

5-2 - DISCOVERY OF ASH IN SEDIMENTS AROUND THE LAS VEGAS VALLEY: IMPLICATIONS FOR FUTURE ASHFALL HAZARDS FROM DISTAL VOLCANOES



m Tuesday, 15 March 2022

0 8:30 AM - 6:00 PM

9 *UNLV Student Union - Student Union Ballroom AIB*

Booth No. 2

Abstract

Hazards from volcanic eruptions are mainly considered to occur close to the source volcano: lava flows or pyroclastic flows destroying homes and other infrastructure; ash plumes disrupting aviation paths and powerlines; damming or contaminating water sources. Because of this, most active volcanoes in the US are monitored and nearby towns may have evacuation plans in the event of impending eruptions. However, often ignored are the effects of explosive volcanic eruptions on populations far from the volcano. Ash from even moderately explosive eruptions can travel hundreds of miles from the source, blanketing entire areas with anywhere from a centimeter to several meters of the heavy material, and causing disruption in aviation and automobile traffic, destroying utility lines, and by extension disrupting the transport of goods among different areas.

The Las Vegas Valley in Nevada has no active volcanoes nearby but could potentially be affected by eruptions from distal volcanoes. This is highlighted by the recent discovery of several ca. 9-9.5 Ma ash layers preserved in a half-graben south of Las Vegas, in the northern McCullough Range. Dubbed the Pipeline Ashes, the three rhyolitic ashfall deposits comprise a section approximately 2.5-3 m thick. The lower white ash, undated, is ~0.3 m thick and correlates to the Southwest Nevada Volcanic Field (SNVF). The middle, silvery-gray, ash (9.31 Ma) is 1.5-2 m thick and correlates to a source in the Yellowstone-Snake River Plain (YS-SRP) hotspot. The upper white ash, undated, is 0.3-0.5 m thick and correlates to the SNVF. Ashes from YS-SRP and SNVF have been documented in sedimentary packages as young as 6 Ma in northwestern Arizona and southern Nevada. Additionally, cryptotephra layers tentatively correlated to the 0.76 Ma Bishop Tuff (Long Valley caldera, CA) and the 32 ka Wilson Creek 15 ash (Mono Craters, CA) were discovered in Pleistocene spring deposits at Whitney Mesa and Tule Springs.

The three pipeline ashes, as well as the Whitney Mesa cryptotephra layer, likely came from caldera-forming eruptions. However, the Wilson Creek 15 ash was produced by a much smaller eruption. That all of these ashes, especially Wilson Creek 15, fell on what is now a major metropolitan area should convince local governments to consider planning for the possibility of ashfall from distal volcanoes.