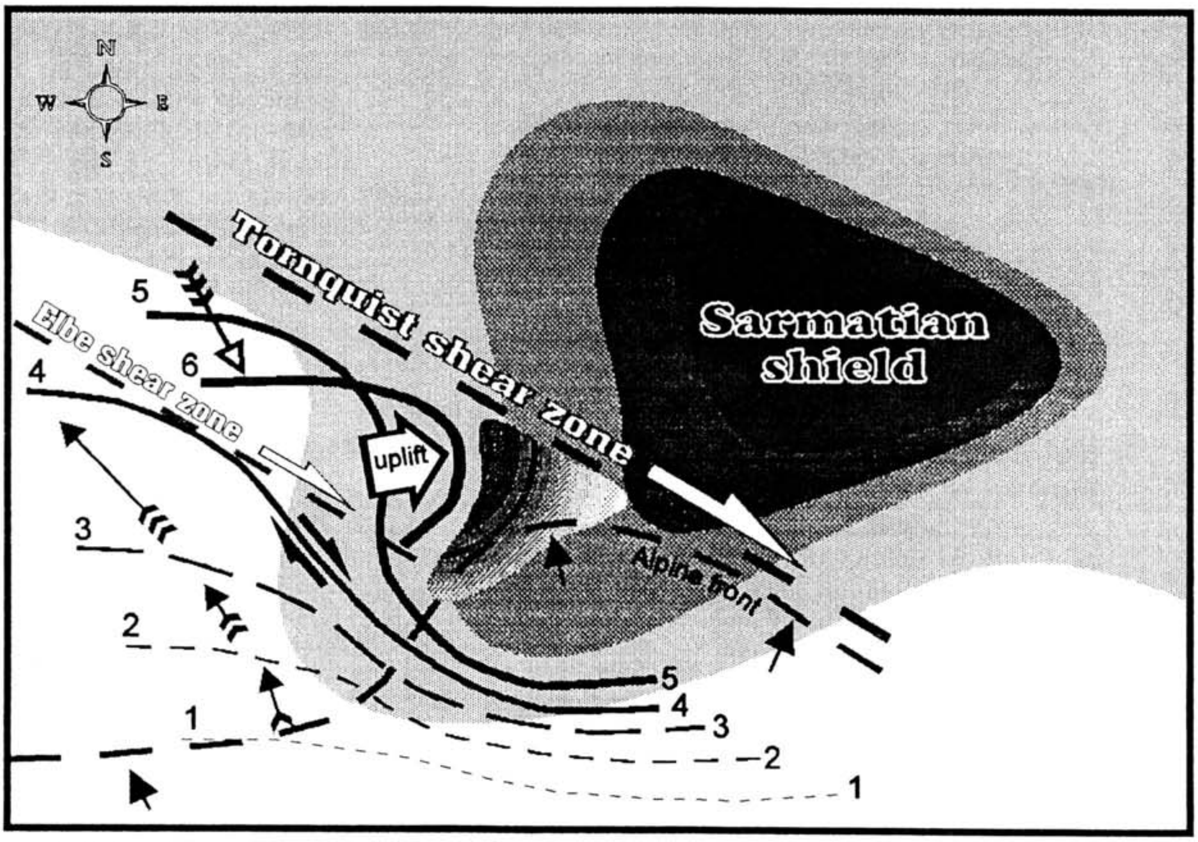

Fig. 2 Simplified scheme of polyphase kinematic development (stages 1 to 6) and bending of the eastern branch of the Variscan front – Lugosilesian orocline – during its Late–Variscan progressive dextral oblique collision with East Silesian terranes accreted earlier (in the time of Late–Caledonian collision) to the Baltica promontory – Sarmatian shield. Shaded subtriangular area in front of the orocline corresponds to the Moravo–Silesian basin.

^{40}AR/^{39}AR AGES OF DETRITAL WHITE MICAS WITHIN THE UPPER AUSTROALPINE NAPPE COMPLEX, EASTERN ALPS, AUSTRIA: IMPLICATIONS FOR TECTONOTHERMAL EVOLUTION AND PALINSPASITIC DERIVATION

