



New occurrences of pseudomorphs after carpholite indicating early HP/LT metamorphism in Ultra-Helvetic Mesozoic sediments of the Gotthard massif

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The so-called „Mesozoic sediments of the Gotthard massif” consist of a large pile of allochthonous sediments in Ultra-Helvetic facies, ranging from Triassic to middle Jurassic in age. These tectonic units, referred to as “Sub-Penninic”, are subdivided into a northern coherent part, the Scopi zone and in a disrupted and imbricated southern part, the Peidener Schuppenzone. The whole pile lies in an overturned position over a lower Sub-Penninic unit, namely the pre-Mesozoic basement of the Gotthard “massif” and its thin veneer of autochthonous Mesozoic cover (basal Triassic).

The investigated area is situated at the Luzzone valley north-east of Olivone/TI. Up to now only a middle greenschist facies metamorphic event was known. Recently, new occurrences of pseudomorphs after carpholite have been found within the Peidener Schuppenzone, indicating an earlier HP/LT (blueschist facies) metamorphic overprint, under PT conditions that are similar to those of the overlying Bündnerschiefer derived from the Valaisan domain. This again raises the old question as to where the original crystalline substratum of the overturned allochthonous Mesozoic sediments, tectonically juxtaposed with the Gotthard massif may have to be looked for. Since there are no evidences for HP metamorphism to have occurred in the Gotthard “massif” these sediments cannot have been deposited on parts of this basement. Moreover, its autochthonous sediments are generally interpreted as the backward remainders of the

northward thrust sediments comprised in the Helvetic nappes. Hence the Gotthard “massif” represents the original crystalline substratum of the Helvetic nappes rather than that of the Scopi zone and the Peidener Schuppenzone.

Our study indicates that the allochthonous Mesozoic sediments in Ultra-Helvetic facies (Scopi zone and Peidener Schuppenzone) might originally have been deposited onto a pre-Mesozoic basement situated in a more internal position relative to the Gotthard “massif”. During Alpine convergence the sediments were first imbricated and partly subducted (Peidener Schuppenzone), then thrust in an inverted position onto the Gotthard massif at a time, which post-dates the detachment of the Helvetic nappes (“Substitution de la couverture”). The former crystalline substratum of these sediments was either completely subducted, or alternatively, has to be looked for in the lowermost Subpenninic basement nappes.