

FIELD OBSERVATIONS AND TOPOGRAPHY OF INFLATED LAVA FLOWS IN IDAHO AND OREGON

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The most prominent features within inflated lava flows are the high, flat-topped, platforms with tilted margins referred to as 'inflation plateaus'. A lower topographic unit surrounds the inflation plateaus to give inflated flow fields a multi-level topographic profile. Previous field work at lava flows in New Mexico (McCartys, Carrizozo) and Idaho (Sunset, Cerro Grande) show similar topographic relationships between the inflation plateaus with measured heights of 8 to 15 m, surrounded by a lower unit, typically 1 to 5 m in relief. Differential Global Positioning System (DGPS) measurements were obtained on three different inflated lava flows in Oregon (Devils Garden, Jordan Craters) and Idaho (Carey) to see if these topographic relationships and dimensions of inflation plateaus are consistent with previously studied flow fields. The Devil's Garden is 20,000 year old basaltic lava flow (86 sq. km, 1.2 cubic km), southeast of Bend, Oregon. Jordan Craters is an olivine basalt flow, 4,000 to 9,000 years old (65 sq. km, 1.0 cubic km) in southeast Oregon on the Owyhee Plateau. The Carey flow is comprised of Hawaiite lava that emanated from a vent on the northern end of the Craters of the Moon National Monument in central Idaho and is estimated to be similar in age to the Sunset flow, 12,000 years old. An impressive series of inflation plateaus is present on the distal end of the Carey flow. Plateaus are particularly well expressed in a region about 4 by 4 km across along the centerline of the flow, where individual plateau sections are separated by rows of aligned lava-rise pits. DGPS measurements were obtained to capture the topographic relationship between the inflation plateaus and lower units, as well as, measure the topographic gradients of the plateau surfaces both along and perpendicular to the flow. Detailed topography of terrestrial inflated flows can be compared with possible inflated lava flows on Mars and the Moon.

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