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Program and Abstracts

Geochronological systematics of the Huayna Potosí and Zongo granitic plutons, Cordillera Real of Bolivia, by the K/Ar, Rb/Sr and U/Pb methods

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The Huayna Potosí and Zongo are two Triassic plutons located at the core of the Real Cordillera of Bolivia. In this work, several Rb-Sr and K-Ar dates made in the past at the São Paulo geochronology laboratory will be presented, along with newer U-Pb SHRIMP and Sm/Nd isotopic analyses presently made in the same laboratory. The results allow us to redefine the geologic story of these plutons. K/Ar and Rb/Sr ages of some low grade metapelitic country rock of early Paleozoic formations yielded a Rb-Sr isochron age of about 350 Ma, with a Sr initial ratio of 0.72, indicating the action of the Eo-Hercinian regional event affecting this part of the Central Andes. A five-point Rb-Sr isochron from an outcrop of granite of the Huayna Potosí pluton yielded 220 Ma, with a Sr initial ratio of 0.71. Similar age values were encountered by U-Pb SHRIMP zircon measurements on two other granitic outcrops, confirming a Triassic crystallization age of that pluton. Zircon saturation temperature was also measured for the Huayna Potosí pluton, indicating it is a cold "S type" granitoid rock system, which did not develop a volcanic system. One granitic rock of the deformed Kuticucho facies of the Zongo pluton yielded a U-Pb SHRIMP age of about 220 Ma, detected from high-Uranium zircon rims, which also exhibited reverse discordance in the Concordia diagram. In both Huayna Potosí and Zongo plutons, several cores of zircon crystals yielded inherited Neoproterozoic and Paleozoic ages, from about 1000 down to 450 Ma. A discordant inherited zircon of the Huayna Potosí presented the oldest age of ca. 2600 Ma. In addition, important Ar loss was detected in rocks from both plutons, and was especially recorded by the K-Ar determination from micas of the deformed Zongo pluton. Two Sm-Nd analyses for the Huayna Potosí pluton yielded negative ε_{Nd} values (-10.7) and (-12.5) and T_{DM} model ages of 2.0 Ga, that could be a good evidence of recycling of Paleoproterozoic crust. Moreover, a T_{DM} value of 2.6 Ga for the Kuticucho pluton, for the same zircon crystal, which yielded the 2600 Ma U/Pb SHRIMP age, may suggest the presence of an Archean crustal domain within the Andes basement.