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The Subpenninic units in the southwestern Tauern Window

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The stratigraphic and tectonic relationships within the Subpenninic succession in the Tauern Window are still under discussion. In recent years the data base, especially in the Brenner - Pfitsch area, has increased considerably due to detailed mapping, exploration drilling and the ongoing construction of the Brenner base tunnel project. Based on these data we present a tectonic model for the Brenner – Pfitsch area.

Due to the Permo-Carboniferous Horst and Graben structures present on the southern European continental margin the stratigraphic succession is very variable, with Palaeozoic sediments forming the base of the succession in the troughs. Finally, in the early Jurassic, shallow-water limestones of the Hochstegen Formation are also deposited directly on top of the exposed basement of the Horsts. During Cenozoic Alpine orogeny, the former Horst and Graben structures were inverted to form the well-known duplex of the Venediger nappe system. During shortening, the autochthonous sediments were intensively deformed and stacked. The Hochstegen Formation, for example, shows large-scale isoclinal folding and internal thrusting in the Brenner area, resulting in a tectonically tripled thickness. On the other hand, this rather stiff marble formation is almost absent in most of the Pfitsch valley. Here, more incompetent Lower Jurassic and Permo-Triassic sediments dominate, which were squeezed into the hinge areas of the isoclinal folds no present as verticalized succession due to the Miocene updoming of the Tauern Window.

Session: *Pangeo workshop: Regional Geology*

Keywords: *Tauern Window, Subpenninic, Collision, nappe stack*