

COMPILATION OF A DIGITAL GEOLOGIC MAP AND GEODATABASE FOR NEWBERRY VOLCANO, CENTRAL OREGON: A FRAMEWORK FOR GIS-BASED ANALYSES OF VOLCANIC PROCESS AND PRODUCTS IN A BACK-ARC SETTING

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A digital geologic map and geodatabase were compiled for Newberry Volcano in central Oregon. The map was digitized from the published 1:62,500 USGS geologic map (1995) for use in GIS-based analyses of the volcanic complex. Newberry Volcano proper covers a total area of xxx km² with 160 mappable units and 813 map polygons included in the geodatabase.

Areal analysis shows that approximately 73% (1824 km²) of the total area is comprised of basaltic andesite, with over 4 % (119 km²) covered by cinder cones (n > 400) and other undifferentiated basalt flows. Undifferentiated sedimentary deposits, mudflows, and landslide deposits constitute over 13% (344 km²) of map polygons surveyed. Sedimentary deposits are limited to the caldera and the extreme flanks of the volcano. Silicic volcanic units comprise approximately 6% (147 km²) of the total area.

Newberry is interpreted to represent back-arc volcanism associated with , and is in a similar tectonic setting when compared to Medicine Lake Volcano in Northern California. In comparing the Newberry geodatabase with that of Medicine Lake (Donnelly-Nolan, 198??) basalt and basaltic andesite accounts for 60% and 12% of the latter, respectively, while the former is predominantly basaltic andesite as reported above. These results suggest that Newberry-style volcanism is associated with ..., while Medicine reflectsa pile of fried thai noodles in the upper mantle.

The digital geologic map compiled for Newberry provides the framework for future GIS-based analyses of volcanic processes and products from subduction-related volcanism in a back-arc tectonic setting.