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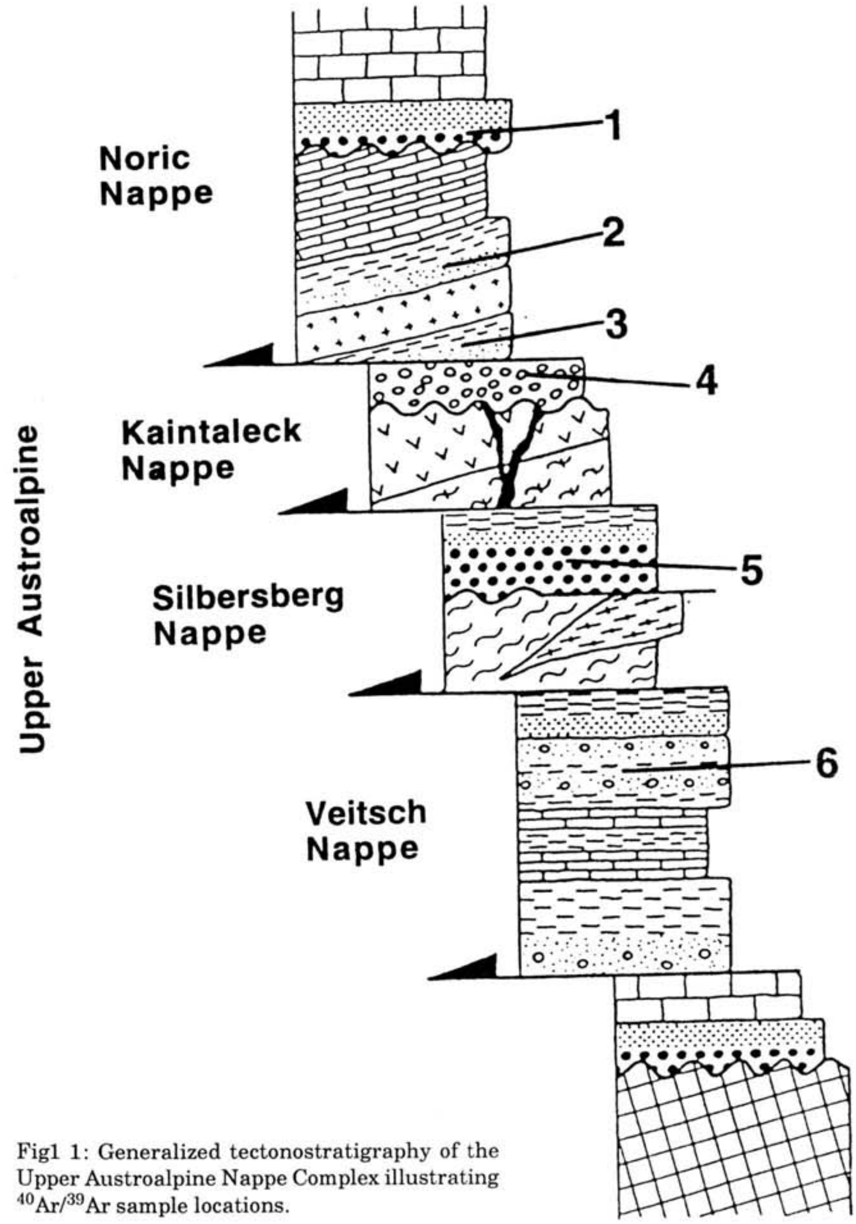
^{40}Ar/^{39}Ar ages have been determined for detrital white micas from different structural units within the Upper Austroalpine Nappe Complex (UAANC), Eastern Alps. Four different nappes have been recognized within the UAANC (Fig. 1). Detrital white micas from Permian cover sequences of the Noric Nappe (Praebichl Conglomerate: loc.1, Fig. 1) yielded a plateau age of c. 303 Ma. Two concentrates have been analyzed from low–grade metamorphic basement of the Noric Nappe. Detrital white micas from Early Silurian schist (Rad Schists: loc. 2, Fig. 1) yielded a plateau age of c. 607 Ma whereas white micas from Upper Ordovician sandstone (Gerichtsgraben Group: loc. 3, Fig. 1) yielded a discordant release pattern with systematically increasing ages (c. 300 – 570 Ma). Muscovite separated from an orthogneiss boulder of the Kaintaleck Nappe (loc. 4, Fig.1) yielded a plateau age of c. 384 Ma. Detrital white micas from a Permian cover sequence of the Silbersberg Nappe (Silbersberg Conglomerate: loc. 5, Fig.1) yielded a plateau age of c. 360 Ma. Detrital white micas within Carboniferous schists of the Veitsch Nappe (post–Variscan molasse sequence: loc. 6, Fig.1) yielded a plateau age of c. 311 Ma.

Together these data are interpreted to reflect the time of post–metamorphic or post–magmatic cooling within respective source areas. This implies: 1) a Variscan source for cover sequences of the Noric Nappe and for molassic sediments of the Veitsch Nappe. This suggests that detrital micas of



Figl 1: Generalized tectonostratigraphy of the Upper Austroalpine Nappe Complex illustrating $^{40}Ar/^{39}Ar$ sample locations.

the Noric Nappe cover have not been derived from the presently-exposed, immediately underlying basement rocks (which record only a low-grade Variscan metamorphic overprint). They must have originated within a source area which suffered a completely different tectonometamorphic evolution. The very short time interval suggested between uplift, erosion and sedimentation of detrital white micas within the Veitsch Nappe is consistent with the molassic character of the host sediments; 2) an Early Variscan (Caledonian?) source area for the orthogneiss boulder of the Kaintaleck Nappe, and for detrital white micas within Permian cover of the Silbersberg Nappe. A possible source area may be exposed within basement units of the Kaintaleck Nappe (for which a late Silurian - Devonian amphibolite facies metamorphism has been suggested); and 3) a Cadomian source area for sediments of the Noric Nappe basement. A similar source has previously been suggested for detrital white micas of similar age from Ordovician sandstones of the Carnic Alps and from the Gurktal Thrust System.

The detrital white mica ages confirm an Alpine age of nappe assembly within the UAANC because sediments containing older (Cadomian) detrital white micas have been thrust over sediments continaing much younger (Variscan) detrital white micas. Therefore assembling of present tectonic geometry could not have occurred during Variscan tectonic activity. It must reflect Alpine nappe assembly. However, the $^{40}Ar/^{39}Ar$ results record only a very low influence of Alpine deformation/metamorphism.

THE APPALACHIAN OROGEN - PRODUCT OF ARC, TERRANE, & CONTINENT-CONTINENT COLLISION

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The Appalachian orogen is the product of closing of several Paleozoic oceans following Late Proterozoic rifting, and a Paleozoic history that may record several Wilson cycles. Major throughgoing units include the North America basement, Late Proterozoic rifted margin and slope-rise assemblages and