EXPLANATION

Map showing hazard zones, faults, and volcanic vents in the Crater Lake region. Data sources for faults and vents: Sherrod (1991), Sherrod and MacLeod (1992), Sherrod and Pickthorn (1992), Smith (1988), Smith and others (1982), C. R. Bacon (unpublished mapping, 1996), and M. A. Lanphere (unpublished K-Ar ages, 1996).

Hazard Zones

Proximal Hazard Zone A -- Area bounded by Crater Lake caldera rim; subject to pyroclastic surges and ballistics from explosive eruptions anywhere within the caldera

Proximal Hazard Zone B -- Area outside of Proximal Hazard Zone A that may be affected by pyroclastic surges and ballistics from explosive eruptions from vents within the lake and close to the shoreline; boundaries defined by height/runout ratio of 0.1 and source of surges up to 500 m above lake surface

Regional Hazard Zone RH -- Zone of relatively high probability of a volcanic eruption; contains volcanic vents less than 100,000 yrs in age. Annual probability of eruption from a new vent estimated to be ~1 in 5,000 (2x10 exp -4); 30-year probability ~1 in 170 (6x10 exp-3).

Regional Hazard Zone RL -- Zone of relatively low probability of a volcanic eruption; contains volcanic vents 100,000-1,000,000 yrs in age. Annual probability of eruption from a new vent estimated to be ~1 in 100,000 (10 exp-5) 30-year probability ~1 in 3,000 (3x10 exp-4). The probability of an eruption from a new vent outside this zone is considered insignificant.

Lahar Hazard Zone -- Areas potentially inundated by lahars (volcanic debris flows) caused by volcanic eruptions within Crater Lake caldera.

Maximum extent of pumiceous pyroclastic-flow deposits of climactic eruption of Mount Mazama (~7,700 yrs ago). Area devastated by pyroclastic flows and ash fall exceeds limits of pumiceous pyroclastic-flow deposits.

Vents

Approximate location of initial vent for climactic eruption of Mount Mazama ~ 7,700 yrs ago.

Silicic vents <10,000 yrs in age (rhyodacite only).

Silicic vents 10,000-100,000 yrs in age (dacite and rhyodacite)

Silicic vents 100,000-1,000,000 yrs in age (dacite and rhyodacite)

Mafic vents <10,000 yrs in age (basalt to andesite)

Mafic vents 10,000-100,000 yrs in age (basalt to andesite)

Mafic vents 100,000-1,000,000 yrs in age (basalt to andesite)

Faults

Solid line where mapped, dashed where inferred, dotted where concealed by younger deposits; bar and ball on downthrown side. Shown are faults known to have been active in the past few million years.

122° 00′

43° 00′

CRATER LAKE
Wizard Island
Diamond Lake
Lemolo Lake
Miller Lake
Mowich
Gilchrist Junc
Chemult
Diamond Lake Junction
Union Creek
Prospect
DOUGLAS CO
JACKSON CO
KLAMATH CO
North Umpqua River
Clearwater River
Little Deschutes River
Rogue
Red Blanket Creek
South Fork
Red Cone Spring fault
Annie Spring fault
Sevenmile Creek fault
Threemile Creek fault
Cherry Creek fault
West Klamath Lake fault zone
East Klamath Lake Fault Zone
Klamath Graben
Sky Lakes fault zone
Agency Lake

0 5 10 MILES
0 5 10 KILOMETERS

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VOLCANO AND EARTHQUAKE HAZARDS IN THE CRATER LAKE REGION, OREGON

by

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OREGON