News Release

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What Makes an Old Geyser Faithful?

New research suggests that how often Old Faithful and other Yellowstone geysers erupt may depend on annual rainfall patterns.

Geysers are rare hot springs that periodically erupt bursts of steam and hot water. Old Faithful has remained faithful for at least the past 135 years, showering appreciative tourists every 50 to 90 minutes (most recently an average of 91 minutes).

USGS researcher Shaul Hurwitz and his colleagues from Stanford University and Yellowstone National Park have discovered that changes of water supply to a geyser's underground plumbing may have a large influence on eruption intervals; that is, the time between eruptions. For example, geysers appear to lengthen and shorten their intervals on cycles that mimic annual dry and wet periods.

Multi-year precipitation records also strongly correlate with geyser behavior. Based on these results, the study proposes that an extended drought should result in longer intervals between eruptions, and perhaps even cessation of activity in some geysers. In contrast, in years with high precipitation, eruption intervals should be more frequent. The new research paper, "Climate-Induced Variations of Geyser Periodicity in Yellowstone National Park, USA," is published in the June issue of the journal *Geology* http://www.gsajournals.org/perlserv/?request=get-abstract&doi=10.1130%2FG24723A.1.

Additional information: Geysers are extremely rare; perhaps less than 1000 exist worldwide, with more than half of them in Yellowstone National Park. The famous Old Faithful Geyser was named in 1870 during the Washburn-Langford-Doane Yellowstone expedition and was the first geyser in the Park to be named. Old Faithful eruptions can be viewed on any computer on Earth via a video camera deployed by the National Park Service (http://www.nps.gov/archive/yell/oldfaithfulcam.htm). Instrumental data which records geyser eruption times is available at http://www.geyserstudy.org/. Long-term meteorological trends can be inferred from seasonal streamflow trends like those in the Madison River (http://waterdata.usgs.gov/wy/nwis/uv/?site_no=06037500&agency_cd=USGS).

This study is a cooperative effort involving the U.S. Geological Survey and the National Park Service.

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