

Climate-Watch, June 2002



NOAA 1972 satellite photo and floodwater damage
Historical photos from Mariners Weather Log (World Wide Photo)
Click on the photo for a larger image

Review

Agnes- June 1972 -A Killer Storm with Massive Flooding

Even though Agnes wasn't a strong hurricane, she **brought massive flooding** to parts of the eastern United States. Agnes caused \$ 3.5 billion in damages back in 1972 and a death toll of 122 lives. Agnes was the nation's most costliest hurricane (after adjusting for inflation) until Hurricane Andrew in 1992. If the losses from Agnes were adjusted to 1997 dollars, damages would eclipse \$10 billion. In 2001, another June tropical system, Allison, brought \$ 5.0 billion dollars in damages to the Gulf coast area. Agnes and Allison are reminders that **size and category of storms don't tell the whole picture**. Agnes was like many early June tropical cyclones - - it developed in the Gulf of Mexico to become a weak Category 1 hurricane by the time of landfall on the Florida Panhandle. The storm then weakened to a depression as it moved inland across Georgia and the Carolinas. It emerged off the Virginia Capes and strengthened back to a tropical storm as it headed north to make landfall once again on New York's Long Island.

From June 19-24, 1972, Agnes **dropped as much as 19 inches of rain** as she roared out of the Gulf of Mexico and across every state from Florida to New York. More than 210,000 people were forced to flee for their lives and 122 were killed. When the storm finally moved through New York and southern Canada and out into the North Atlantic, **long-standing flood records were shattered in six states**.

Agnes produced tornadoes in Florida and flooding up the East Coast. For two days, Agnes drenched New York and Pennsylvania with as much 18 inches of rain. The deluge was too much for the already swollen rivers of Pennsylvania to absorb. They rushed over their banks, sweeping over fields, homes and city streets.



Mud in the Mansion--state employees carry a table out of the state dining room of the executive mansion in Harrisburg as mud covers the floor of the room after flood waters receded in the city. (World Wide Photos)

[larger image](#)

The entire state of Pennsylvania was declared a disaster area with the cities of Wilkes-Barre and Harrisburg hardest hit. The greatest 24-hour amount measured in Pennsylvania was 14.8 inches in Schuylkill County in the Mahantango Creek basin. This amount well exceeds the value expected once every 100 years - this was bigger than the 100-year flood. **Damage reached \$2.12 billion in Pennsylvania** alone, making this still the worst natural disaster in the history of the Commonwealth. See damage cleanup at the executive mansion in Harrisburg, PA.

(Left to Right - The collage photo at the top of the page, shows three young girls covered with mud, sitting on a sofa outside their flood-damaged home in Harrisburg, taking a rest from cleaning their home; human chain of fireman, police, and volunteer workers pull a man to safety from the Susquehanna river; and the third image shows the NOAA ATS-3 satellite photo of Agnes at 1619Z on June 19, 1972)

Additional Information about Agnes:

[NWS 25th Anniversary Report - Hurricane Agnes](#)

[Weather Underground- Tracking Information for Hurricane Agnes](#)

[NWS Hurricane Agnes- Eastern Region Report](#)

Weather Log - June 1-10th, 2002

Top hurricane experts from NOAA expect the 2002 Atlantic hurricane season will likely have **normal to slightly above normal** levels of activity. The [outlook](#) calls for the potential of nine to thirteen tropical storms, with six to eight hurricanes, and two to three classified as major hurricanes (category 3 or higher on the Saffir-Simpson Hurricane Scale).

According to media reports, **three days of torrential rains** have caused widespread flooding in central and southern Chile, killing at least nine people and forcing 50,000 people from their homes, authorities said on June 3rd, 2002. "We have a difficult night ahead," President Ricardo Lagos said in a nationwide broadcast. Nearly five inches of rain fell between June 1st and June 3rd in this capital city of 5.5 million people, flooding numerous streets, damaging and collapsing homes and cutting electric power to 90,000 homes, officials said. After touring the most affected

neighborhoods in Santiago, Lagos urged people to stay home. Classes were suspended at schools and universities and work shifts were shortened at many government and private offices.

Authorities said around 50,000 people were evacuated from their flooded homes, with police using inflatable boats to rescue many of them. Some evacuees stayed with relatives or friends but 29,000 had to be sheltered at public schools or other government facilities, said Alberto Maturana, head of the government's Emergency Bureau. The nine dead either drowned or were buried by collapsing structures in Santiago, the neighboring port city of Valparaiso and in southern Chile, Maturana said.

News reports indicated that **eight people** were found dead on the 7th, after fierce thunderstorms swept across Europe, leaving a trail of flooded roads, collapsed houses and downed bridges from France to Poland. Regional officials in northeastern Italy declared a state of emergency, while in Austria the military was deployed to battle the effects of flooding.

Weather Log - June 11-20th, 2002

A [fast-moving wildfire](#) in the Pike National Forest **more than doubled** in size to 77,000 acres on the 11th and threatened a residential area south of Denver, prompting preparations for the largest evacuation yet. Authorities have drawn up plans to evacuate as many as 40,000 people from the southwestern outskirts of Denver. As of June 11th, shifting winds slowed the advance of a wildfire bearing down on Denver early Tuesday as yellow smoke blanketed the city and officials warned mass evacuations were still possible. Ash fell across the southern portion of Denver, where many complained of shortness of breath or throat and eye irritation. So far this season, 156 square miles have burned in Colorado with 40 homes destroyed.

