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## **An insight on the polyphase thermal history of the Ghomarides and Upper Sebtides in the Internal Rif (North Morocco) by means of Raman spectroscopy on organic matter**

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The correct assessment of maximum temperatures experienced by rocks is an essential tool to unravel the evolution of the thermal structure of the crust during the main phases of an orogenesis. Given to broad P-T stability field of classical metamorphic mineralogical indicators, maximum temperatures derived from the analyses of carbonaceous material dispersed in rocks by means of Raman spectroscopy has shown to be a suitable alternative to classical geothermometer. Initially developed for high metamorphic rocks the use of this tools has recently been extended also at lower metamorphic degree and diagenesis. This allowed us to extend the analyses of paleotemperatures experienced by rocks from Ghomarides and Sebtides from the Internal Rif in North Morocco with respect to previous works. Ghomaride and Sebtides in this portion of the Rif-Betic-Tell chain, represent respectively the upper and lower plates of a metamorphic core complex and are composed, the first, by Paleozoic rocks with a partially preserved Mesozoic-Cenozoic cover and the second by lower Paleozoic to Triassic deep-crustal mica-schists, migmatites and granulites associated with peridotites (Beni Bousera complex).

Our data suggest that the uppermost Tiszgarine Unit of the Upper Sebtides experienced warmer condition than previously observed. Moreover, we calculate the maximum temperatures experienced by the Ghomarides during both the Eo and Late Variscan cycles showing that differences in temperature exist among the vary units that compose the complex. Finally, in the southern area our data suggest a less severe alpine heating related to the emplacement of the Beni Bousera peridotite, than previously calculated.