

## Climate-Watch, August 2001

National Climatic Data Center - (last update September 24, 2001)



**Richmond, VA Flooding- August 23rd, 1969** Aftermath of Hurricane Camille

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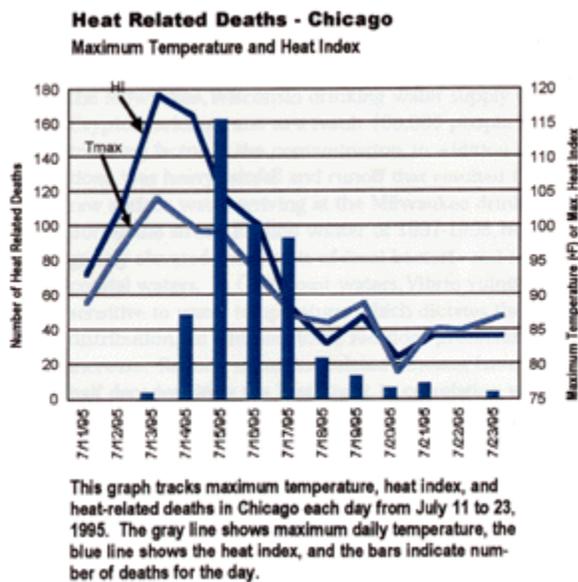
### Review - Temperature Extremes and Floods- Two Weather Related Killers !

**Floods are among the most frequent and costly of natural disasters** in terms of human hardship and economic loss. As much as 90 percent of the damage related to all natural disasters (excluding droughts) is caused by floods and associated debris flows. Most communities in the United States can experience some kind of flooding. Over the 10-year period from 1988 to 1997, floods cost the Nation, on average, \$3.7 billion annually. The long-term (1940 to 1999) annual average of lives lost is 110 per year, mostly as a result of flash floods.

The two key elements in flash floods are rainfall duration and intensity. Intensity is the rate of rainfall, and duration is how long the rain lasts. Topography, soil conditions, and ground cover also play an important role. Flash floods occur within a few minutes or hours of excessive rainfall, a dam or levee failure, or a sudden release of water held by an ice jam. Flash floods can roll boulders, tear out trees, destroy buildings and bridges, and scour out new channels. Rapidly rising water can reach heights of 30 feet or more. Furthermore, flash flood-producing rains can also trigger catastrophic mud slides.

**Heat kills by taxing the human body beyond its abilities.** In an average year, about 175 Americans succumb to the effects of summer heat. Among the large continental family of natural hazards, only the cold of winter - not lightning, hurricanes, tornadoes, floods, or earthquakes -

takes a greater toll. In the 40-year period from 1936 through 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation.



[larger image](#)

In the disastrous heat wave of 1980, more than 1250 people died as the direct result of the heat, with an estimated 10,000 deaths related to heat stress. No one can know how many more deaths are advanced by heat wave weather - how many diseased or aging hearts surrender that under better conditions would have continued functioning. The 1995 Chicago heat wave resulted in more than 400 deaths in a 9-day period as shown in the adjacent plot.

See the special NCDC report [Climate of 2001 - Summer Heat in the U.S.](#) for more information.

### Weather Log - August 1 - 10, 2001

**Flash flooding gripped the Chicago area on the morning of August 2nd, 2001.** The floods shut down major thoroughfares at the height of morning rush hour, flooding dozens of underpasses. Manhole covers were seen floating off in some places, with 2-4 inches of rain falling in just several hours. The flash flooding began early Thursday morning when heavy rain moved through the area. Cooler temperatures associated with the system were a welcome relief from the **heat which brought dangerous heat index numbers to the region in late July.** The heat index is a number in degrees Fahrenheit (F) that tells how hot it really feels when relative humidity is added to the actual air temperature. Exposure to full sunshine can increase the heat index by 15 degrees F.

**Heat stroke death of Korey Stringer of Minnesota Vikings:** On August 1st, lineman Korey Stringer died as a result of a heat stroke suffered during training camp the previous day in Minnesota. Temperatures were in the low 90's with a heat index near 100 during the Tuesday practice sessions. The conditions during the practice sessions were not at all uncommon for July and August NFL training camps, but this was the first heat stroke death reported in the history of the league. However, this year's heat wave in the Plains states has not been unusual, and overall heat-related deaths for this year are still substantially less than during 1995 and 1999. According to the new media, (Reuters) reported that the heat wave affecting much of the Midwest this summer has been a factor in 56 deaths according to local health officials from the affected states.

