EGU2020-10167
https://doi.org/10.5194/egusphere-egu2020-10167
EGU General Assembly 2020

The Camarat granite (Maures Massif, SE France): a tectonic marker of the late orogenic evolution of the South European Variscan Belt

Olivier Bolle[1], Michel Corsini[2], Hervé Diot[3,4], Oscar Laurent[5], and Raphaël Melis[2]
[1]Department of Geology, Liège University, Liège, Belgium (olivier.bolle@uliege.be)
[2]Geoazur UMR-CNRS 7329, Côte d'Azur University, Sophia Antipolis, France
[3]UMR-CNRS 6112, Laboratory of Planetology and Geodynamics, Nantes University, Nantes, France
[4]Faculty of Sciences and Technology, La Rochelle University, La Rochelle, France
[5]Institute for Geochemistry and Petrology, ETH, Zu̇rich, Switzerland

A significant portion of the Maures-Tanneron Massif (SE branch of the European Variscan Belt) is occupied by late orogenic, anatectic crustal granitoids that were emplaced at ca. 325-300 Ma (Upper Carboniferous)[1,2]. The Camarat granite[3] is one of the smallest representatives of these granitoids (~2.5 km^2). It is a composite intrusion exposed in migmatitic gneisses of the Maures Massif, along the southern shore of the Saint-Tropez Peninsula. From west to east, it consists of an E-W strip of Ms-Bt-Crd leucogranite where coarse- and fine-grained facies are found in similar amounts, and two bodies of Bt-Ms leucogranite, dominantly coarse-grained.

Zircon and monazite from two samples of the Camarat granite have been analyzed by LA-ICP-MS for U-Pb dating. Sixteen monazite analyses from the fine-grained facies of the E-W granite strip give a Concordia age of 303.5 ± 1.8 Ma (2 S.E., MSWD = 0.9). Sixteen zircons from the coarse-grained facies of the easternmost intrusion provide a Concordia age of 304.6 ± 2.1 Ma (2 S.E., MSWD = 1.2). The two dates are identical within uncertainty and are considered to constrain crystallization of the Camarat granite at ~304 Ma (Kasimovian–Gzhelian limit).

Twenty-one measurements of the anisotropy of magnetic susceptibility (AMS) and direct textural quantifications through image analysis (IA) of 10 samples give agreeing results that reveal the fabric orientation in the Camarat granite. The foliation has a variable orientation, with a weighted average of N65°E/26°NNW for the AMS data and N77°E/17°NNW for the IA data (D = 10°). The lineation pattern is more homogeneous, displaying a consistent northerly shallow plunge (mean of N12°E/22°NNE vs. N22°E/20°NNE; D = 10°). The Camarat granite lineations are parallel to lineations in the gneissic country rocks. These were produced during the last Variscan tectonic event evidenced in the area, a partitioned transpression phase, localized along ca. N-S sinistral strike-slip shear zones[4]. It is proposed that the ascent of the Camarat granite was favoured by such strike-slip structures and that pull-aparts represent the sites of emplacement, as best exemplified by the E-W granite strip.

In the Corso-Sardinian Block, another portion of the SE Variscides formerly juxtaposed to the Maures-Tanneron Massif[5], a model of progressive transition from late orogenic, Upper

Carboniferous transpression to post orogenic, Permian extension has been recently proposed[6]. A similar model may be extended to other areas of the SE Variscan Belt, in particular to the Maures-Tanneron Massif which is cut and bordered by Permian grabens[7], the ca. E-W orientation of these grabens implying that a ca. N-S direction of stretching, as recorded by the 304 Ma Camarat granite, was still prevailing in Permian times.

- Duchesne et al., Lithos 162-163, 195-220 (2013). 2. Schneider et al., Geol. Soc. Spec. Pub. 405, 313-331 (2014). 3. Amenzou & Pupin, C. R. Acad. Sc. Paris (Série II) 303, 697-700 (1986). 4. Corsini & Rolland, C. R. Geoscience 341, 214-223 (2009). 5. Edel et al., Geol. Soc. Spec. Pub. 405, 333-361 (2014). 6. Casini et al., Tectonophysics 646, 65-78 (2015). 7. Toutin-Morin, Ann. Soc. géol. Nord 106, 183-187 (1987).