

Yellowstone

Steamboat Geyser—

Tallest Active Geyser in the World

Yellowstone National Park
P.O. Box 168
Yellowstone, WY 82190



Tucked away in the Norris Geyser Basin is Steamboat Geyser, the world's tallest active geyser—its major eruptions shoot water more than 300 feet (91 m).

Only Waimangu Geyser in New Zealand rocketed to greater heights—and it did so for only four years, ending in 1904. In Yellowstone National Park's recorded history, only two other geysers—Excelsior Geyser in Midway Geyser Basin and Sapphire Pool in Biscuit Basin—have exceeded Steamboat in massiveness. Excelsior was very active for about 10 years, ending in 1888, and had one major eruption in 1985. Sapphire Pool was active for several years after the Hebgen Lake Earthquake of August 1959.

Steamboat's minor and major eruptions, described on the back of this page, are entirely unpredictable.

Steamboat's Major Eruptions

All known major eruptions are listed below. During Steamboat's early years, other major eruptions probably occurred but were not seen because most of each year passed with no observers in Norris Geyser Basin.

YEAR	NUMBER OF ERUPTIONS	INTERVALS
1878	At least 2	
1890	At least 1	12 years
1891	At least 1	Less than 1 year
1892	At least 1	Less than 1 year
1894	At least 1	2 years
1902	At least 1	8 years
1911	At least 1	9 years
1961	At least 1	50 years
1962	At least 7	8–360 days
1963	26	6–32 days
1964	29	5–45 days
1965	22	7–50 days
1966	At least 10	11–77 days
1967	At least 3	15–310 days
1968	At least 3	42–150 days
1969	2	45 days
1978	2	9 years & 148 days
1979	1	199 days
1982	23	4–43 days
1983	12	4–107 days
1984	5	19–93 days
1989	3	107 days to 4.3 years
1990	1	238 days
1991	1 (October 2)	
2000	1 (May 2)	8 years & 212 days
2002	2 (April 26, September 13)	1 year & 359 days, 140 days
2003	3 (March 26, April 27, Oct. 22)	194 days, 30 days, 178 days
2005	1 (May 23)	1 year & 172 days

This is a total of 166 recorded eruptions, with intervals ranging from 4 days to 50 years.



Steamboat Geyser, May 2000

Major Eruptions—Rare & Spectacular

The magnitude and destructive force of a major eruption of Steamboat Geyser are unforgettable. Water intermittently surges from two vents to varying heights. Suddenly water explodes from the larger north vent more than 300 feet (91 m) high. Curtains of water fall to the slope above the geyser and collect in torrents rushing back into the vent, carrying huge amounts of mud, sand, and rock that are shot skyward again and again. Water coats everything with a glistening layer of silica. Trees and cars in the parking lot are often covered with eruption debris. An eruption in February 21, 1982, blanketed the snow upslope from the geyser's vent with an estimated 700 cubic feet (20 cubic m) of debris.

Mature lodgepole pines have been broken by the blast, stripped of their limbs by the weight of ice from the water and steam of winter activity, and undermined and then washed away by the geyser's massive discharge. Commonly, the boardwalk at the base of the hill has been covered by the geyser's outwash.

The water phase of a major eruption lasts from 3 to more than 40 minutes. Once the water supply is exhausted, the geyser continues with a powerful steam phase lasting from several hours to a day and a half. Its roar is so great that conversation near the geyser is difficult, and visitors in the Norris Campground, a mile to the north, have been awakened by the noise.

Not-so-minor Eruptions

Steamboat's minor eruptions—the most typical display—reach 6–40 ft (2–12 m) and last 1–4 minutes. Intervals may be as short as 2–5 minutes. The higher and longer minors often excite viewers because a major eruption seems imminent. Usually the geyser calms down again.

Inquire at the Norris Information Station about Steamboat's current activity—is it having a quiet year, emitting only steam, or is it having frequent, high minor eruptions?

Dormancy & Rejuvenation

On September 2, 1961, Steamboat had its first major eruption since 1911. No one knows what caused the long dormancy, but the rejuvenation might have been a delayed response to the Hebgen Lake Earthquake of August 1959.

The Hebgen Lake Earthquake, measuring 7.5 on the Richter Scale, had its epicenter a few miles outside the western boundary of Yellowstone National Park. It caused widespread and spectacular changes in the hydrothermal features along the Firehole River.

Two years later, Steamboat Geyser erupted for the first time in 50 years. Some scientists believe this rejuvenation was a direct result of the shifts in thermal energy caused by the 1959 earthquake; others say it was coincidental.

Steamboat remained active through the 1960s, then was dormant for nine years. In March 1978, swarms of tremors hit the Old Faithful area. Later that month, observers noted Steamboat's minor eruptions had increased volume and were reaching 90 feet (27 m). On March 28, Steamboat had a major eruption. Again, some scientists think it was a response to the earlier earthquake activity, some say it was coincidental.

In the last decade of the 20th century, Steamboat quieted again. Then, on May 2, 2000, a major eruption occurred. No major earthquake activity preceded this eruption nor eruptions in 2002 and 2003.

Nevertheless, scientists continue to study Steamboat to find out if it is among the seismically-sensitive geysers.

The Cistern Spring Connection

Cistern Spring, at the base of the hill, exhibits changes related to its gigantic neighbor.

After 1959, Cistern Spring's temperature gradually rose, possibly receiving some of this heat from Steamboat. Cistern began increasing discharge in 1965 when Steamboat's frequency of major eruptions was beginning to decrease. This surge in heat

and water was so great that all vegetation immediately south of Cistern was killed and a colorful silica terrace rapidly grew several feet high. This terrace continues to rise and expand.

Since that time, Cistern has also drained during and/or after a major Steamboat eruption.

Steamboat's Future

Steamboat Geyser's future is unpredictable. Fifty years with no major eruptions occurred in the past, and it is just as likely that 50 or more years will pass as quietly as before. The dynamic nature so characteristic of this geyser basin, and of the geology of Yellowstone as a whole, will determine the answer.

For more information

www.nps.gov/yell
volcanoes.usgs.gov/yvo/steamboat.html