

Significance of ^{40}Ar - ^{39}Ar encapsulation ages of metapelites from late Paleozoic metamorphic complexes of Aysén, Chile

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The ages obtained by the ^{40}Ar - ^{39}Ar encapsulation technique (retention and total gas ages, Dong et al. 1995) on $<2\mu\text{m}$ fractions of five metapelites from the Eastern Andean Metamorphic Complex (EAMC) and two from the Chonos Metamorphic Complex (CMC), allow discussion on the latest recorded metamorphic event in each zone (Figure 1). The Kübler Index (KI) of illite/muscovite (principal component of the metapelites) varies between 0.15° and $0.45^\circ \Delta^\circ 2\theta$ (Ramírez et al, 2005), indicating regional variation from diagenetic to epizonal metamorphic grade. The ^{40}Ar - ^{39}Ar encapsulation analyses reveal ^{39}Ar loss varying between 21 and 25 %, which shows a limited positive correlation with KI values. The obtained retention and total gas metapelite ages reflect distinct metamorphic conditions. Retention ages most probably indicate burial or regional metamorphic events (Thomson et al, 2002) without plutonic influence in the southern EAMC. Total gas ages reflect contact ages for metapelites close to intrusions in the northern and southern EAMC and in the CMC. The thermal overprinting of metapelites occurred in the Early Cretaceous at 130 Ma and 145 Ma and is related to the contact metamorphism of an emplacement pulse of the North Patagonian Batholith (Pankhurst et al., 2000). Total gas metapelite ages obtained from the western belt of the CMC suggest a thermal event related to a distinct pulse of the North Patagonian Batholith.

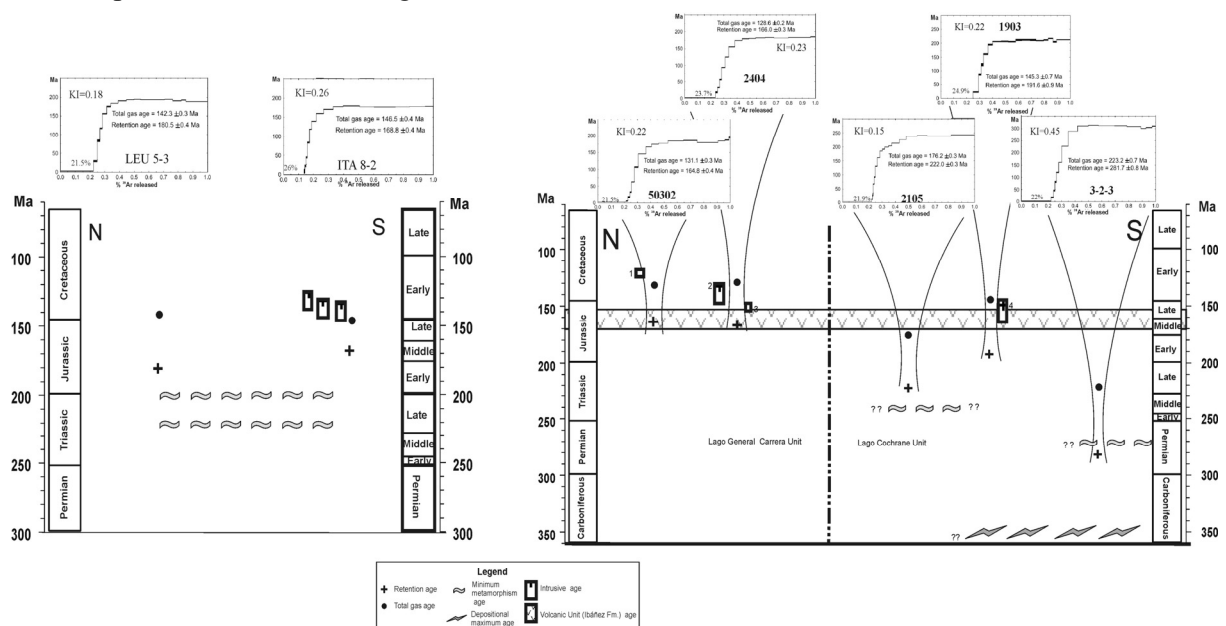


FIGURE 1.

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