the Blue- A Dangerous Killer !

Recent media reports indicated that a **bolt of lightning** struck two men who were tossing a football on a beach **on a clear day** on Island Beach State Park, New Jersey. One of the men reportedly died, and the other was injured. The lightning was reportedly sparked from a storm a few miles off shore. Lightning can be a dangerous killer. The average lightning stroke is 6 miles long. On average there are about 44,000 lightning storms every day on the planet and lightning strikes the earth about 6,000 times each minute--about **8.64 million strikes each day**.

The average diameter of the typical lightning bolt is about the **size of a quarter or half dollar**, and the temperature in a return stroke of lightning can reach 50,000 degrees F--almost five times hotter than the surface of the sun.

"Positive Giant" lightning strikes can hit the ground up to **20 miles away from the storm**. Because it seems to strike from a clear sky, it is sometimes known as "A Bolt From the Blue." These "Positive Giant" flashes strike between the upper portion of the storm and the Earth, and carry several times the destructive energy of a "regular" lightning strike.

A lightning strike may contain more than 1,000,000 volts and over 200,000 amperes, and are classified as either "hot" or "cold". A hot strike lasts up to a tenth of a second, has a high amperage, and sets fire to flammable materials in its path. A cold strike is much faster, has a higher voltage in relation to amperage, and has an explosive rather than a flammable effect. A

large bolt of cold lightning has enough power to lift a **44,000 ton ocean liner six feet in the air**. The average lightning bolt would light a 100 watt light bulb for three months.

Lightning is the most dangerous and frequently encountered weather hazard that most people experience each year. It is the **second most frequent killer** in the United States with nearly 100 deaths and 500 injuries each year. (Floods and flash floods are the number one cause of weather related deaths in the US.)

Weather Log - July 1 - 10, 2001

The temperatures fell to **39 degrees F at Muskegon, MI** on the morning of July 2nd, 2001. This was a new record low for the date and for the month of July. The old daily record was 44 degrees set in 1995 and the old monthly record was 40 degrees set on July 11th, 1945.

Significant flooding occurred in West Virginia and eastern Kentucky on July 8th due to a series of thunderstorms.



[larger image](#)

Up to 3000 homes were damaged or destroyed by flooding or mudslides, one person was killed in southern WV, and two were killed in eastern KY. West Virginia declared a state of emergency in eight counties. The National Weather Service reported that nearly 8 inches of rain fell in Mullens, WV. As a result, the Guyandotte and Tug Fork Rivers rose well above flood stage, and the USGS said flooding on parts of the Guyandotte exceeded the 100-year flood level. In Wyoming County, 75 percent of the businesses were damaged or destroyed. Preliminary damage estimates for West Virginia are at least \$20 million, but some costs have not yet been counted.

The AP reported that a tornado formed over the ocean as a waterspout and moved ashore in the busy beach resort of **Myrtle Beach, South Carolina**, on July 6th. Several people were reportedly injured, mobile homes were destroyed, and buses were overturned. Damage is estimated at 8 million dollars, and power was knocked out for 4000 residences and businesses.

In the Cascades of Washington state, **4 firefighters were killed** when a fire (believed to originate from a campfire) overtook the firefighters, due to gusty winds. Six others were injured in the blaze, which started on July 10. This was the nation's deadliest wildfire since 1994. The fire grew from its initial size of less than 10 acres early in the day to 2500 acres by late afternoon. Extremely dry weather, low humidity, and dry underbrush have reportedly made the steep, heavily forested terrain of north-central Washington especially dangerous.

China: The weather of June and early July 2001 in southern China was marked by **persistent heavy rain and squally thunderstorms** under the repeated influence of active troughs of low pressure near the south China coast. Troughs of low pressure affected the territory repeatedly and brought heavy rain episodes to Hong Kong and surrounding areas. Also, western China - Qinghai Province - was hit by heavy rains, resulting in 8 deaths, and leaving 7 people missing. Southern China has been hit by **two typhoons - Durian and Utor** - and the two worst affected areas are the Guangdong Province and the Guangxi Autonomous Region. Following is a summary of the effects of the two storms:

- 33 deaths
- Over 440,000 evacuated
- Over 600,000 homes damaged or destroyed
- Over \$2.7 billion (US dollars equivalent) in damages to structures, crops, etc

Typhoon Utor resulted in 121 deaths in the **Philippines**, including at least 28 in the northern city of Baguio. In addition, 44 people remain missing, and 130 individuals were injured. The government reported that almost 1 million people in approximately 20 provinces were affected by Utor, over 3700 homes were destroyed, and at least 8390 homes were damaged. Typhoon Utor is also reportedly responsible for 1 death in Taiwan.

In **Bolivia**, media reports indicated that at **least 9 people have died** as a result of low temperatures in the Andean nation. Five other individuals were reportedly injured in an accident caused by snow. Low temperatures also caused many people to suffer from severe respiratory diseases in the state of La Paz. Four individuals reportedly died in El Alto because of low temperatures, where, according to Bolivia's Federal Police, temperatures of 5.6 degrees Celsius were registered. In addition, 2 individuals reportedly froze to death in La Paz, and 3 died in the city of Tarija. The snowstorm reportedly hit the Bolivia cities of La Paz, El Alto, Oruro, Cochabamba and Potosi on Thursday (28th), dumping 10cm of snow.

