

U-Pb age constraints on the source, cooling and exhumation of a Variscan middle crust migmatite complex from the Central Iberian Zone: insights into the Variscan metamorphic evolution and Ediacaran paleogeographic implications

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Supplementary Material 1: Detailed stratigraphy

The stratigraphic sequence of the host rocks of the Figueira de Castelo Rodrigo-Lumbrals Anatectic Complex (FCR-LAC) is composed of Neoproterozoic to early Cambrian metasedimentary units (DBSG), overlain in discordance by Lower Ordovician to Silurian metasedimentary units of the Marofa syncline.

The Douro-Beiras Supergroup, also referred to as the Schist-Greywacke Complex, has been individualised into the Douro and Beiras Groups, with distinct ages and facies (Sequeira, 1993, 1991; Sousa, 1982, 1984). In the studied region, the pre-Ordovician units have been attributed to the Douro Group (Silva and Ribeiro, 1991; Sousa, 1984). The Douro Group has been defined by autochthonous and allochthonous units outcropping in the Douro region. In the Figueira de Castelo Rodrigo, the two autochthonous units, the Bateiras and Ervedosa do Douro Fms., described in the Valongo-Castelo de Paiva region to the West, do not outcrop. However, their allochthonous lateral equivalents, the Rio Pinhão and Pinhão Fm. (Silva and Ribeiro,

1985), are bounded to the North of the FCR-LAC. These correspond to turbidites with basal metagreywackes, phyllites and thin calcsilicate units (Rio Pinhão Fm.) that prograde to chloritic phyllites interlayered with metaquartzwackes that to the top become rhythmic siltite-phyllites (Pinhão Fm.) (Sousa, 1984). On top, the Desejosa Fm. (Sousa, 1982), corresponds to a fine interlayering of phyllites and psammities, with predominance of graded bedding and load structures, occasionally the occurrence of calcsilicate beds and more rarely greywackes (Silva and Ribeiro, 1994, 1991). Identification of the ichnogenus *Rosselia* and *Teichichnus* in the Desejosa Fm. has allowed a more robust age attribution to the Cambrian Stage 3 (Dias da Silva et al., 2014). On top of the Desejosa Fm., a new unit has been recognised as the Montes Ermos (Dias da Silva et al., 2014) whose position in respect to the São Domingos Fm. is not clear. These correspond to fine grained sandstone and siltstone, and metaconglomerates, respectively. Maximum deposition age using detrital zircon has been determined to 424 ± 20 Ma (Martins et al., 2012; Teixeira et al., 2012), which lacks resolution, but points to a deposition age younger than Cambrian Stage 2, in good agreement with the trace fossil record of the Desejosa Fm.

To the South of the FCR-LAC, the Douro Group has been described from bottom to top as the Ponte de Chinchela Fm. (equivalent of Rio Pinhão Fm.), de Pinhão Fm., and the Excomungada Fm., believed to be a lateral equivalent to the Desejosa and S. Domingos Fms. (Ferreira da Silva, 2013; Ribeiro, 2001).

In the Marofa syncline, three major units of Ordovician age, from bottom to top the Poiares-Castelo Rodrigo, the Santo Antão and Sobrido formations are found. The basal unit, the Poiares-Castelo Rodrigo fm. (Ribeiro, 2001), corresponds to a thick quartzitic unit, lateral equivalent of the Santa Justa Fm. in Valongo (Gutiérrez-Marco et al., 1990; Meireles et al., 2006) and to the Marão Fm. of Floian age (Lower Ordovician; (Gutiérrez-Alonso et al., 2007; Sá et al., 2005). The Santo Antão fm. on top, corresponds to grayish-black phyllites equivalent to the Valongo Fm. (Gutiérrez-Marco et al., 1990; Meireles et al., 2006) and to the Moncorvo Fm. (Sá et al., 2005) that have been attributed to the Darriwilian (Middle Ordovician; Sá et al., 2005). At the topmost of the sequence, Meireles et al. (2006) recognised a new unit, at the base formed by a thin quartzite that is overlain by black phyllites and diamictites, named the Sobrido fm., lateral equivalent to the Sobredo Fm. in Valongo (Gutiérrez-Marco et al., 1990) and to Guadramil Fm. in Moncorvo defined by Sá et al. (2005) of Hirnantian age (Upper Ordovician). It is somewhat uncertain if there is any Silurian up in the Marofa syncline sequence.

