

RESEARCH ABSTRACT

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**Study Title:** 1. Tree ring dating of prehistoric eruptions of Mount St. Helens  
2. Forest succession following the A.D. 1480 eruption

**Key Words:** terrestrial plant trees vegetation forest  
succession prehistoric eruptions ashfall zone Douglas fir  
tree ring dating archives

**Abstract:** This study includes two topics:

1. Dating of prehistoric eruptions of Mount St. Helens using tree ring patterns of living trees and of dead, buried trees. Using increment cores of Douglas fir (*Pseudotsuga menziesii*), three prehistoric eruptions were dated at 1480, 1482, and 1800 A.D.
2. Reconstruction of forest succession northeast of the volcano in the area affected by the 1480 eruption using tree ring dating. This study may provide insight into the rates of forest succession that can be expected following the May 1980 eruption. Tephra fallout from the 1480 eruption killed trees along a corridor northeast of the volcano, leaving scattered survivors among the dead. Douglas fir reestablished 0-2 km from seed sources over a 40 to 60 year period after the 1480 eruption. Douglas fir reestablished 3-4 km from seed sources over a 180 year period after the 1480 eruption. Considering this data, future forest reestablishment in the 1980 blast area may be expected to take place over a 40 to 180 year period.

**Type of Measurement(s):** Tree rings were examined on stump cross sections and increment cores; tree ring widths (mm); ash layer thicknesses (cm).

**Frequency of Measurement(s):** 1981-1988; samples collected from several to many trees for each of many plots.

**Data Storage:** Tree cores and tree ring measurement data on computer disk are stored in Yamaguchi's laboratory at University of Colorado.

**Long-term plans:** Data available for collaborative efforts: The first study is ongoing, but should be completed by 1993. The latter study was a PhD thesis which was completed and presented in 1986. Yamaguchi is looking forward to returning to the area to work on other projects in the future.

Yamaguchi has many color slides of field conditions at the volcano during 1981-1988, particularly northeast of the volcano. He and his data are available for future collaborative efforts.