

"Cool Faithful"

A Working Geyser

Geysers like "Old Faithful" in Yellowstone National Park erupt repeatedly due to a series of changes in temperature and pressure.

WHAT TO DO

Observe this working model of a real geyser erupt approximately every 9 minutes, spraying steam and hot water into the air. Can you identify how each of the components correspond to those in a real geyser?

WHAT'S HAPPENING?

In a real geyser, a cave deep underground is connected to the surface by a long channel or crack in the rocks. Water leaking from the surface fills the channel and cave, and the weight of this tall column of water creates tremendous pressure in the cave below. Nearby geothermal activity heats the water, but due to the added pressure the water must reach a much higher temperature before it can begin to boil. This is called superheated water, and is what makes a pressure cooker heat food more quickly. Once it does boil, however, steam bubbles fill the channel and the pressure drops, causing the superheated water to flash boil and suddenly release the pressure in a violent eruption at the surface. As the pressure is released the eruption ends, cooler water reenters the channel, condenses the steam, drops the pressure and water is sucked back into the cave to start the cycle over again.