

Lava Tube Formation

Roofing of Lava Channels

Roofing a Channel

Surface lava channels can be roofed over to form tubes.

This has been seen to happen in three ways.

A: Simple crust growth.

Surface crust grows progressively across the channel. It may then be thickened from below. This is most common with slow steady flow rates.

B: Log jam of floating slabs

A prior crust breaks up into rafts that drift downstream. The blocks may form "log jams" at constrictions and are then welded into a solid roof.

Mainly found at moderate flow rates.

C: Levee overgrowth

Overflow or spatter builds levees that arch over the channel and eventually join as a roof.

Mainly found with fluctuating or rapid and turbulent flows.

In all three cases, later overflows through skylights may thicken the roof from above.

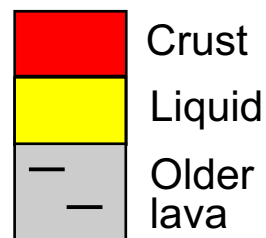
Reference

Peterson, D.W., Holcomb, R.T., Tilling, R.I., & Christiansen, R.L., 1994: Development of lava tubes in the light of observations at Mauna Ulu, Kilauea Volcano, Hawaii. *Bull. Volcanol.* **56**: 343-360.

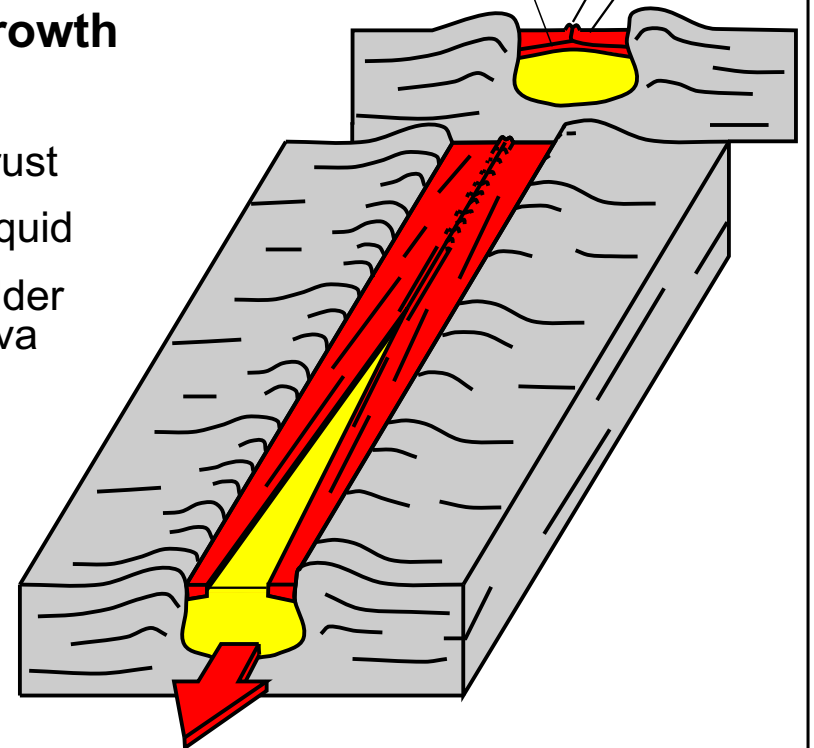
Other ways of making tubes

Lava tubes form in basaltic lava flows by two main processes which have been observed in active lava flows in Hawaii (Peterson & others, 1994): first by the roofing over of surface lava channels in several ways (as described in this poster); and second by the draining of still molten material from beneath the solidified crust of a flow (described in a separate poster).

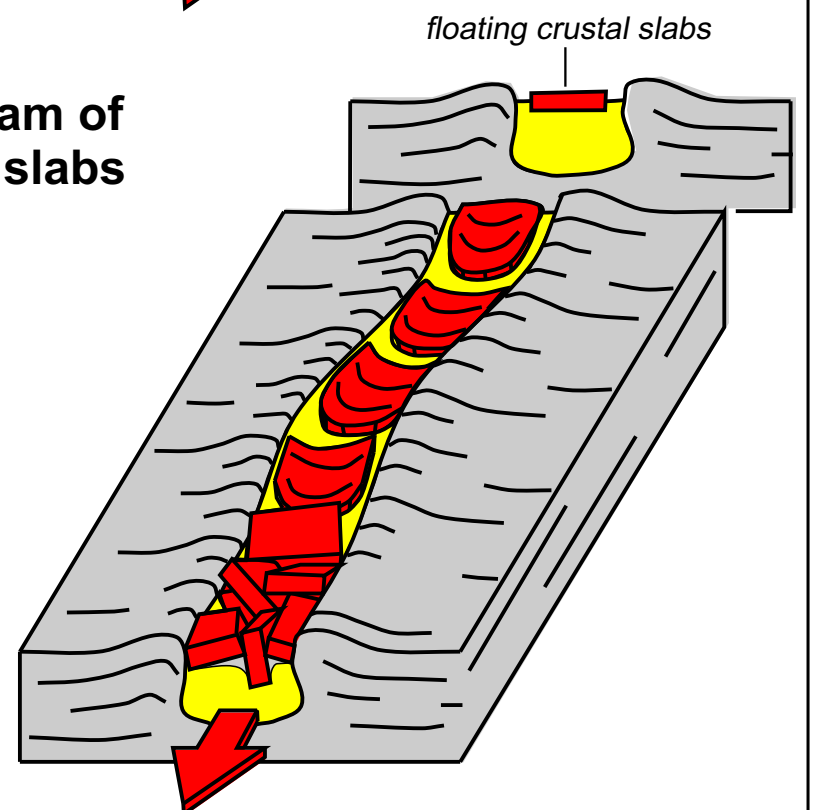
A: simple crust growth



Additional coating beneath median ridge crust



B: log jam of crustal slabs



C: Levee overgrowth

