
Polyphased magmatic evolution of the Cambro-Ordovician Chamrousse ophiolite (External Crystalline Massif of Belledonne, Alps): new in situ U-Pb zircon ages

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Résumé

The ophiolite of Chamrousse in the southern part of the External Crystalline Massif (ECM) of Belledonne (Alps) is the oldest well-preserved ophiolite of the Variscan belt in France. In that sense, it records the only incontestable suture zone within the ECM but its paleogeographic position is still discussed in the orogenic belt models (1,2). The ophiolite unit is made of a thin (< 2000m) inverted ultramafic-mafic sequence, which has been proposed to be deformed and amphibolitised during the Cambro-Ordovician oceanic accretion and overturned during pre-Variscan obduction (3,4). New in situ U-Pb zircon ages reveal however a more complex igneous evolution. First, the presence of rare Proterozoic inherited zircon grains within the Cambro-Ordovician unit suggests that magma emplacement took place within the thinned/hyper-extended Gondwana margin. Then, new Devonian ages indicate that the ophiolite is partly made of by the magmatic phase resulting from the back-arc geodynamic setting preceding the Variscan collision in the ECM. In the light of these new in situ U-Pb zircon ages, combined with additional field, microstructural, petrological observations, a new model of accretion / obduction is proposed for Chamrousse, adding some critical constraints on the overall configuration of the Variscan belt in the ECM. (1) Guillot et al. (2009). Bull. Soc. Geol. Fr. 180: 483-500 ; (2) Faure & Ferrière (2022) Geosciences 12: 65 ; (3) Ménot et al. (1988) Earth Planet Sci. Lett. 88: 82-92; (4) Guillot et al. (1992) Bull. Soc. Geol. Fr. 163: 229-240.

Mots-Clés: Ophiolite, External Crystalline Massif, Variscan Belt, In situ geochronology

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