As of June 12th, smoke from the 87,000-acre Hayman fire shrouded the peaks of North America's continent-dividing mountain range and pushed a heavy haze toward the Colorado capital. More than 5,000 people have been evacuated from the area **about 35 miles south of Denver** -- and hundreds more are on notice that they may be the next to leave their homes.

NCDC Satellite Services created **two animations of the Hayman fire** during June 10 starting at 1532Z and ending on June 11 at 0055Z. The plume development is quite remarkable, spreading northeastward over Denver, CO into Nebraska. The first file is a smaller [animated gif - \(1.7 mb\)](#) and covers a three hour period (1845 - 2145 Z, June 10). The second file is a larger [avi file - \(7.0 mb\)](#).

According to media reports, **floods in central and western China have killed at least 205 people** and hundreds more are missing. Nine people were killed when a railway bridge was washed away by floodwaters near the northwestern city of Xi'an, home to the famed Terracotta Army, but the toll could have been far higher, the China Daily reported. In Suining, the most severely hit city in Sichuan, 14 people died, the Sichuan Daily said and about 300 mm (12 inches) of rain fell in just one day." This portion of China is usually quite arid, but the area has seen a week of torrential rain, and in the worst affected area - south of the city of Xian - close to half a metre of rain fell in two days.

Floods have been an annual curse in China, but the government moved to curb the risk after the worst deluges in half a century in 1998 killed more than 4,000 people.

Flooding Update- China

Latest media reports indicate that parts of western China have been inundated by their heaviest rains on record, **killing more than 223 people and leaving as many as 320,000 homeless**, disaster officials said on the 13th. Deaths and flood damage were reported in areas that stretched from the remote northwestern desert region of Xinjiang to the densely populated central province of Hubei. In the normally dry west, record high rainfalls this year have made flooding particularly severe, meteorologists said.

Parts of Shaanxi province got **489 millimeters (19.6 inches) of rain** over the weekend, the heaviest two-day total since weather records began a century ago, said an official of the provincial weather bureau.

Media reports indicate that more than 30,000 people were evacuated in the central-eastern Cuban province of Sancti Spiritus because a reservoir is in danger of overflowing following **heavy rains**, the government's National Information Agency said on the 15th. The evacuations have been going on for several days. The local news agency reported earlier this week that another 1,300 people had been evacuated because of building collapses and flooding caused by heavy rains in the neighboring province of Ciego de Avila, to the east.

Monsoon rains have flooded northern Bangladesh, trapping tens of thousands of people in their homes, drowning two children and damaging crops, roads and bridges, officials said. Dhaka's weather office said 16 inches of rain fell in the affected region on the 18th and 19th, causing the Surma and Kangsha rivers to overflow and flood more than 200 villages. The flooded region is about 70 miles north of the capital, Dhaka. Bangladesh, a delta nation of 130 million people, suffers heavy rains during the monsoon season that begins in mid-June and lasts until September. Most of the country **receives between 60 and 100 inches of rain per year** and in the eastern part of the country 150 inches of rain falls annually. The majority of the rain falls during the June-September period with periodic monsoon floods. In 1998, heavy flooding killed at least 3,000 people. Also deadly cyclones can affect the country at other times as well. In November 1970, a deadly tropical cyclone and associated storm surge killed over 300,000 people in Bangladesh.

Weather Log - June 21-30th, 2002

The Rodeo and Chediski fires in Arizona merged on June 24, and have burned over 330,000 acres as of this date. Over 300 homes have been destroyed by the fires in Arizona, and over 30,000 people have been forced to evacuate, including most of the population of Show Low (pop ~ 8000). The entire town is now considered to be threatened by the fire.

The images below are from June 24, with the 2nd image showing where the inversion has caused the smoke to settle in the valleys. The burned areas show up very well, and the hot spots form a ring.

[Satellite Image, June 24, 0218 UTC](#)

[Satellite Image, June 24, 1437 UTC](#)

As of June 28, the fires in Arizona have burned over 450,000 acres and destroyed well over 400 homes. In the Durango, CO area, 2 fires have burned over 70,000 acres and destroyed at least 45 homes. And southwest of Denver, a fire has burned nearly 140,000 acres and destroyed at least 133 homes, but is now about 80% contained. Nationally, 2.6 million acres have been consumed by fire thus far this year. This contrasts with a 10-year average year-to-date of about 1 million acres, and an acreage total of 1.3 million at this time in 2000. 2000 was the most severe fire season in terms of acreage burned in the past 40 years, but much of the damage occurred during the latter half of the year.

Elsewhere, heavy rains and thunderstorms have caused additional flooding in the upper Midwest, where 13 counties in northern Minnesota have been declared disaster areas. The town of Mahnommen has been especially hard hit by the flooding.

See the latest NOAA Media Advisory - [NOAA Forecasters Focus on Drought for Summer 2002](#).

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 records that were set across the U.S. during June 2002.

Additional Resources

- [Recent Global Daily Data](#)
- [NOAA 2002 Hurricane Season Forecast](#)
- [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](#)

Citing the Article

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