

## The Huachón gold prospect, Eastern Andean Cordillera of Peru: the southern extension of a 400 km long Carboniferous orogenic gold province?

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The Eastern Cordillera of the Central Andes is the host of a major Carboniferous metallogenic belt consisting of shear-zone hosted gold-bearing quartz veins, interpreted as orogenic gold deposits (*Haeblerlin et al., 2002, 2004*). A major mining area of this belt is the 160 km long Pataz-Parcoy district (7°20'-8°50'S) in the Marañón Valley Au-belt, located in the Eastern Cordillera of the northern Peruvian Andes (*Haeblerlin et al., 2004*). While the northern extension of the Marañón Au-belt is known (mine of Balsas, 6°50'), its southern boundary is poorly documented but estimated to extend about 400 km to the south at 12°S.

The gold-mineralized Huachón area (10°40'), east from Cerro de Pasco, could presumably belong to the southern extension of the Marañón Valley Au-belt. A current field and laboratory study is devoted to the auriferous prospects at Huachón. Structural, petrological, dating and geochemical investigations of the rocks of Huachón could provide knowledge about the extent of the Carboniferous metallogenic gold belt in the Eastern Andean Cordillera. Such information about the tectonic and the thermal evolution during the formation of the Andean orogenic gold deposits are also attractive from the point of view of mineral exploration (**Fig 1**).

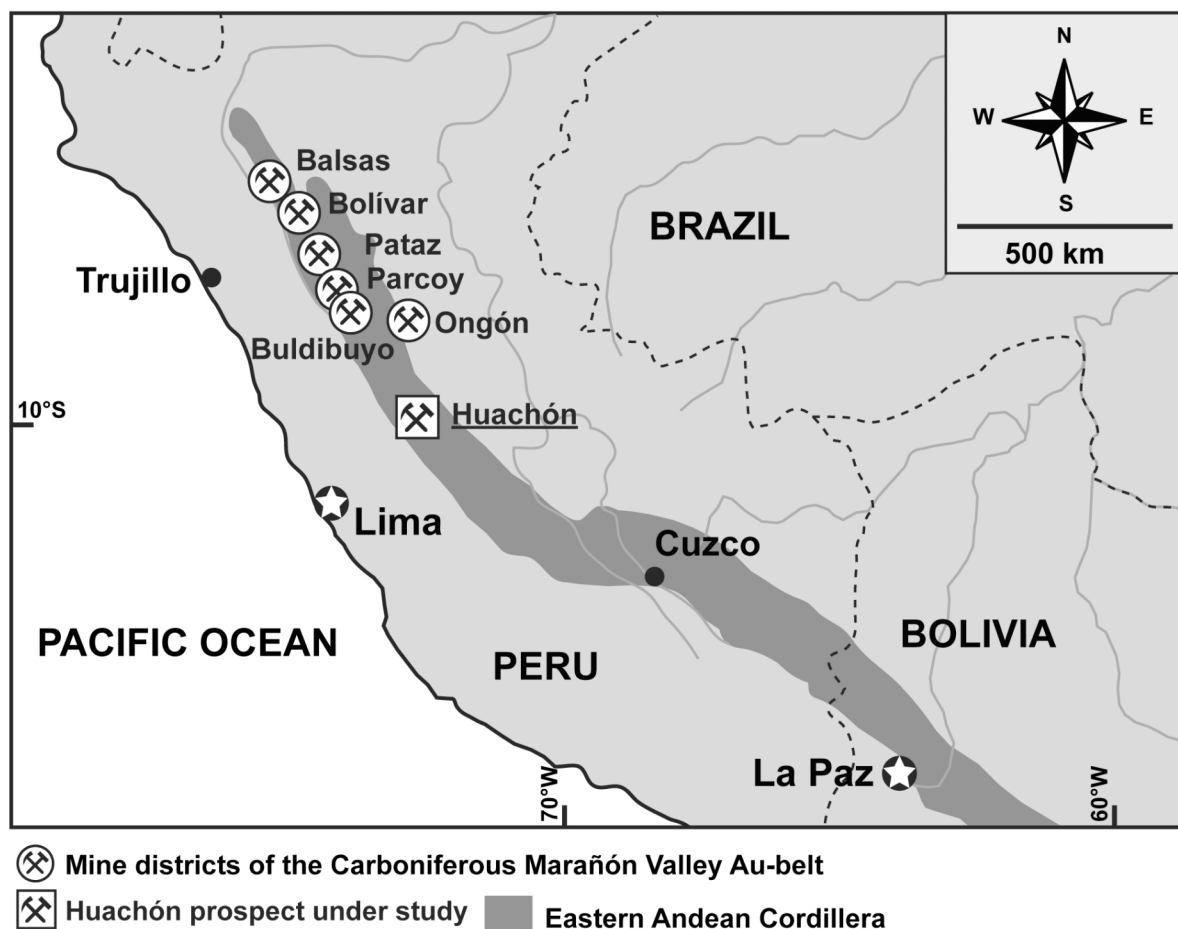
The auriferous Huachón prospect includes a main quartz-sulfide vein and several small subordinate veins. These veins are located immediately to the east of the roughly North-South oriented contact between the western margin of a Carboniferous batholith and the eastern margin of the schists of the Marañón Valley belt. Huachón is still a prospect and gold exploitation consists of some artisanal underground mines distributed over a 60 km<sup>2</sup> area in the Peruvian Altiplano, situated above an elevation of 4500 meters. Veins are a few centimeters to 1.5 meters wide. Gold grades in the ore shoots vary between 10 to 15 g/t and locally reach 70 g/t Au.

There is a strong lithological and rheological control on the vein occurrences, in particular of the gold-bearing quartz veins. The mineralized quartz veins occur within or along the margin of a granodioritic batholith. They are emplaced along NNW-striking brittle-ductile shear zones, which played a favorable role for fluid circulation. The fertile lodes are dipping approximately 60° to the north-east to east, while vertical structures are barren.

Preliminary observations show that the gold lodes consists of a two-stage sulphide-rich ore sequence. The first event is composed of milky quartz with pyrite and arsenopyrite. The second event consists of blue-grey quartz, galena, sphalerite and native gold. This second stage took place after an important deformational and fracturing event which affects the first paragenesis, as evidenced by thin section observations, showing that the galena-sphalerite-blue-quartz association fills cracks

in deformed early milky quartz. A late post-sulphide barren hydrothermal event, consisting of calcite and quartz crosscuts the mineral assemblages deposited during the two previous events. Weak hydrothermal alteration of the plutonic wallrock is locally found at the contact with the quartz veins, but is not obvious. It consists of sericitisation, chloritisation and carbonatisation. Similar typical characteristics of the auriferous quartz veins were already described in the recent study devoted to the Pataz province (Haeberlin, 2002, Haeberlin et al., 2002, 2004).

Fluid inclusion microthermometry of quartz from the Huachón prospect is currently undertaken to compare fluid types involved in ore formation at Huachón with respect to those described by Haeberlin (2002) and Haeberlin et al. (2002) at Pataz.



**Fig 1:** Situation of the Huachón prospect in the frame of the Marañón Valley Au-belt of the Eastern Andean Cordillera.

#### REFERENCES

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