CRUSTAL EVOLUTION OF THE CENTRAL ANDES: U-Pb AND Lu-Hf DATA FOR ZIRCONS FROM PUNA AND EASTERN CORDILLERA.

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RESUMO:

The continental active margins are the main places to study process such as crustal reworking, destruction and accretion. The Andean active continental margin, therefore, offers a unique opportunity to study these processes, taking into account that it has been active from at least the end of the Neoproterozoic. In the Central Andes, two Lower Paleozoic orogenies are recognized: the Pampean orogeny (Lower Cambrian) and Famatinian Orogeny (Upper Ordovician). During the Cretaceous, in the Eastern Cordillera, the rift-related Salta basin developed. It was followed during the Paleogene, by the Andean orogeny with the development of typical arc magmatism in the Puna and other foreland basins in the Eastern Cordillera. Previous published and new U-Pb and Lu-Hf zircon data (more than 280 analyses) provide a new constraint to understand the processes of generation and reworking of continental crust, at least during the Lower Palaeozoic times: 1) the U-Pb data indicated that two main magmatic events may be recognized, one at the end of the Mesoproterozoic and a second during the Pampean and Famatinian cycles; 2) the Hf T_{DM} model ages, indicate that new crust was generated mainly at ~1.4 Ga; and 3) younger (about 1.0 Ga) and older (until 2.8 Ga) events of crust generation are also identified in the ordovician subvolcanic rocks of the Puna and some ordovician metasedimentary rocks from the Eastern Cordillera, as well as in plutonic and sedimentary rocks from the Puna and Eastern Cordillera. The range of crust generation ages indicated by Hf isotopes (between 0.9 and 1.4 Ga), is similar with the integrated Nd T_{DM} model ages for metasedimentary rocks from the Central Andes (between 1.2 and 2.2 Ga). The two systems indicated separately that generation of new crust occurred mainly in the Mesoproterozoic and Paleoproterozoic. The main processes registered during the Pampean or Famatinian orogenies in the basement of the Andes involved mostly reworking of older crust. The data allow us to constrain the main processes that took place during the construction of this part of South America. New U-Pb and Lu-Hf data from younger such as the Tertiary volcanic rocks from Puna will help to have a complete range of age and Hf isotopes data to complete the understanding of the crustal evolution of the Central Andes.

PALAVRAS-CHAVE: CRUSTAL EVOLUTION, CENTRAL ANDES, U-Pb AND Lu-Hf IN ZIRCON