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***How do continental flood basalt lava flows form?
Results from the Columbia River Province***

4:00 p.m., Monday, September 29, 2008

Northrup Hall 040

Refreshments will begin at 3:30 p.m.

ABSTRACT:

The conditions required to explain the great length (up to 1000 km) and the large volume (up to 10,000 km³) of continental flood basalt lava flows will be examined in this talk. Two simple requirements for a long lava flow are (1) sufficient magma held in a chamber to supply a large volume of lava, and (2) an emplacement system that can transport the liquid lava from vent to flow front without the lava freezing. All long lava flows in the CRB are exclusively pāhoehoe flow fields, or closely related varieties. Only the insulated flow model for pāhoehoe flow fields where the dominant lava body is the inflated sheet lobe fits all the quantitative criteria required to explain the great extent of CRB flows: effusion rates are on the order of 1000s m³/sec, lava travels from the vent to the flow front in days to weeks, heat losses are restricted to as little as 0.001-0.1 °C per km, and eruption durations are years to centuries. Vent systems for CRB flows are poorly understood, and new results on a relatively well-exposed example will help us understand the nature of venting and eruption columns, important for assessment of the environmental impact of flood basalt volcanism.