

Pseudotachylites as evidence of the paleoseismogenic zone of a Paleozoic accretionary prism, northern Chile (29°S)

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Along the coast of northern Chile the outcrops of metamorphic rocks belonging to the Epimetamorphic Chañaral Complex can be found. These are low grade metasedimentary sequences that represent the frontal accretion in a Late Paleozoic accretionary prism related to the Gondwanean orogeny. In some locations however, higher grade metamorphic rocks crop out, such as the Punta de Choros Metamorphic Complex (29°S) composed of metasedimentary rocks and metabasalts, representing the basal accretion processes. Previous studies of the epi- and metamorphic complexes have revealed at least three deformation stages, including *mélange* facies that are interpreted as brecciation within or near the subduction channel. Closely related to the *mélange* rocks, it is possible to observe irregular dark-colored veins, partly brecciated, composed of a very fine grained matrix and metamorphic fragments. SEM analyses of these veins suggest the occurrence of melting or high-T interaction with aqueous fluids that nucleated biotite, monazite and allanite crystals in a mica-dominated matrix. The veins are therefore interpreted as pseudotachylites and may represent the paleoseismogenic zone within the prism given the low metamorphic grade of the surrounding rocks. Petrographic and fluid inclusion analyses are used to further constrain the P-T metamorphic conditions and the composition of fluids involved in the *mélange* and pseudotachylite formation.