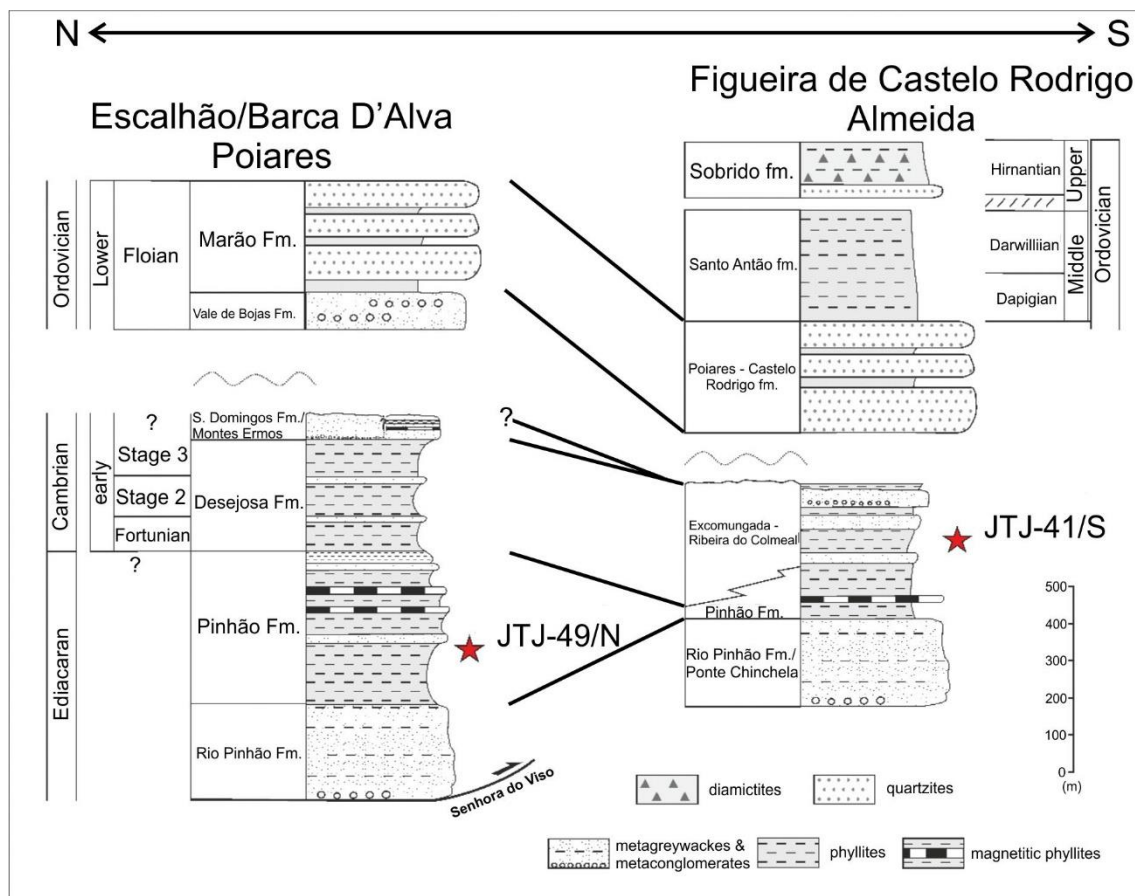


Fig. 1 – Schematic stratigraphic columns of the DBSG (Douro Group) and Ordovician units to the north (Escalhão / Barca d'Alva / Poiares) and to the south (Figueira de Castelo Rodrigo / Almeida) of the FCR-LAC, reconstituted after (Dias et al., 2013; Ferreira da Silva, 2013; Sá et al., 2005). The two metasedimentary units sampled for this study are projected in the columns as stars.

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