France: The AP reported that strong winds sent a huge tree crashing down on spectators at a music concert, resulting in 11 deaths and approximately 85 injuries, as winds up to 93 mph ripped through the Alsace region north of Strasbourg.

Italy: Reuters reported that at least 35 individuals were injured when a tornado ripped through northern Italy on July 7, uprooting trees and tearing the roofs off of homes. Lampposts were reportedly brought down by the winds, and the police reported a spate of car crashes as drivers lost control in the high winds. Railway lines were also reportedly damaged near Milan, putting them out of order for at least 2 days.

Russia: The ITAR-TASS reported that torrential rains that resulted from a tropical cyclone that hit the Baikal area caused flooding in the Kitoi, Belaya and Iya Rivers, all of which are tributaries of the Angara River. Precipitation exceeded a monthly average in several days, flooding a number of populated localities, roads and farms. Approximately 130 individuals were left homeless in the highland areas of the Republic of Buryatia as a result of the floods and mudflows, and 200 tourists were blocked in the Eastern Sayan Mountains.

Vietnam: Reuters reported that the death toll from the worst floods to hit Vietnam's far north in several years rose to 33 on July 6, and several individuals remain missing. The flooding reportedly resulted from heavy rains in the aftermath of Typhoon Durian, which struck 6 highland provinces north of Hanoi, inundating tens of thousands of houses, causing rivers to swell, breaching dykes and washing away parts of some roads.

Weather Log - July 11 - 20, 2001

An **unusually cool, dry air mass** invaded the eastern third of the U.S. during the July 12-15 period. The cooler air reached well into the south, with Mt. Leconte, TN reaching 41 degrees, and Augusta, GA reaching 57 degrees--quite unusual for July.

Heavy rains and thunderstorms struck the Ohio Valley on July 17-18, resulting in 2 deaths in Cincinnati. Over 6 inches of rain was reported in some locations.

In **South Korea, heavy rains** soaked parts of the country on the 14th, triggering landslides and flooding that killed at least 40 people according to government officials. As the rain let up on the 15th, thousands of soldiers and government officials helped flood victims clear garbage, mud and debris. Media reports indicate about 34,000 homes were flooded in Seoul and Kyonggi-do, a populous area surrounding the capital. Nearly 500 cars were reported destroyed or swept away in floods. Rainfall in Seoul measured 3.91 inches per hour, the heaviest since 1964, when 3.9 inches per hour was recorded. In all, 12.2 inches of rain fell in Seoul and Kyonggi. Some 3,700 acres of farmland, mostly rice paddies, were flooded, and three of Seoul's seven main subway lines temporarily halted service to some stations.

This report highlights the danger of lightning and is related to our featured story above. According to media reports, **lightning struck** a Minnesota National Guard bivouac site in the training area of the sprawling Camp Ripley in central Minnesota, during the evening of July 17th, 2001. Nearly two dozen Marine Corps reservists were sent to hospitals, military officials said. Most were released after treatment but two were transferred to St. Cloud Hospital, where they were in fair condition Wednesday.

Media reports indicate that **more than a million people** remain stranded in the east Indian state of Orissa after heavy monsoon rain caused severe flooding in the area. As of July 20th, at least 39 people have been killed, thousands of homes are damaged or destroyed and the situation is likely to get worse as [more rain is expected](#) over the next few days. Nearly 7,000 villages have been affected by the floods and officials estimate five million residents have been forced to abandon their homes and move to government buildings on safer ground. Climatologically, flooding is nothing new to this part of the world. A combination of the monsoon and dangerous typhoons generally bring between 10-20 inches of rain monthly mainly to coastal areas in this region in the July to September period.

Weather Log - July 21 - 31, 2001

Update- Relief workers were battling to help more than 500,000 people still marooned in the eastern Indian state of Orissa on Sunday (22nd) as swollen rivers receded, officials said. The

floods triggered by torrential monsoon rains have left **45 people dead** and affected more than seven million people in the last 10 days in the poverty-stricken coastal state. "The trend of all the rivers is that water levels continue to fall," Karunakar Biswas, a government official, told Reuters.

Media reports indicated that **torrential downpours that killed some 200 people in Pakistan** have ended a drought, but caused millions of dollars' worth of damage. Most of the deaths were caused by mudslides, flash floods and collapsing houses in the North West Frontier Province, the capital Islamabad and the adjacent city of Rawalpindi. Thousands of people were displaced by the worst floods in memory in Rawalpindi. The city was not only hit by the record rain, but because it lies on a lower level than neighboring Islamabad, which recorded 620 mm (24 inches) of rain in 10 hours on Monday (23rd), it was hit by the run-off floodwaters from there as well.

