K-AR AND RB-SR CLAY MINERAL AGES FROM NEOGENE VINCHINA AND BERMEJO BASINS, CENTRAL ANDES OF ARGENTINA

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The evolution of clay minerals along the sedimentary record allows a relatively simple estimation of the temperatures reached by clastic basins, constituting a low-cost and powerful tool to understand its thermal and mechanical properties, aspects useful in tectonic and geodynamic reconstructions. Their isotopic characterization allows, in turn, assign ages to the identified mineral growth episodes. This work presents detailed isotopic analysis of clay minerals carried out in sequences associated with two thick foreland depocenters in the Central Andes of Argentina (up to ~12km) corresponding to the Bermejo and Vinchina basins. The characterization of clay minerals was performed by XRD and SEM. Different size fractions were separated from pelitic levels between 350 and 7000m depth and analyzed by K-Ar (2-1□m, 1-0.2□□m, <0.2□□m) and Rb-Sr (<2□m). The ages obtained by the two methods are comparable and consistent. The Rb-Sr isochrones (11 samples) give ages between ~125 and ~234Ma, and an isochron of 154±9Ma was obtained for all the samples together. The K-Ar ages (18 samples) decreases as the grain size of the fraction is smaller (151-263Ma for the 1-2□m, 138-159Ma for the 0.2-1□m, 82-116Ma for the <0.2□□m). Considering that the obtained ages are significantly older than age for the onset of sedimentation in the Vinchina basin (~20Ma), is demonstrated the presence of a significant amount of detrital components, mainly illite, even in the finer analyzed fractions, and is consistent with a weak diagenesis related to a low thermal regime. Moreover, the great homogeneity in the Rb-Sr ages suggests that the ~154Ma isochron reflects the contribution of the supply area for Vinchina and Bermejo basins during its formation. The <0.2□m fraction from a Vinchina basin tuff level (7000m depth) yielded a K-Ar age of 5±2Ma, interpreted as diagenetic and is consistent with the burial-thermal model proposed previously for this basin.