stärker durchlässig sein, wie mancherorts auch trockene Senken und Gruben belegen. In den naturbelassenen Wäldern ist teilweise eine auffallend scharfe Kleinmorphologie erhalten, die für eine Grundmoräne untypisch ist und am ehesten durch Ablationsmoräne oder Kamesbildung während des Eisrückzuges zu erklären ist. Aus einigen Bohrungen ist bekannt, dass sich unterhalb dieser gemischtkörnigen, glazialen Moränensedimente grobe Kiese befinden, die als Aquifer für den bedeutenden, ins wissenschaftliche Visier genommenen Grundwasserkörper dienen. Der hohe Anteil an zentralalpinen Komponenten spricht für eine glaziale bzw. gletschernahe Bildung (z.B. Vorstossschotter) der Grobschotter.

Die Untersuchungen haben gezeigt, dass dieser tiefe Grundwasserkörper nördlich Maishofen eine grosse Ausdehnung hat und vorwiegend von Wasser gespeist wird, das direkt im darüber liegenden Gelände versickert. Eine Beteiligung an grösseren Wassermengen von der Saalach oder von den Hängen der Grauwackenberge ist nicht wahrscheinlich. Die breite Streuung an gelösten Stoffen im Wasser und in der Isotopenchemie lassen auf komplexe Untergrundverhältnisse schliessen. Der Grundwasserkörper hat ein sehr geringes Gefälle, so dass es kaum zum Durchmischung des Wassers kommt.

Late Tertiary deformation history at the Calama-Olacapato-El Toro wrench corridor: Examples from the polymetallic deposits of the La Concordia District (~ 24° S), Central Puna plateau, NW Argentina

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The relationship of epithermal precious- and porphyry Cu-deposits to regional shear zones is controversial and has not been described yet for the back-arc of the Central Andes. Several ore districts of Miocene to Pliocene age associated with transversal volcanic zones within Argentina, Bolivia and Chile are aligned along NNW to NW-trending lineaments such as the Calama-Olacapato-El Toro- (COT) or Lipez fault zone. The Pb-Zn-Ag deposits of the La Concordia District with extensive propylitic and phyllic alteration is located in the Central Puna plateau along the COT wrench zone. The polymetallic mineralization is confined to vein-type mineralization within Upper Miocene dacites and adjacent Mesozoic sedimentary units.

Detailed paleostress analyses suggest that five regional deformation events characterize Late Tertiary deformation at the La Concordia District including four phases being directly responsible for mineralisation. D1 as oldest deformation phase depicts WNW-ESE shortening and subvertical extension resulting in regional folding with N to NNE-trending fold axes. Mineralisation initiated in the study area during D1 with NW to NNW-trending extensional shear veins and W-trending extensional veins. D2 comprises a similar shortening direction with shortening axis trending W-E and a general N-S extension with ENE-, NE-, NNE- and NW-trending strike-slip faults (Calama-Olacapato-El Toro) causing vein-type mineralisation in resemblance to D1. D3 depicts a change in paleostress orientation resulting in N-S shortening and reactivation of mineralized extensional shear veins of D1 and D2. Mineralization also occurs in NE-trending Riedel shear fractures. Shortening axes trend NNE to NNW and extension axes ENE to SE. Related faults strike NW, ENE and NE. D4 marks a distinct change in paleostress kinematics comprising subvertical shortening and ca. E-W extension with mainly N to NNE- and NE-trending normal faults. No mineralisation is associated with D4. The youngest deformation event D5 is related to NW-SE shortening with NE-SW extension and N to NNE-striking vein-type mineralisation. The resulting faults are W-, WNW-, N-, NNE- and NE-trending.

Vein-type mineralization within the La Concordia District is clearly fault-controlled and confined to deformation phases D1, D2, D3, and D5 with subhorizontal shortening. The main mineralization occurred in extensional shear veins subparallel to NW to NNW-trending faults of D2 and D3. These extensional shear veins are strongly deformed showing pinch-and-swell structures. Fault-slip data of the Chorrillos fault respectively COT deformation zone are coeval with D2 and D3 of the La Concordia District, which points to a direct relationship of mineralization and fault activation of the COT wrench corridor. Anticlinal structures combined with the activation of the thermally induced COT fault zone during flat slab subduction of the Nazca plate enhanced the intrusion into shallow crustal levels. The Upper Miocene dacites of the La Concordia District provided the mineralizing hydrothermal system.