

Preliminary account of the Silurian carbon isotope record ($\delta^{13}\text{C}_{\text{org}}$) from the Barrancos region, Ossa Morena Zone, Portugal

G. LOPES^{1,3*}, P. FERNANDES¹, R. GOODHUE²,
Z. PEREIRA³ AND J.M. PIÇARRA⁴

¹CIMA, University of the Algarve, Campus de Gambelas,
8005-139 Faro, Portugal

(*correspondence: gilda.lobes@lneg.pt)

²Department of Geology, Trinity College Dublin, Ireland

³LNEG, Ap.1089, 4466-956 S. M. Infesta, Portugal

⁴LNEG, Ap. 104, 7801-902 Beja, Portugal

The Barrancos region provides one of the reference sections for the Silurian of the Ossa Morena Zone in Portugal. In this area the Silurian succession is condensed, with a maximum thickness of 50 m and the ages provided by graptolite faunas indicates that all the Silurian system is represented here. The lithologies are fairly homogenous throughout the succession consisting of black carbonaceous shales interbedded with black cherts, that were deposited in marine basins that developed at the northern margins of the Gondwana continent. This study is the first attempt to characterize the variation of $\delta^{13}\text{C}_{\text{org}}$ in this region, in order to assess well-documented Silurian climatic events.

The studied section is located at Monte do Carreba, near Barrancos village, and consists of a 45 m thick succession of black shales and cherts with graptolite faunas that indicates a Llandovery to lower Ludlow age. The base of the section is faulted against Upper Ordovician greywackes and quartzites. In this section $\delta^{13}\text{C}_{\text{org}}$ shows a baseline of consistent low values ranging from -25.88 to -25.10‰. This is interrupted by three positive excursions with maximum values of: -22.73‰ at the transition between the Llandovery (Telychian) and Wenlock (Sheinwoodian), -23.33‰ at the Homerian and -23.09‰ at the transition between the Wenlock and Ludlow (Gorstian). The excursions have positive shifts between +2.55 and +3.15‰ and are tentatively related to the three first global climatic events recognized for the Silurian (Ireviken, Mulde and Linde). Although this study is a preliminary account of $\delta^{13}\text{C}_{\text{org}}$ in this region, it could provide useful data for the recognition and discussion of climatic global events in high latitude regions as was the OMZ located during Silurian times and for sections with high level of thermal maturation.

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Isotope geochemistry of São Tomé Island (Cameroon Volcanic Line): Implications for mantle source components

J.M.R. LOPES¹, R. CALDEIRA^{2,3*}, U.G. CORDANI¹
AND J.M. MUNHÁ³

¹IGC-USP – Instituto de Geociências - Univ. São Paulo, BR

²LNEG – Laboratório Nacional de Energia e Geologia, PT

(*correspondence: rita.caldeira@lneg.pt)

³CeGUL – Centro de Geologia da Univ. Lisboa, PT

An asthenospheric origin for the Cameroon Volcanic Line (CVL) is today an accepted fact. Its mantle source has been ascribed to a mixture of HIMU with DMM enriched with EM I components. However, in view of the redefined FOZO (Focal Zone) it has been suggested that CVL basalts are generally outside the typical HIMU field and instead encompass the FOZO domain, a component suggested to be common to all OIBs. Here we present new Sr and Nd isotopic data for the previously defined São Tomé Island main volcanic units (CMZ: 6 -8 Ma; CRA: 2.5 - 5 Ma; CST: < 1.5 Ma). São Tomé basalts ($^{87}\text{Sr}/^{86}\text{Sr}$)_i = 0.703046 to 0.703530 and ϵNd = 3.15 to 5.56 isotopic data are similar to values found for other CVL basalts and fit within the projection plane defined by isotopic compositions of the HIMU, DMM and EMI mantle components, displaying a trend between these two. However they also fit, almost perfectly, within the FOZO domain. In addition, already published $^{206}\text{Pb}/^{204}\text{Pb}$ (19.4 to 20.1) data on São Tomé is consistent with a FOZO contribution, pointing out to FOZO prevalence as the main source component over HIMU. The new data also show an increase in $^{143}\text{Nd}/^{144}\text{Nd}$ towards the younger volcanic unit, which can be interpreted as a waning of the EMI component with a resulting increase of DMM. Accordingly we propose that the São Tomé magmatism was derived from a deep-seated (FOZO) signature, mixed with DMM and EMI components.