**Flooding in northern Bangladesh** closed schools and thousands fled their homes after heavy monsoon rains swamped villages. According to media reports, floodwaters washed away dirt roads or overflowed the paved streets, disrupting communication and transportation. Villagers used homemade boats or rafts fashioned from banana trees to get around. The Meteorological Department said 100 millimeters (3.9 inches) of rain fell on the region during a 12-hour period ending at 6 a.m. (0000 GMT) Thursday, August 2nd, 2001. The rains, along with floodwaters coming from the neighboring Indian state of Assam, have caused the Bangladesh rivers to overflow. Most of Bangladesh's 250 rivers have their origins in the Himalayas. The rivers run through the Indian and Bangladeshi plains before draining into the Bay of Bengal. Monsoon season rainfall amounts average between 90 and 100 inches per month at Cherrapunji, India (at 4,300 feet in the lower Himalayas) to 10-25 inches per month in central and southern Bangladesh.

[Tropical Storm Barry](#) moved across the lower Gulf coast states of Florida and Alabama on August 6th, 2001 brought heavy rains and some flooding. [Rainfall amounts](#) of up to 8-9 inches were measured over the Florida panhandle with lesser amounts in parts of Alabama, Mississippi and southwest Georgia.

[Severe thunderstorms](#) with associated damaging downdraft winds were observed over eastern North Dakota and western Minnesota. These storms were associated with a cold front which swept through the area and also spawned several tornadoes and hail. Many locations reported extensive damage due to strong winds. The winds at Grand Forks, ND AFB on August 8th, 2001 at 8:06 PM **reported a wind gust of 114 mph** (99 kts) , the sustained winds were observed at 81 mph (70 kts). See the following to obtain [Preliminary Storm reports](#) for any day.

### **Weather Log - August 11 - 20, 2001**

Typhoon Usagi pounded the **north-central coast of Vietnam** on the 11th bringing with high winds and torrential rains. Officials said tens of thousands of people were left homeless and at least one person was killed.

Media reports indicate that northeastern Iran also experienced **heavy rains and flash flooding** on the 10th and 11th of the month. Rescue workers pulled bodies from the mud and army helicopters evacuated residents to hilltop shelters in northeastern Iran, where flash floods and mudslides have killed an estimated 200 people. A rescue pilot said he saw at least three buses with Iranian tourists buried in mud in Golestan National Park, a popular summer destination for Iranians. Trucks and bulldozers moved ahead with repairs to damaged utilities and roads, including the main highway between Tehran and the northeastern city of Mashhad. State television estimated damage at \$25 million and thousands of people were said to be left homeless. The flooding in the region is reported to be the worst in 200 years. As of August 18th, officials have so far confirmed 226 deaths following the region's worst flooding in 200 years, but at least 284 people are still missing. The damage is estimated to run into tens of millions of dollars.

According to government reports, **heavy rains caused flash flooding in northern Thailand** which claimed at least 73 lives. Heavy mountain rains triggered a pre-dawn flash flood on the

11th in mountainside villages in Lomsak district of Phetchabun province. The southwest monsoon brings abundant rains to the country in the May - October period. In 2000, floods claimed the lives of several hundred people in Southeast Asia in [September](#) and again in [November](#).

**Washington, D.C. officials say more than 1,500 homes were damaged by heavy rains** from thunderstorms on the 11-12th. This flooding has prompted the first-ever request for federal disaster aid for residents of the nation's capital. The storms caused torrents of storm water and raw sewage to flow into hundreds of homes.

Lightning triggered **wildfires continue to burn in many western states** around mid month. The National Interagency Fire Center (NIFC) reported that lightning activity diminished across the west on the 15th and allowed firefighters to contain four large fires in Nevada and Colorado. Efforts are now focused on Oregon and Washington, where hot and dry conditions have increased large fire activity. Currently more than 20,200 firefighters are assigned to wildland fires in the western United States. The center is on National Preparedness level four; level five is the highest.

According to NIFC (National Fire News) the national level of preparedness increased to the highest point on the 16th, as more than **one half million acres are burning in 42 large fires** across the United States. Nearly 21,000 firefighters are working on the fire lines. Record high temperatures in Oregon, Washington, and Idaho may increase large fire activity. Predicted strong winds will challenge firefighters on the 17th. Media reports on the 16th indicate federal troops will join the 21,000 firefighters.



[larger image](#)

The assignment came hours after Oregon Gov. John Kitzhaber declared a drought emergency for his state Thursday (16th) and mobilized 120 National Guard troops to help battle wildfires. Oregon and Washington, suffering dry conditions and winds ranging from 15 to 35 mph, continue to have the worst blazes of the 10 Western states where wildfires are burning. The NIFC said the 42 major fires have scorched over 500,000 acres in those states. However, looking at the year to date statistics, the **number of fires and total acreage burned year to date are close to the 10 year national average**. See the special [NOAA news story](#) on this situation.

