Mt. St. Helens

VOLCANO WEATHER

John B. Walls
Chief Meteorologist
KOIN TV
Portland, OR

On March 27, 1980, Mt. St. Helens in southwestern Washington (40 air miles north northeast of Portland, Oregon) was jarred by several small earthquakes and began to spew steam from a newly formed crater. This activity quickly drew the attention of geologists and volcanologists as well as the media from around the world.

By mid May, the mountain was relatively quiet but at 8:32 A.M. (PDT) on Sunday, May 18th, a major eruption occurred sending ash and smoke above 60,000 ft. High level 60 kt winds bent the ash plume towards the east. Eastern Washington skies darkened and ash fell like black snow to a depth of several inches over a large area.

On April 2nd, the 700 mb NMC analysis indicated a low in southwestern Utah at 12Z producing an easterly wind over the mountain. On this date (between the initial crater formation and the major eruption), small jets of steam were rising a few thousand feet above the top of the mountain. Stratocumulus, which covered much of the Columbia River Basin of central Washington, was piled up on the eastern slopes of the Cascades. The easterly flow from the surface to the top of the mountain would occasionally push some of low cloud deck across the Cascade ridge.

At noon on April 2nd, KOIN television cameraman, Dave Gray, was filming the mountain's activity from the northern end of Yale Lake, 10 miles south of the mountain. Making exposures approximately every two seconds, Mr. Gray caught on film the building of stratocumulus fragments to towering cumulus, precipitation, and dissipation in a 30- to 40-minute time period. The rapid development was apparently due to the heat and moisture provided from the crater.

The sequence of pictures shown here are prints from Mr. Gray's film, which were made from frames about four minutes apart.

In print #1, the stratocumulus from the east side of the Cascades clings to the eastern slope of Mt. St. Helens while the small steam plume drifts slightly to the west. In prints #2, #3, and #4, fragments of the cloud deck pass over the crater and by print #5, the cumulus has shown significant development. By frame #9, the cloud has apparently reached full vertical development while new clouds over the crater receive their portion of heat and moisture from the crater. The vertically developed cumulus of print #9 moved off to the left in subsequent prints while new development is taking place in prints #10, #11, and #12 and, this time, with precipitation.

The total sequence of prints covers a period of time of about 45 minutes but the full development of the cumulus occurred in about 30 minutes in an otherwise relatively stable atmosphere.

The catastrophic explosion that occurred after this time on the 18th will no doubt draw much more attention with respect to its effect on weather, but certainly the leeside weather was modified before the big event.

This sequence of prints was extracted from a movie film taken by television cameraman, Dave Gray, KOIN-TV, Portland, Oregon. Mr. Gray took the pictures of Mt. St. Helens from the northern end of Yale Lake, 10 miles south of the mountain in southwestern Washington. The prints are approximately 4 minutes apart beginning near noon on April 2, 1980. The view is to the north.

BIOGRAPHY John B. Walls is currently Chief Meteorologist for KOIN Television and also President of Leeweather Northwest, a weather consulting corporation, both of Portland, Oregon. He served 20 years as a weather officer in the U.S. Air Force, retiring in 1972. He holds a M.S. in Meteorology from the University of Washington, and various other degrees, including a PhD in Adult Education.

