

## 1.3 Flank margin speleogenesis in carbonatic sedimentary dikes of a volcanic island: the caves of Selvagen Grande

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### Abstract

Caves in Selvagen Grande have been reported since more than a century ago, mainly because of their importance in nesting of Cory's Seawater colonies. Before the Microceno project, only three long caves were known in the island: Furna do Inferno, Furna do Capitão Kidd and Furna do Risco. Considering the volcanic setting of the island with fonolitic and basaltic lava flows, their origin was initially attributed to lava tube genetic processes. The Microceno expedition performed a detailed study of the lithologies and speleogenetic morphologies, documenting additional 10 cavities and discovering also one new important cave, *Furna do Sopro du Dragao*. The main discovery is that none of these caves are related to volcanic processes. Instead, most of them are formed along sedimentary dikes constituted by bioclastic limestone belonging to Miocenic sedimentary phase intruding the fonolitic basal complex. Internal morphologies indicate that their formation could be related to flank margin speleogenetic processes, due to mixing of seawater with island aquifer along preferential fracture pathways crossing the dikes.

To our notice, it is the first case described in the world of a diffuse speleogenesis due to water mixing-corrosion cycles along sedimentary dikes in a predominantly volcanic environment. This has interesting implications for potential karstic processes in volcanic environments on Mars where sedimentary dikes constituted by sulphates have been widely documented by satellite observations and ground rovers.

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