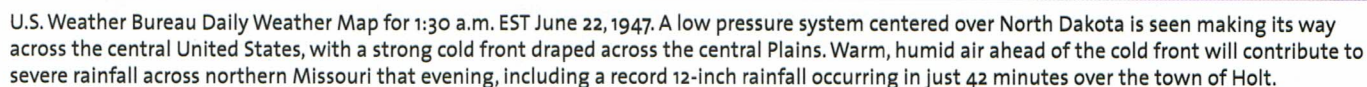


## by Sean Potter

## NOAA CENTRAL LIBRARY DATA IMAGING PROJECT



The opening stanza of Robert Frost's sonnet "The Broken Drought," which first appeared in the April 1947 issue of the *Atlantic Monthly* under the title "But

The American Meteorological Society defines a cloudburst as “any sudden

June 1947 ranked at the time as the wettest June on record across northern Missouri, with heavy, persistent rainfall contributing to extreme flooding along the Missouri and other rivers throughout the region. "The outstanding feature of June was the unusually heavy rainfall, with resultant widespread and very destructive floods over the northern half of



the State," reported the U.S. Weather Bureau's *Climatological Data* publication for Missouri for June 1947, which stated that among official reporting stations, the highest monthly rainfall was 23.60 inches. "It is a rare occurrence, indeed, when as much as 20 inches of rain occurs in Missouri in a period of one month," the report noted.

"The heavy rainfall last night removed any hope that the floodwaters had passed a peak," the *Kansas City Star* reported in the next day's edition. "The river at Kansas City will subside a few inches today, but by tomorrow or Wednesday, when the last night's rain has emptied into the river, the stream will surge considerably higher than the 27.5-foot crest expected to be reached here at 7 o'clock tonight."

According to a 1947 report by the United States Army Corps of Engineers, the severe flooding along the middle and lower Missouri River basin that year inundated three million acres of land and resulted in \$111 million dollars in damages and 26 deaths.

Shortly after the sudden storm in Holt, the Corps of Engineers conducted a "bucket survey," which amounted to a detailed analysis by meteorologists or hydrologists in the field who collected raw data, interviewed witnesses, and observed the aftermath of the storm firsthand. As part of its survey, the team interviewed several volunteer observers in and around Holt who reported the record rainfall occurring during a period of 40–45 minutes, with two reports putting the duration at exactly 42 minutes. The survey team summarized the event and the account of the record observation:

*Heavy rain began between 7 P.M. and 7:35 P.M. on 22nd, ended about 8:20 P.M. on 22nd. Holt Creek was out of its bank in about 10 minutes after the storm started. It was 4 feet, or more, higher than it had*

*ever been known before. On the west side of the town, there is a watershed which is about ¼ of a mile back to the ridge from the town. Between the railroad track and the watershed, a distance of about 400 feet, the water was in each house as much as 2 or 3 feet deep. Observer stated that the rain occurred in about 45 minutes. His wife has timed it and said it was exactly 42 minutes. Measurements were made in a bucket, 11 inches across and 14 inches deep, vertical side. Good exposure. Observer was positive that the bucket was empty before the storm on the 22nd.*

About a quarter mile from Holt, another observer measured 12.12 inches in a paint bucket, falling between about 7:30 p.m. and 8:25 p.m., though the drum leaked and the observer was not certain it was empty before the storm. Like his neighbor, this observer's wife verified his statements. The survey team noted that other reports taken at the same time "confirm the severity and brief duration" of the storm.

Meteorological conditions surrounding the Holt cloudburst were the focus of an analysis by George Lott of the Weather Bureau's Hydrologic Division, published in the journal *Monthly Weather Review* in 1950. Lott refers to the event as "the outstanding example of a very intense, small-area rainstorm" and suggests it occurred "as a local intensification in a long, narrow, warm sector convective system."

As *Weatherwise* contributing editor Thomas Schlatter reported in the Weather Queries department of the August/September 1991 issue of *Weatherwise*, cloudbursts of this magnitude are a rare occurrence, and often require several key components, including:

- Warm or tropical climate
- Proximity to warm ocean water

- Mountainous terrain close to the shoreline
- Strong influx of warm, moist air
- Slow-moving storms or a continuous parade of storms over the same spot
- Atmospheric instability

"Not all these criteria need to be satisfied to produce a world record," Schlatter noted. "For example, the Holt, Missouri, storm occurred over gently rolling terrain (...), but it had a very strong inflow (estimated at 48 mph) of moist air (dew point 73–74°F)."

Decades after it occurred, the Holt, Missouri, rainfall remains a world record, and has been cited in countless textbooks, almanacs, and journal articles. It has even made its way into the world of fashion, inspiring the following blurb in the "Feminique" section of the June 20, 1977, edition of the *Chicago Tribune*:

*An inch of rain fell on Holt, Mo., in 42 minutes back in 1947. Chances of it happening here are pretty slim, but to be on the safe side, why not look at big-brimmed rain hats? One colorful hat comes in its own purse-sized carrying case.*

While it got the quantity of rain wrong—perhaps due to an incredulous copyeditor—the note nonetheless captures the essence of the event and the impact of its magnitude. The record rainfall at Holt, Missouri, is a once-in-a-lifetime occurrence that, had it not been for a vigilant weather observer and his timekeeping wife, might be lost to history. **W**

---

*Contributing Editor SEAN POTTER is a New York-based Certified Consulting Meteorologist (CCM), Certified Broadcast Meteorologist (CBM), and science writer with an interest in weather history.*