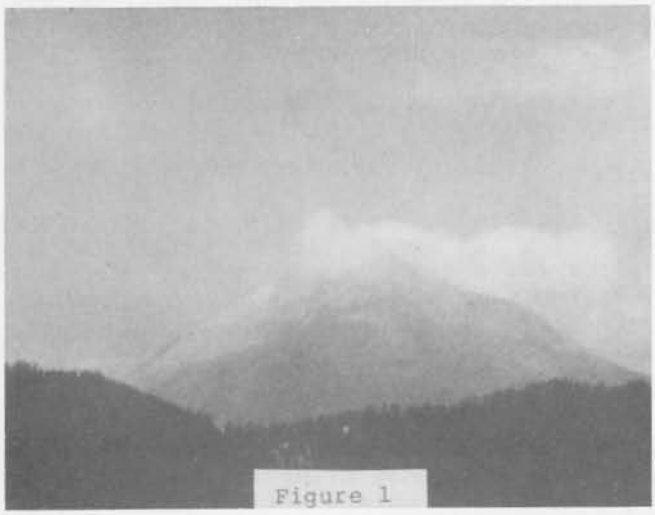

Figure 1

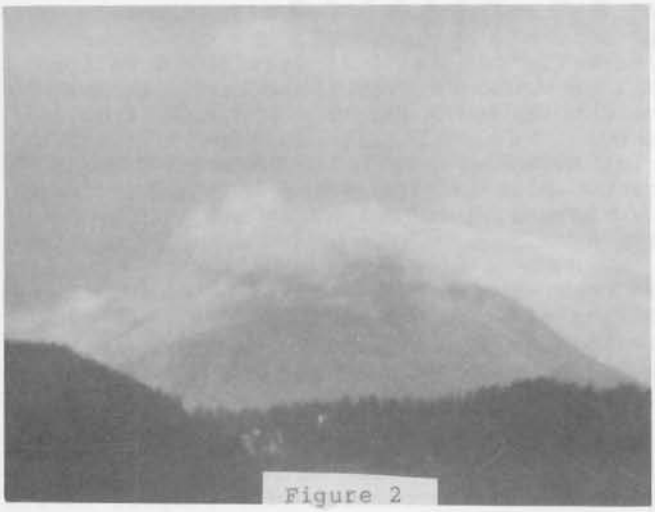

Figure 2

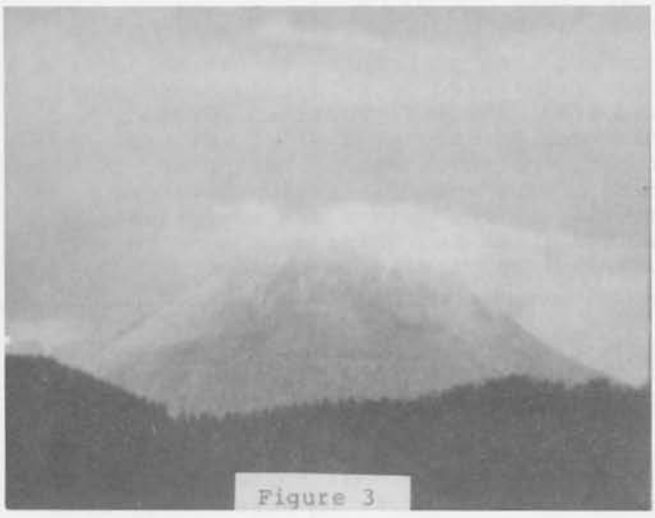

Figure 3

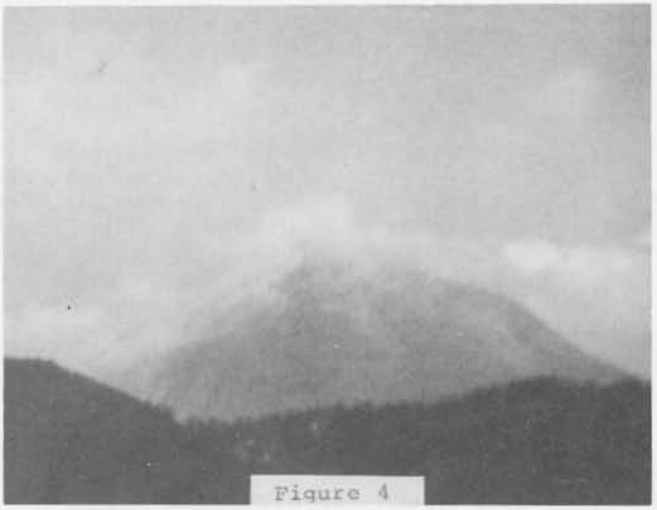

Figure 4

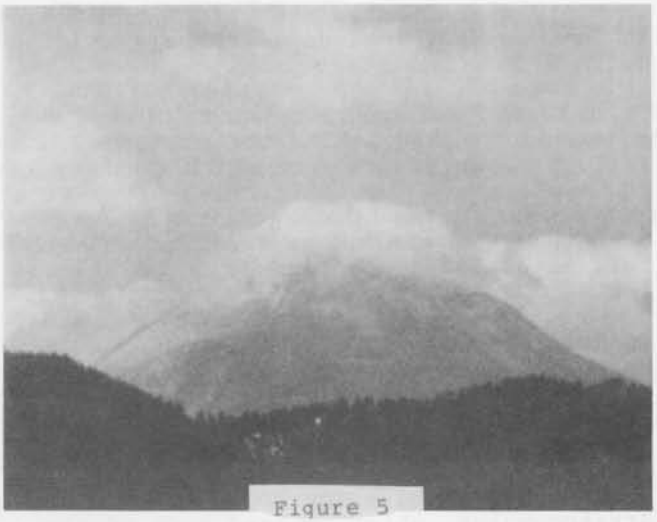

Figure 5

