The Panixer Pass Transverse Zone (PTTZ) in the eastern Swiss Alps is a peculiar SSE-trending structure oriented approximately perpendicular to most Alpine structures. It comprises a plunging fold (Crena-Martin Fold, CMF) with Permian-Verrucano deposits in its core, which is cut by the Glarus Thrust. Also, the structural buildup of the Infrahelvetic Complex changes considerably across the PTTZ, e.g., the progressive generation of the crenulation in the CMF. Multiple theories of the structural evolution have been published (Gasser, 1975; Pfiffner, 1977), however, none of those satisfyingly because traditional 2D geological cross-sections have not been sufficient to fully understand the 3D complexity of the structure.

The most recent product of our study therefore is a 3D structural model of the PTTZ to get a better insight into its geometry. As input for the model, we produced a kinematic box model and collected structural orientation data. The final 3D structural model honours the observed surface geology and the expected 3D subsurface geometry. Our field data indicate that the stretching and transport direction was continuously NE directed, except for a phase of dextral shearing during early movement along the Glarus Thrust and related deformation in the Helvetic Nappes. The PTTZ developed prior to this pervasive shearing during a thrust-dominated deformation phase, for which we have created a kinematic block model. According to this model, the PTTZ is the result of multiple lateral ramps and related fault-bounded folds that all developed in a similar position amplifying each other. In particular, we do not propose E-W-directed shortening to form the PTTZ. Our kinematic model reproduces the key features of the 3D structural model.

Finally, we embed our kinematic model into the existing sequences of deformation phases (Schmid, 1975; Wilmsen and Pfiffner, 1977; Gasser and den Brook, 2006). We allow ourselves to reinterpret some of those proposed deformation phases to find a good correlation with our own observations.