



ISOTOPIC GEOCHEMISTRY AND GEOCRONOLOGY OF GRANITES OF THE REAL CORDILLERA OF BOLIVIA

Iriarte A. R., Cordani U.G.

Programa de Pós-Graduação Geociências (Geoquímica e Geotectônica) – IGc-USP

ABSTRACT: The Huayna Potosí, Zongo and Taquesi are Triassic plutons located at the core of the Real Cordillera of Bolivia. For this work, several Rb-Sr and K-Ar dates made in the past at the São Paulo geochronology laboratory, yet unpublished, will be presented, along with newer U-Pb SHRIMP and Sm/Nd isotopic analyses presently made in the same laboratory, allowing us to redefine the geologic story of this part of the Central Andes. Rb/Sr analyses of low grade metapelitic country rock of the early Paleozoic (Amutara and Cancañiri Formations) yielded a Rb-Sr isochron age of 344 ± 38 Ma, indicating the action of an early Gondwanide regional event. A five-point Rb-Sr isochron from an outcrop of granite of the Huayna Potosí pluton yielded an age of 224 ± 28 Ma. Newer U-Pb SHRIMP zircon ages of about 221 Ma were encountered on two other granitic outcrops of the same granite, confirming its Triassic crystallization age, and a similar U-Pb SHRIMP age of 221.9 ± 1.5 Ma was encountered for one sample of the Taquesi pluton. For the Zongo pluton many of the zircon grains obtained from one sample of foliated facies yielded extremely high uranium content (up to 2%), which produced reverse discordant apparent ages. These “anomalous” zircons have dark U-rich rims surrounding white inherited cores of normal U content. We interpret this U enrichment as a late petrogenetic process that happened in this pluton. Its crystallization age is taken from two concordant but imprecise U-Pb SHRIMP ages of 220 ± 20 Ma. Important Ar loss in micas was detected in the Zongo granitoids and their country rocks, recording a thermal event that opened this isotopic system in the Oligocene, during the Andean Orogeny. Finally, U-Pb ages of inherited zircon xenocrysts yielded very different ages, many of them related to magmatic Andean episodes, with Neoproterozoic peaks and several others to much older Proterozoic events. These ages are combined with Sm/Nd isotopes whose negative Epsilon values and respective model ages suggest also reworking of older Proterozoic basement.

KEYWORDS: Granites, Real Cordillera, zircon, SHRIMP