

Steamboat Geyser

National Park Service
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Yellowstone National Park



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 has rocketed to greater heights—but not in more than one hundred years. In Yellowstone National Park's recorded history, only two other geysers have exceeded Steamboat in size: Excelsior Geyser in Midway Geyser Basin and Sapphire Pool in Biscuit Basin. Steamboat's minor and major eruptions are entirely unpredictable.

Major eruptions—rare & spectacular

A major eruption of Steamboat Geyser is unforgettable. Water surges from two vents to varying heights, then 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.

As much as 700 cubic feet (20 cubic m) of eruption debris can accumulate around the geyser. Even cars in the parking area can be lit-

tered with debris. Mature lodgepole pines have been broken by the blast, undermined and then washed away by the geyser's massive discharge. The boardwalk at the base of the hill has been covered by the geyser's outwash.

The water phase of a major eruption lasts 3 to more than 40 minutes. Once the water supply is exhausted, the geyser continues with a powerful steam phase lasting several hours to more than a day. 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 are most common and 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 minor eruptions

often excite viewers because a major eruption seems imminent. Usually the geyser quickly calms down again.

Dormancy & rejuvenation

The 1959 Hebgen Lake Earthquake, 7.5 on the Richter Scale, was centered outside the western boundary of Yellowstone. Two years later, for the first time in 50 years, Steamboat Geyser erupted. Some scientists believe this rejuvenation was a direct result of thermal energy shifts 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 occurred in

the Old Faithful area. Soon observers noted Steamboat's minor eruptions had increased volume and were reaching 90 feet (27 m). On March 28, Steamboat had a major eruption. As before, some scientists think it was a response to the earlier earthquake activity; some say it was coincidental. Geyser observers enjoyed a spectacular couple of years with many Steamboat eruptions, but then the geyser grew quiet again. The early 2000s saw a few major eruptions; the last was in 2005.

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 gradual rose, possibly receiving some of this heat from Steamboat. Cistern's discharge increased in 1965 when Steamboat's major eruptions were becoming less frequent. 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 then, Cistern has also drained during or after a major Steamboat eruption.

Steamboat's future

Steamboat Geyser's future is unpredictable. Fifty year intervals have occurred in the past, and it is just as likely that 50 or more years will pass 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.

Steamboat's major eruptions

All 167 recorded major eruptions are listed here. Others may have occurred, but were not necessarily seen if there were no observers in Norris Geyser Basin. The intervals range from 4 days to 50 years.



Year	No. of eruptions	Interval
1878	At least 2	
1890	At least 1	12 years
1891	At least 1	< 1 year
1892	At least 1	< 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	4.3 years to 107 days
1990	1	238 days
1991	1 (Oct. 2)	
2000	1 (May 2)	8 years & 212 days
2002	2 (Apr. 26; Sept. 13)	1 year & 359 days; 140 days
2003	3 (Mar. 26; Apr. 27; Oct. 22)	194 days; 30 days; 178 days
2005	1 (May 23)	1 year & 172 days
2013	1 (July 31)	8 years & 70 days

For more information

www.nps.gov/yell

"Norris Area Trail Guide," available at Norris area trail heads and visitor centers

Yellowstone Resources & Issues Handbook, annual

Yellowstone: Official National Park Handbook, David Rains Wallace