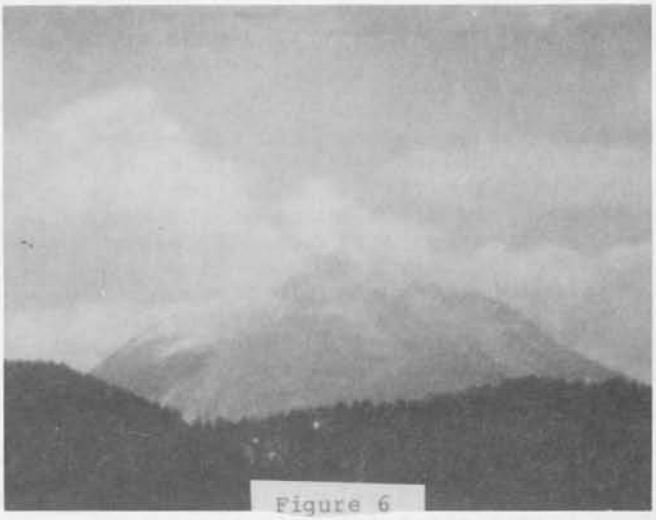

Figure 6

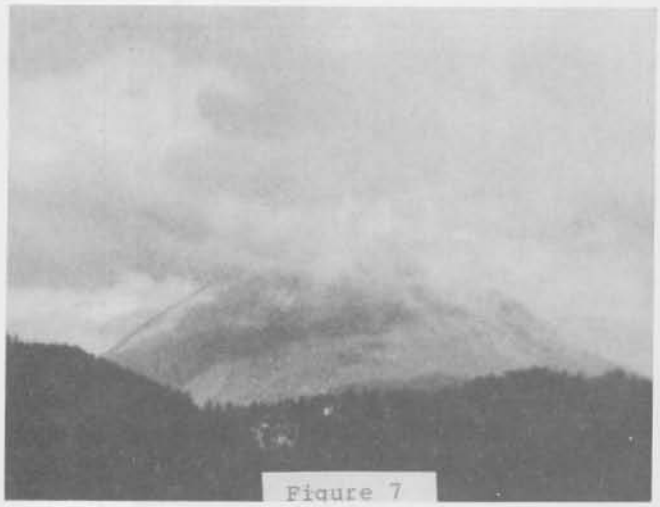

Figure 7

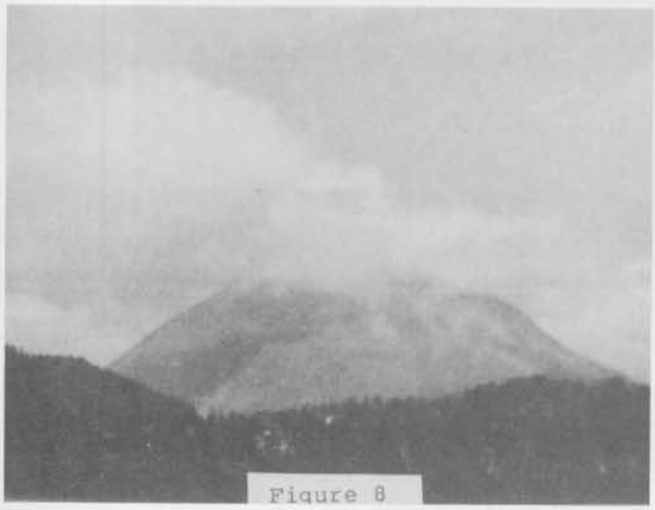

Figure 8

Figure 9

Figure 10

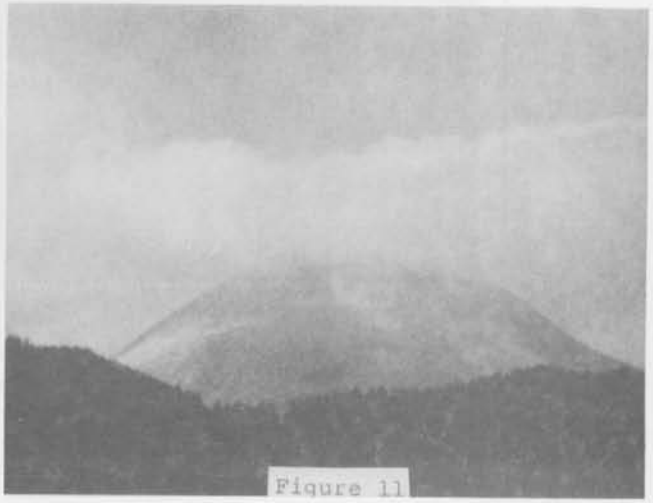

Figure 11

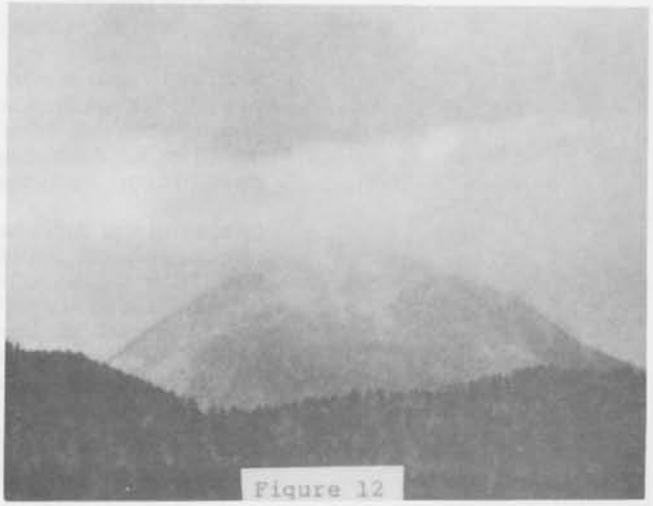

Figure 12