

**EXHUMATION OF THE SAUALPE ECLOGITE UNIT, EASTERN ALPS:
CONSTRAINTS FROM $^{40}\text{Ar}/^{39}\text{Ar}$ AGES AND STRUCTURAL INVESTIGATIONS**

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The Cretaceous-aged Eclogite-Gneiss unit and its tectonic overburden (Micaschist, Phyllite and Lower Magdalensberg units) of the Saualpe, Eastern Alps, have been investigated in order to constrain the mode of exhumation of the type locality of eclogites. $^{40}\text{Ar}/^{39}\text{Ar}$ ages of white mica from the eclogite-bearing unit suggest rapid, uniform cooling and exhumation between 86 and 78 Ma considered to represent Santonian-Campanian cooling and exhumation. Overlying units show upwards increasingly older ages with an age of 261.7 +/- 1.4 Ma in the uppermost low-grade unit (Lower Magdalensberg unit). We consider this Permian age as geologically significant and to record a Permian tectonic event. Rocks of phyllite and micaschist units along western margins of the Saualpe block yield amphibole and white mica ages ranging from 123 to 130 Ma. These are considered to closely date the age of nappe stacking. Biotite and amphibole of Micaschist and Eclogite-Gneiss units show variable contents of extraneous argon. Consequently, their ages are in part geologically meaningless whereas other samples yield meaningful ages. The ages of white mica from the Eclogite-Gneiss unit argue for cooling through ca. 400 °C during the time as the westerly adjacent Upper Cretaceous Krappfeld-Kainach collapse basin type formed.

The Preims unit with paragneiss and marbles is considered to represent a large synmetamorphic shear zone at the base of the over-thrusting Eclogite-Gneiss unit. The unit comprises a flat-lying foliation and a SE-trending lineation. This zone is considered to represent a zone of top-NW thrusting. A major ductile low-angle normal fault with top to ESE shear has been detected between the Eclogite-Gneiss and overlying units, respectively between the Micaschist and Phyllite units. The ductile thrust at the base and the low-angle normal fault at top are considered to confine a NW-ward extruding high pressure wedge. This observation argues for rapid exhumation of a subducted high-pressure wedge within a subduction channel. Rapid erosion of the exhuming wedge facilitated exhumation. Eroded sedimentary rocks are preserved within adjacent Gosau basins, although only pebbles of low-grade rocks of the uppermost tectonic unit can be found in these basins.