



Structurally controlled ore mineralizations in a large-scale continental wrench corridor, Nujiang valley, China

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The investigated area of Nujiang valley is located between 25 and 28 degrees latitude north, close to the border to Myanmar in the western part of the province Yunnan (China).

This valley represents a c. 500 km long (between Boashan in the south and Gongshan in the north) and several km wide straight north-south-trending wrench corridor situated on the eastern side of the plate boundary between the Indian and the Eurasian continental plates.

This Nujiang fault zone separates the Tengchong block composed of mainly permo-carboniferous sediments in the west from the Boashan block in the east. The latter is composed of sediments of the same stratigraphic age, too, but shows different sedimentary sequences. Due to the northward movement of the Indian plate by about 10 cm per year this dextral wrench corridor is well pronounced. Additional extension in south-south-east direction is related to the sinistral Lancangjiang-Red-River-fault.

The main tectonic features are:

In general, the ductile foliation is nearly vertical and north-south trending, the mineral stretching lineation plunges 20 degrees to the north. In the north, steep dipping north-south trending, isoclinally folded unmetamorphosed sediments, mainly of carboniferous age (limestones and pelites) occur. Further to the south marbles and gneisses of low to medium grade metamorphism are exposed, showing a subvertical north-south trending foliation, too. In the southern part there are some huge occurrences of migmatites. Shear-sense-indicators like rotated clasts show dextral sense of movement and a high amount of constrictional strain. The main strain axis seems to be parallel

to the stretching lineation (N-S, 20 degrees to the north). Brittle structures show a general extension in north-south direction with very well developed extension veins perpendicular to this direction.

This area is characterized by the intrusion of many, mostly calcalkaline plutons which lead to several different ore mineralizations depending on the chemistry and depth of the intrusion, and on the host rock type. Most of the ore bodies are characterized by sulphidic Pb-Zn-Sn-(Ag) mineralizations. Different planar structures control the position and orientation of the ore bodies. In the north of Gongshan the mineralizations are related to quartz-veins parallel to axial-plain foliation of the isoclinally folded sediments and also to the position of extension veins. Near Gongshan the ore mineralization is related to a leucocrat intrusion into a large antithetic sinistral shear zone. South of Gongshan we found ore bodies parallel to the foliation of marbles and in the position of antithetic shears. Further to the south, close to a large calcalkaline intrusion into medium grade marbles, we found mineralizations in the orientation of many different fracture-systems (e.g., extension veins, Riedel- and Antiriedel-planes, P-shears). All of these described bodies are sheared by synthetic shears and other secondary shear-planes.

From this preliminary field study we conclude that in this area of complex tectonics the emplacement and orientation of most of the ore bodies is controlled by the tectonic situation.

Further detailed structural investigations will be done.