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Troodos: A Giant Serpentinite Diapir

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ABSTRACT

Troodos is a classical ophiolite complex. It is proposed that the serpentinized harzburgites that now form the top of the mountain and represent the originally lowest part of the ophiolite sequence rose as a diapir. This diapiric rise is caused by the pervasive serpentinization of a suboceanic harzburgite, due to rock-sea water interaction. The serpentinization caused a 44% expansion of the rocks. Contrary to salt diapirism, the driving force for this diapiric rise is not so much the difference in density, but the volume increase asscociated with the transformation of harzburgite into serpentinite. The overlying gabbros, sheeted dike complex and pillow lavas were pierced by this serpentinite diapir but barely deformed. Their interaction with sea water was li- mited to some pyroxenes in the gabbros being transformed to amphiboles, and epidotisation of some of the dikes in the sheeted dike complex. The location of steep faults in the Troodos massif is determined by the contrasting expansion behavior of different rock-types on both sides of the fault.

KEYWORDS

Ophiolites, Seawater Interaction, Serpentinization, (Lack of) Deformation, Cyprus, Olympic Flame

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