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SUMMARY OF NEW $^{40}AR/^{39}AR$ DATA ALONG THE TRANSALP-SECTION

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$^{40}Ar/^{39}Ar$ dating of various units along the TRANSALP section N and S of the Tauern window has been carried out in order to constrain the tectonic evolution of the Austroalpine basement, and of Penninic units exposed in the Tauern Window. In the following the tectonic units are discussed from hanging- to foot-wall:

White mica from the Paleozoic clastic sequences of the **Graywacke Zone** south of Schwaz record disturbed Ar-release spectra, with ages of c.180 Ma in low-temperature gas release steps, which increase to c. 267.2 ± 6.0 Ma in medium- and high-temperature gas release steps. These ages are interpreted to record late-Variscan cooling and an Early Jurassic tectonothermal overprint.

The underlying **Kellerjoch gneiss** is a deformed pre-Variscan meta-granitoid, which is, due to its tectonic position, considered to be part of the basement unit of the Middle Austroalpine nappe complex (STEYRER et al. 1996). The protolith is regarded as a coarse-grained felsic biotite-granodiorite (SiO_2 68–75%) with K-feldspar phenocrysts up to 20 mm and magmatic quartz up to 5 mm. The weak peraluminous composition (A/CNK c. 1–1.1) points to an I-type granitoid, as well as high Ba- (500–700 ppm) and moderate Rb- (130–160 ppm) contents (STEYRER & FINGER, 1996). Preliminary dating of monazite and thorite (method see FINGER et al., 1996) yielded a monazite Th-U-Pb-model age of 468 ± 38 Ma (STEYRER & FINGER, 1996), which is interpreted to closely date the time of protolith formation. Variscan regional metamorphism is indicated by thorite Th-U-Pb model ages of 323 ± 49 Ma and 353 ± 26 Ma; STEYRER & FINGER 1996). These data are in concordance with phengite Rb-Sr reported by SATIR & MORTEANI (1978). $^{40}Ar/^{39}Ar$ incremental heating of white mica bulk-grain samples generally show strongly disturbed age patterns which record late-Variscan ages in high-temperature argon release steps and Cretaceous ages in low-temperature increments, indicating two low-grade metamorphic overprints.

Nearly all $^{40}Ar/^{39}Ar$ age spectra of the **Innsbruck Quartzphyllite** show staircase patterns due to polyphase tectonothermal events.Three events can be clearly deduced: (1) Late Variscan metamorphic imprint (e.g. 282.8 ± 2.9 Ma); (2) a possible Early Jurassic rejuvenation is indicated by ages between 180 and 200 Ma. We preliminarily interpret the Early Jurassic $^{40}Ar/^{39}Ar$ ages to record a thermal imprint most probably associated with ductile shearing along low-angle normal faults during extension, which subsequent led to formation of Penninic oceanic crust. This poses the question whether some of the present-day observed nappe contacts within Austroalpine units were initially formed during extension. Finally (3) a Cretaceous overprint is indicated by a weakly defined "plateau age" of c. 93.1 ± 5.3 Ma. These data show that the Cretaceous metamorphic overprint, which was associated with ductile thrusting, did not significantly exceed the Ar retention temperature in white mica.

Within the Penninic units of the **Tauern Window** (however, west of the TRANSALP-line) three major events are recorded: $^{40}Ar/^{39}Ar$ incremental heating of phengites from the Eclogite zone and the overlying Rote Wand -

Modereck nappe record cooling subsequent to eclogite facies metamorphic conditions at c. 38 Ma. Local shear deformation within the eclogite zone caused mylonitization at c. 32 Ma. Late stages of brittle deformation are constrained by analyses of vein-filling adularia and white mica, which record ages of c. 20–15 Ma, interpreted to closely date formation of the veins during exhumation of the Tauern Window and lateral continental escape of the hangingwall Austroalpine nappe complex. These results are in accordance with a staircase-type Ar-release pattern obtained by dating of crenulated white mica from the Penninic-Austroalpine boundary (LIU et al., 2001).

Samples from Austroalpine mylonitic rocks **close to the DAV fault** (S of the Tauern window) record a Paleogene metamorphic overprint of the Austroalpine units there (integrated plateau ages of 44.6 ± 0.7 and 59.3 ± 1.3 Ma) with subsequent rejuvenation (< 40 Ma).

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