See the following fire images: [Southern Oregon](#) , [Washington](#) , and [Northern California](#).

The hazard event satellite images available courtesy of [NOAA OSEI Satellite Images](#).

The nation's **newest environmental satellite** sent back its first clear, crisp image of the western hemisphere on August 17th, 2001. [NOAA](#) operates the satellite known as Geostationary Orbiting Environmental Satellite (GOES) -12 satellite.

### **Weather Log - August 21 - 31, 2001**

As of the 20th, **Typhoon 14W - Pabuk** was located about 200 miles south of Shikoku Island, Japan. The storm is moving northward toward Japan and is expected to make landfall in about 24 hours. The storm brought heavy rains, high winds and flooding. The Japan Meteorological Agency warned that Typhoon Pabuk -- a Laotian name for a large, freshwater fish -- made a direct strike on central Japan. The storm weakened and as of 0600Z on the 21st was **downgraded to a tropical storm** as it moved inland. National Police Agency officials in Japan said six individuals have died with 50,000 evacuated from their homes; and over 12 inches (300 mm) of rain were reported in some areas of southwestern and central Japan, before the remnants of the tropical depression storm moved northeastward into the Pacific.

**Tropical storm Chantal dumped torrential rains** across parts of the northern and central Yucatan peninsula on the 20th and 21st. The storm was moving quickly over the Caribbean, but forward progress slowed to a snails pace once it moved inland. This slow movement will allow feeder bands of heavy rainfall to move slowly across the area. The storm is expected to weaken as it crosses the Yucatan, with rainfall amounts in excess of 20 inches See [NOAA's /Tropical Prediction Center](#) for the latest information.

Just in time for winter, the nation gets a **new wind chill index formula**. As most of the nation copes with simmering summer heat, NOAA's National Weather Service was preparing for winter. Starting with the 2001-02 winter, forecasters will use a new [Wind Chill Temperature Index](#), designed to calculate a more accurate reading of how the cold air feels on the human skin.

Western fire update -- nine new large fires are burning in nine western states. One new large fire was contained in Wyoming. Overall, 40 large fires are burning in nine states. Currently, more than 28,500 firefighters and support personnel are assigned to wildland fires. The Pacific Northwest remains the hotspot, with 15 large fires burning. However, **favorable weather conditions helped firefighters make good progress** on most of the fires in Oregon and Washington. Some evacuations remain in effect in Washington.

According to the United Nations world food supply, **floods in northern Sudan** have displaced tens of thousands of people. "As several areas are inaccessible, airlift operations are needed to reach the isolated population," the Rome-based FAO said in a statement. The Nile's floodwaters are still at critical levels in Khartoum and are continuing to displace hundreds of people, Khartoum papers said on August 22nd, 2001. As of the 30th, media report indicate that these floods are Sudan's worst floods in years and have displaced 7,000 families and destroyed schools, mosques and even entire villages.

According to the U.N. World Food Program, **three months of drought** in what is normally the rainy season caused as many as 1.6 million people in Central America to suffer from hunger. The drought is the most severe in Guatemala, El Salvador, Nicaragua and Honduras, and is the most

urgent problem to hit the area since Hurricane Mitch of 1998. Some experts say 80 percent of the basic grain crop has been lost to the drought this year. Local governments also have blamed illegal wood cutting for denuding hillsides, causing erosion and wasted runoff.

Flooding in southeast Asia **usually occurs yearly during the summer rainy season**. The floods of 2000 were the worst to hit the Mekong Delta region and other parts of southeast Asia in more than 40 years. The floods in the Mekong Delta in 2000 killed nearly 500 people and caused \$280 million in damage. This year some flooding has been reported, and rising flood waters triggered by heavy seasonal rains have killed 17 people, including seven children, in central and southern Vietnam as of August 28th, 2001. The death toll from floods that hit Cambodia in August 2001 has reached 35, and an estimated 700,000 people are now homeless.

In South Africa, parts of Cape Town on August 29th were **declared disaster areas** due to heavy rains and flooding. The heavy rains have already driven thousands of people from the settlements, and from substandard housing consisting of shacks and temporary shelters on land which is now waterlogged from the record-breaking rains in July and August. Rivers also overflowed and mudslides engulfed homes in Hout Bay - a fishing village south of the city.

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

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## 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 August 2001.

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## Additional Resources

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

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### Citing the Article

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