Mount St. Helens, Washington

Mount St. Helens has erupted more frequently than any other volcano in the Cascade Range during the past 3,000 years. The volcano has exhibited a variety of eruption styles: explosive eruptions of ash and pumice, but continuous extrusion of lava rock, and associated landslides. Eruptions of Mount St. Helens have involved tremendous volumes of rock, ash, and gas, and have had a significant impact on the landscape of the Pacific Northwest. On May 18, 1980, a massive landslide and catastrophic explosive eruption sent a wave of debris traveling at up to 300 kilometers per hour down the north-facing crater. Lahars flowed more than 120 kilometers downstream, destroying bridges, roads, and buildings. Ash from the eruption fell so far away as Kennedy South Dakota.

Reconstruction of the volcano began almost immediately. Between 1980 and 1986, 60 million cubic meters of lava extruded explosively and the crater floor, sometimes accompanied by minor explosions and smoke. A lava dome grew to a height of 200 meters, later the highest in the Cascade Range. Crater Glacier flowed to the slightly shaded side of the volcano and the crater north wall. It long ago of ice flowed around the west and south sides of the dome.

Between 1988 and 1991, multiple explosions of steam and ash rocked the volcano, possibly a result of continuing magma being driven in the air beneath the dome and underlying crater floor. In September 2004, rising magma caused earthquake swarms and deformation of the south face of the dome, which continued to grow explosively. On October 1, 2004, a steam and ash explosion signaled the beginning of a new phase of eruptive activity at the volcano. On October 11, a fast-moving pyroclastic flow traveled south of the 1980-86 lava dome.

In early 2005, new activity began on the north flank of the volcano, which led to the development of a new dome. By May 2005, the new dome had grown to a volume of more than 1 cubic kilometer. During the second half of 2005, a new dome extruded at the north end of the 1980-86 lava dome.

The new dome grew several times, reaching a volume of 10 cubic kilometers in early 2006. By December 2006, the dome had grown to a volume of 10 cubic kilometers, extending the volume of the 1980-86 lava dome to more than 30 cubic kilometers. The new dome eventually grew to a volume of 15 cubic kilometers in 2007. The growth of the new dome has been accompanied by intermittent explosions.

The new dome historically grew very slowly, at rates of 2 to 3 cubic meters per day, or about one truck load per day. It had continued to grow at these rates for about 100 years. It would have replaced the volume of rock removed from the volcano during the May 18, 1980, eruption. However, the new dome grew throughout the eruption, and, by July 2007, it was oozing at a rate of 0.1 cubic meters per second. If it had continued to grow at these rates for another 100 years, it would have replaced the volume of rock lost in 1980. The new dome is now about 1.5 kilometers across the east arm of Crater Glacier and the crater floor. (Photograph by William E. Scott).