Lava tubes: when, where and how they form.

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Lava tubes are powerful heat insulators, allowing lava to keep the initial temperature and travel longer distances than when freely flowing on the ground surface. It is thus extremely important to recognize how, when and where these structures form within a lava flow field for hazard assessment purposes, in order to plan possible interventions should a lava flow approach inhabited areas. Lava tubes display a variety of sizes, ages, modes of emplacement, inner features, relationships with lava surface morphologies and composition. I will describe the processes causing lava tube formation and growth, showing when and where it is possible to connect their inner structures with the surface textures of the host lava flow field from a genetic viewpoint. My aim is to unravel the emplacement process of the lava flow field using the lava tube features, and to identify the position and possible pathway of lava tubes on the basis of the lava flow surface texture. I will illustrate the aspects of volcanic hazards related to active and long-lasting lava flow fields containing lava tubes, and the processes causing lava tube persistence and long life, and will give a few examples of their distribution worldwide, age and composition ranges.