

## **CRUSTAL REJUVENATION: CONSTRAINTS FROM $^{40}\text{Ar}/^{39}\text{Ar}$ AGES OF DETRITAL MICA OF FLYSCH AND MOLASSE BASINS**

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The infilling histories of Variscan and Alpine flysch and molasse basins of Eastern Alps and Bohemian Massif have been studied by  $^{40}\text{Ar}/^{39}\text{Ar}$  dating of single detrital mica grains in order to reveal exhumation processes in the hinterland. The main emphasis was to study the time lag between cooling of white mica (c. 400°C) during exhumation in the hinterland and the deposition. The Variscan flysch basins in Alps and eastern Bohemian Massif record a predominant Caledonian metamorphic source where the time lag is c. 40 to 10 Ma. The subsequent molasse basins are dominated by exclusively Variscan ages with a time lag of c. 5 to 15 Ma. These relationships constrain regional removal of upper crustal levels prior to molasse deposition and very rapid rock exhumation from deep crustal levels. In contrast, the Alpine flysch basin is dominated by Variscan and only subordinate Alpine ages (time lag: minimum ca. 30 Ma). The molasse basin includes similar age groups what is interpreted to record relatively low regional exhumation and regional preservation of upper crustal levels with Variscan basement crust. These relationships show that regional rejuvenation of crust within orogens are essentially driven by large-scale tectonic processes like crustal underplating and growth of plateaus. These processes are dissimilar in Variscan and Alpine orogens of Europa.