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Constraints on the Stratigraphic Record in the Alpine Paleozoic of Northern Greywacke Zone (Austria, Tyrol) deduced from Ar/Ar-Data of detrital Micas

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The Paleozoic sequences of the Northern Greywacke Zone in the Eastern Alps were mapped entirely new in the last 20 years. An area of approximately 800 km^2 size between Zell am See, Kitzbühel and Wörgl in Tyrol has been investigated. In this context the stratigraphic concept was improved by classical biostratigraphic data (conodonts, acritarcs, macrofossils). The sequences can be divided into two different tectostratigraphic units.

The biostratigraphical age of a carbonate platform (Wildseeloder Unit) is well established. The other realm is dominated by up to several km thick siliciclastic turbiditic sequences (Glemmtal Unit) and yielded only a few biostratigraphical bench marks. Sedimentation starts at least in the lowermost Ordovician, the youngest biostratigraphical evidence is the Middle Devonian. Coarsening upwards, turbiditic sequences are overlying the Devonian rocks (Schattberg Formation). Therefore, the authors postulated twenty years ago, that the turbiditic sedimentation extends to the Carboniferous.

In context with provenance studies, Ar/Ar-dating and microprobe analysis on detrital white micas were carried out, closely controlled at biostgratigraphically fixed profiles. As the age of detrital micas evidently cannot be younger than the age of sedimentation of the hosting greywacke sediments, a powerful tool for the stratigraphic control is established. One result based on the data requires the assumption that the Schattberg Formation is partly Carboniferous in stratigraphic age.

This yields important consequences for the geodynamics of the Alpine Paleozoic.