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# MINERALOGY AND PETROLOGY OF THE CTD-IN/CHL-OUT ISOGRADE IN THE SOUTHERN ÖTZTAL COMPLEX

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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.

The petrographical observations of Al-rich garnet-Staurolite-bearing micaschists from the southern Ötztal-Stubai Complex in the area of the CARG 012 sheet Schlanders resulted in the construction of the chloritoid isograde. Distinguished could be three Eo-Alpine mineral zones from west to east: 1) Variscan staurolite and kyanite breaking down to Eo-Alpine phyllosilicates such as chlorite, muscovite and margarite along a model reaction such as: 10fst + 82an + 94$H_2O$ = 8daph + 82ma + 51q, 2) Variscan staurolite breaking down to Eo-Alpine chloritoid, biotite and paragonite and the formation of garnet along a model reaction such as: 6fst + 7ann + 2ab + 35$H_2O$ = 7mu + 2pa + 45fctd, 3) the formation of Eo-Alpine staurolites in the vicinity of the Schneeberg Complex. The calculation of model reactions illustrating these mineral reactions using the software THERMOCALC v.3.33 yielded chlorite, paragonite and chloritoid phase stability fields in agreement with previously published P-T data of this region. A temperature of less than 500°C can be assumed based on literature data as well as the reaction kyanite + anorthite = margarite + quartz for the westernmost samples. Further to the East staurolite breaks down to chloritoid and Eo-Alpine garnet at around 520-540°C based on estimates from the COC. In the East new Eo-Alpine staurolite formed which indicates a maximum possible temperature of around 550-600°C. This staurolite is also very Zn-rich, indicated by its retrograde breakdown to Zn-spinel and chlorite.