The tectonometamorphic evolution of the Austroalpine Complexes in the Vinschgau (Ötztal Complex, Campo-Ortler Complex, Texel Complex) in the course of the mapping project CARG 012 (sheet Schlanders)

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The Austroalpine nappe stack in the investigated area, located in the Vinschgau area (Southern Tyrol), comprises from bottom to top the Campo-Ortler (COC), the Texel (TC), the Ötztal (ÖC) complexes and the Matsch (M) nappe. All these units have been known for a long time and were essentially defined based on the degree and age of their metamorphic overprint. Their delimiting faults are only partly well known (e.g. Vischgau shear zone (VSZ), Schneeberg Fault Zone (SFZ) while in other areas they are hard to pin down. This is partly due to the lack of obvious fault rocks such as mylonites or cataclasites as well as to missing petrological/geochronological data (e.g. the contact between TC and ÖC).

The currently mapped sheet Schlanders (CARG 012) offers the chance to carefully investigate the above mentioned units and their tectonic contacts and to implement them into a tectonic model based on new petrological, geochronological and structural data.

Based on our current observations the tectonic contact beween the ÖC and the overlying M nappe is characterized by a two-stage evolution. A subhorizontal mylonite layer can locally be mapped, revealing a top-to-the-west sense of shear. Unfortunately these mylonites can not be continuously traced and therefore the exact position of the contact between ÖC and M still stays enigmatic. Especially in places where the inferred Permian dykes are missing within the M nappe the paragneiss and micaschist lithologies can hardly be attributed to either of the two nappes. The younger overprinting contact is fully brittle and marks the southern contact of the ÖC and M nappes near the Vinschgau valley. There several meters thick cataclasites and gouge layers offset and obliterate the original mylonitic contact. The nature of this E-W trending contact is not yet fully understood since arguments in favour of a south-directed thrust as well as a top-north normal fault could be found. Most likely the mylonitic contact has be folded prior to brittel faulting.

The VSZ, marked by mylonites and ultramylonites in the northern flank of the Vinschgau valley can be traced along a steeply west-dipping synform/antiform pair towards north(east) and finally into the SFZ. The exact location of the triple point between ÖC, TC and Schneeberg complex has still to be mapped. Yet another and more southerly located segment of the VSZ remains to be looked for at the contact between the Texel complex and the Meran Mauls basement.

In conclusion the Schlanders map sheet is a key area for deciphering the pre-Eoalpine (ÖC-M contact) as well as the Tertiary (post-nappe folding/faulting) evolution of the Eastern Alps.