to post-glacial times. These magmas may be related to a widespread upwelling of the asthenospheric mantle beneath Europe. They could not be erupted from the upwelling asthenosphere until after the subducting slab had become detached and had sunk into the asthenosphere. Such "slab window" alkali basalts have been observed in other regions of the world when a subducting slab has been detached.

Pre-Alpine and Alpine metamorphic history of the Sopron Hills (Burgenland, Austria)

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The Sopron Hills, in the borderland between Austria and Hungary, represent one of the easternmost occurrences of the Central Alps towards the Carpatians and in spite of the poor outcrop situation they play an important part in understanding the geology of this area. Andalusite (And) - bearing lithologies of presumed pre-Alpine age have been recognised in the Hungarian part of the Sopron Hills for several years. This work deals with the continuation of these rocks into the Austrian part of this crystalline massif. Petrological, geochronological and structural investigations of the partly well preserved pre-Alpine And-bearing rocks give major insights in the *pre-Alpine* metamorphic history, the *Alpine* overprint and the post-mid-cretaceous tectonic exhumation by normal faulting.

Lithologies with a relatively well preserved pre-Alpine mineralogy, which outcrop predominantly in the uppermost levels of the Sopron Hills, comprise the *Óbrennberg-Kaltes Bründl Series (ÓKB)* consisting of schists and feldspar-rich schists with varying amounts of kyanite, sillimanite, and locally preserved andalusite. The rest of the massif with strong Alpine metamorphic overprint comprise gneisses and monotonous diaphthoritic mica schists with varying quartz contents and numerous rectangular to rhomboic pseudomorphs after staurolite (Stau), which is called *Sopron Series (SS)*.

Rb/Sr-mineral-ages in both series show partial Alpine resetting, although this was much more effective in the SS than in the ÓKB, where the oldest mineral-ages of the Sopron Hills are preserved.

The mica schists of both series are geochemically relatively similar. According to major- and traces discrimination diagrams, shales with an island-arc-signature are the most probable protolith for these rocks. Major- and trace-element discrimination diagrams for the amphibolites point to a protolith with ocean-floor-affinity, while the gneisses classify as peraluminous syn-collision granites.

The conditions of the pre-Alpine high-T metamorphism in the *ÓKB* are estimated at 650° C and 3-5 kbar. There is strong evidence for an Alpine metamorphism in the SS, with peak-conditions at 550 ± 30° C and 9.5 ± 1.5 kbar.

The SS in this area is believed to belong to the Lower Austroalpine "Grobgneis Unit", whereas the *ÓKB* show striking similarities to the Strallegger Gneisses and to the „Dist-Paramorphosenschiefer" (Koralpe), which are part of the Middle Austroalpine Units.

Although the present tectonic arrangement is supposed to be partly a result of the large scale nappe-transport during the Alpine orogeny the dominant ductile deformation within the mylonites and leucophyllites (shear bands, strain fringes, scc'-fabric, crystal preferred orientation and shape preferred orientation of dynamically recrystallised quartz) indicates a top-to-SE extension. These micro- and mesoscopic kinematic indicators as well as the geometric arrangement of the ductile to brittle deformation style and the Alpine metamorphic overprint suggests extensional exhumation along a SE-dipping normal fault.

Tertiary tectonic evolution of the Pannonian basin system and neighbouring orogens: a new synthesis of paleostress data

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The combination of a paleostress data base, borehole, gravity and seismic data, paleogeographic and stratigraphic information suggest that 7 major Tertiary tectonic episodes can be recognized in the Pannonian basin and surrounding orogens. The first two episodes affected two, separated major blocks, the East Alpine-Western Carpathian-North Pannonian (Alcapa) and the South Pannonian-Eastern Carpathian (Tisza-Dacia) blocks.

A Middle Eocene to Early Oligocene N-S compression is connected to contractional basin formation in the foreland and hinterland of the Alpine-Carpathian orogenic wedge. Due to the north-westward shift of the Adriatic promontory, the Alcapa terrane was separted from the Southern