

Evidence for Lower Paleozoic magmatism in the Eastern Southalpine basement: zircon geochronology on Comelico porphyroids

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ABSTRACT

Multigrain conventional U/Pb and single grain $^{207}\text{Pb}^*/^{206}\text{Pb}^*$ evaporation data on zircons are presented for two samples of acidic metavolcanic rocks from the Eastern Southalpine basement (Comelico, North-Eastern Italy). Three zircon populations have been distinguished in each sample, reflecting different contributions in the metavolcanics. Clear, colourless, elongated crystals are thought to be single stage magmatic products, whilst zircons belonging to other populations contain inherited cores mantled by magmatic overgrowths. Elongated crystals yielded concordant U/Pb ages (479 and 485 Ma), which are within error of each other, whereas other zircon populations were discordant; the inherited components have poorly constrained Archean apparent ages. Evaporation measurements performed on a core-bearing crystal yielded ages ranging from 646 to 715 Ma, which are interpreted as discordant ages of the core; Th/U zoning also points to a magmatic signature of the inherited cores. The conventional U/Pb data represent the first radiometric age determinations of the pre-Variscan acidic volcanism in the Southalpine domain, and the concordant ages constrain the acidic volcanic activity in the Eastern Southalpine basement within the Arenig. The new isotopic ages are consistent with the biostratigraphy and lithostratigraphy of a nearby basement outcrop (Agordo), which has been correlated to Comelico. Moreover, it is also possible to correlate the Southalpine Ordovician volcanism with a volcanic event occurred in the Austroalpine domain (Eisenerz), for which a comparable age has been inferred by means of biostratigraphy.