

SHORT-LIVED EPISODES OF CARBONATE PRODUCTIVITY ASSOCIATED WITH THE EFFUSION OF SUBMARINE LAVA FLOWS IN THE MIDDLE CAMBRIAN OF THE COASTAL MESETA, MOROCCO

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To the NW of the Moroccan High Atlas, a thick lower Palaeozoic succession is known from exposure, along the Oum-Rbia oued and its SE prolongation (the Rehamna jbel), and from core drilling under the Mesozoic-Cenozoic cover in the Doukkala Plateau. There, the middle Cambrian 'Schistes à Paradoxides', more than 1000 m thick, consists of homogeneous green shales and greywackes, locally interrupted by volcanosedimentary units.

In the Sidi-Saïd-Maâchou area, located along the Oum-Rbia oued, a volcanosedimentary complex embedded in homogeneous shales forms a broad lenticular sedimentary body, up to 10 km across and ca. 16 m thick. It consists of lava flows, dike intrusions, volcanoclastic conglomeratic and breccia lenses, and limestone beds embedded in a green and purple, shale-dominated succession that display interbedded tuffs and tuffites decreasing in abundance upsection (Gigout, 1951, 1956; El Attari, 2001). Although Gigout (1956) named this volcanosedimentary complex the 'Sidi-Saïd-Maâchou volcano', it does not preserve the typical conical shape of volcanoes, and can better be described as a 'flood basalt field', characterized by spreads of lava flows, erupted from scattered monogenic fissures vents, which flooded the seafloor generating a new substrate. From a geochemical point of view, the volcanic products of Sidi-Saïd-Maâchou show a within-plate alkaline nature (Ouali et al., 2000) and its emplacement fits well with the northward migration of the Atlas rift that began during the late Neoproterozoic and aborted during late Cambrian times.

The episodic development of carbonate productivity in this volcanosedimentary complex is directly associated with the effusion of submarine lava flows. Carbonate factories are both shelly and microbial in character. The biodiversity displayed by trilobites (conocoryphids, solcnopleurids, and paradoxidids) and linguliformean brachiopods (*Almahadella*, *Eothele* and other acrotretids) is similar to that reported in coeval strata from the Anti-Atlas. This suggests normal marine and not stressful conditions, so that the fossil community cannot be envisaged as a chemotrophic-dominated hydrothermal vent ecosystem (sensu Van Dover, 2000). Degradation of microbial mats was primarily responsible for the development of sheet cavities, up to 30 cm thick, subsequently occluded by sediment infill and banded calcite cements. Carbon and oxygen analysis of the calcite cements points to depleted values representative of the degradation of organic matter.

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