Officials in the **town of Manshera** in the North West Frontier Province said 65 people were killed and more than 100 injured on Monday (23rd) when a hillside village of more than 40 houses was swept away by a mudslide caused by the heavy rain. The village destroyed by the landslide, Dadar, is 95 kilometers (60 miles) north of Islamabad, and in an area prone to landslides near the town of Shinkiari on the famous Karakoram Highway. Relief operations were continuing on the 26th in parts of northern Pakistan, which were worst hit by the record rains earlier this week that killed about 200 people and injured a similar number. Water levels in Pakistan's two main reservoirs, Mangla and Tarbela -- both of which had hit the so-called "dead level" -- had risen sharply though they were still not full. Weather officials said the outlook for the rest of the monsoon season that ends in September was for above-average rain.

The **monsoon season in Nepal, which begins in June and ends in September**, regularly brings flash flooding and the loss of life. According to the Home Ministry of Nepal, more than 100 people have died in landslides and floods this season. At least 20 people were feared dead early Sunday (29th) after heavy monsoon rains triggered floods and landslides about 115 miles northwest of Nepal's capital, Kathmandu.

Media reports indicate that at **least 61 people are now dead in Taiwan** in the wake of Typhoon Toraji. The typhoon, which was the worst typhoon to hit Taiwan this year, roared across the island Monday (30th), leaving a trail of destruction that also left more than 103 people missing, many of whom are believed to be buried alive. The eastern coastal county of Hualien took the brunt when Toraji reached shore. Rescue workers recovered 13 bodies from under mud and rocks in a small village called Ta Hsin, while 34 people were still missing. Toraji, named after a popular flower in North Korea, is the eighth and worst typhoon to menace Taiwan this year. Typhoon Utor lashed Taiwan, the Philippines and China last month, killing at least 46 people in China, 121 in the Philippines and one in Taiwan.

The AP reported that at least two more villages fell victim to Poland's **rain-swollen Vistula River on the 31st**, when floodwaters broke through a sandbag dam in a farming region southeast of Warsaw. Severe damage has reportedly occurred to the capital, and the villages of Kepa Gostecka and Kepa Solecka were flooded, forcing more than 1,500 individuals to evacuate. Weeks of intense rains and electrical storms have reportedly killed at least 25 individuals and caused tens of millions of dollars in flooding damages in southern Poland. The floods are

reportedly the worst to hit Poland since 1997. The villages of Braciejowice, Zakvzev, Grabowiec and Las Debowy were also reportedly evacuated on Tuesday.

Also, that torrential rains soaked central and upper South Korea leaving 3 dead and 3 missing. The downpour reportedly began early on the 29th, and flooded nearly 3,000 houses while stranding thousands of people on islands and mountain resorts. Most casualties and property damage reportedly occurred in Incheon - a port city west of the capital Seoul - and the populous Kyonggi Province surrounding the capital, which received up to 9.8 inches of rain. A section of roads in Seoul was reportedly submerged in 7.6 inches of rain, and this was the **third bout of heavy rains to hit South Korea in less than a month**. A total of 60 individuals have reportedly died and 6 others remain missing as a result of the earlier downpours.

Media reports (as of the 30th) indicate that the **two main lava flows of Mount Etna appear to be slowing down** as emergency workers battle to save tourist facilities. Despite the slowing of the lava, workers on Mount Etna remained on high alert on Monday (30th) because of the volcano's unpredictability, Sicily's Civil Protection Agency said. Emergency workers worked through the night to reinforce the dams put up to protect the tourist base, Rifugio Sapienza. Officials said the embankments were so far diverting the flow of lava and keeping it under control. The other river of lava, which in the past days threatened the town of Nicolosi, appeared to have stopped advancing about four kilometres (2.5 miles) from the town. See the [NOAA Mount Etna Eruption - NOAA-16 Multi-spectral Color Enhancement - July 24, 2001 at 1233z](#) satellite image showing the volcanic plume.

Reuters reported that Spain's North African enclave of Melilla was hit by **freak heat waves on the 30th** which sent temperatures as high as 30 degrees Celsius in a matter of minutes. Spain's Meteorological Institute reportedly said that it registered 2 heat surges Monday morning. The first surge reportedly sent the temperature to 105 degrees Fahrenheit from 75 degrees Fahrenheit before falling off again within 15 minutes. Approximately an hour later the second surge reportedly pushed the temperature up 59 degrees Fahrenheit before cooling down again a few minutes later. Melilla is located on a small peninsula on Morocco's Mediterranean coast.

Note: Hazard event satellite images available courtesy of [NOAA OSEI Satellite Images](#).

Selected U.S. City and State Extremes

The [Selected U.S. City and State Extremes](#) provides a list of new monthly or unusual records that were set across the U.S. during July 2001.

Additional Resources

- [Recent Global Daily Data](#)
- [NOAA 2002 Hurricane Season Forecast](#)
- [National Fire News](#)
- [NCDC El Nino / La Nina](#)
- [NNDC Climate Data Online \(for long-term climate data\)](#)
- [Additional NOAA OSEI Satellite Images](#)(Western Fires, Tropical Storms, etc)
- [NCDC Storm Event Database](#)
- [Links to Numerous Natural Disaster Web Sites](#)

Citing the Article

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