

# VOLCANO REVIEW

**FREE**

**A VISITOR'S GUIDE TO MOUNT ST. HELENS NATIONAL VOLCANIC MONUMENT**



Photo by W. McCausland, USGS (10/29/07)

## Fire and Ice: The Rise and Fall of the Crater Glacier

The recent eruption of Mount St. Helens provided scientists with an unprecedented opportunity to observe the extrusion of a new lava dome through the middle of a glacier. Between 2004 and 2008, the volcano constructed a 1,300 foot tall lava dome and erupted enough lava to fill Portland's Rose Garden Sports Arena more than 150 times. As the dome grew, it split the Crater Glacier in two, squeezing it against the crater walls and doubling its thickness. As the heaped-up ice relaxed, the east and west arms of the glacier flowed north, eventually joining together north of the "old" 1980-'86 lava dome (cover photo). Geologists were amazed by how fast the ice moved (up to 3 feet per day) and how little ice was melted (10% of total glacier volume).

In 1980, Mount St. Helens amazed us with its enormous power and capacity for sudden dramatic change. Over the past four years, we have been privileged to witness its equally impressive continuous, mostly non-explosive process of rebuilding. In the months ahead, we will watch North America's most closely monitored volcano and eagerly await the next chapter in Mount St. Helens' dramatic history.

### Online Information:

**Mount St. Helens Visitor Information:** [www.fs.fed.us/gpnf/mshvm](http://www.fs.fed.us/gpnf/mshvm)

**Eruption Geology and Monitoring:** [www.vulcan.wr.usgs.gov](http://www.vulcan.wr.usgs.gov)

**Earthquakes:** [www.pnsn.org/HELENS/welcome.html](http://www.pnsn.org/HELENS/welcome.html)

(see 'webicorders' for real-time earthquake monitoring)



Photo by K. McGee, USGS.

Aerial view of the stacked up and cracked surface of the Crater Glacier in September, 2005. Edge of growing lava dome is seen pushing glacier from right. Dust on left side of photo is from rock fall off the east crater rim.

## Crater Glacier and Eruption Facts

**1986 to 2004** – Snow and ice accumulate in the crater (about 650 feet thick) forming North America's youngest glacier. At 0.4 square miles the glacier's area is  $\frac{1}{5}$  that of all of the pre-1980 glaciers combined.

**October 2004** – Eruptive activity resumes with more than 1000 small earthquakes per day and small steam and ash eruptions. A new lava dome rises through the Crater Glacier at a rate of 1 dump truck load per second.

**2004 to 2008** – The quiet extrusion of mostly gas-free, semi-solid lava continues until the extrusion pauses in February 2008. During the 3-year long eruption, a total of 7 lava spines are extruded, filling the south crater with a 1,300 foot tall pile of fragmented rock (taller than the Empire State Building and  $\frac{2}{3}$  mile long by  $\frac{1}{3}$  mile wide).

Gifford Pinchot National Forest



US Forest Service