Comunicaciones Nº 42 - 1991: 93 - 95
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THE ISLA ITALIA-ISLA DRING METABASITES: FRAGMENTS OF OCEANIC CRUST IN THE LATE PALEOZOIC CHONOS ACCRETIONARY COMPLEX

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The Chonos archipielago, which constitutes the Coast Ranges of Chile north of the NAZCA-SOUTH AMERICA-ANTARCTIC plates triple junction, is mainly underlain by low grade metamorphics which are believed to have constituted an accretionary wedge in the southwestern margin of Gondwanaland.

The sedimentation of the protolith was active during the late Silurian-early Devonian, as indicated by fossil brachiopod fauna (Miller & Sprechmann, 1978). The metamorphism of the complex appears to have taken place in late Carboniferous times (260 Ma; with a further deformational-metamorphic event during the late Jurassic-Early Cretaceous (Davidson et al., 1987; Hervé et al., 1988).

A 15 km^2 body of metabasite with occasional pillow structures occurs within the Palaeozoic accretionary complex in Islas Italia and Dring (Fig. 1). Major and trace element geochemistry as well as REE patterns indicate compositional similarities between these metabasites and P-type MORB and oceanic island tholeiite basalts. The chemistry of relic clinopyroxenes is also indicative of an ocean floor basalt protolith.

The metabasites exhibit very low grade metamorphism characterized by the pumpellyite-stilpnomelane-actinolite assemblage, which is comparable to the metamorphic grade of the surrounding pelito-sandy melange as indicated by illite crystallinity studies.

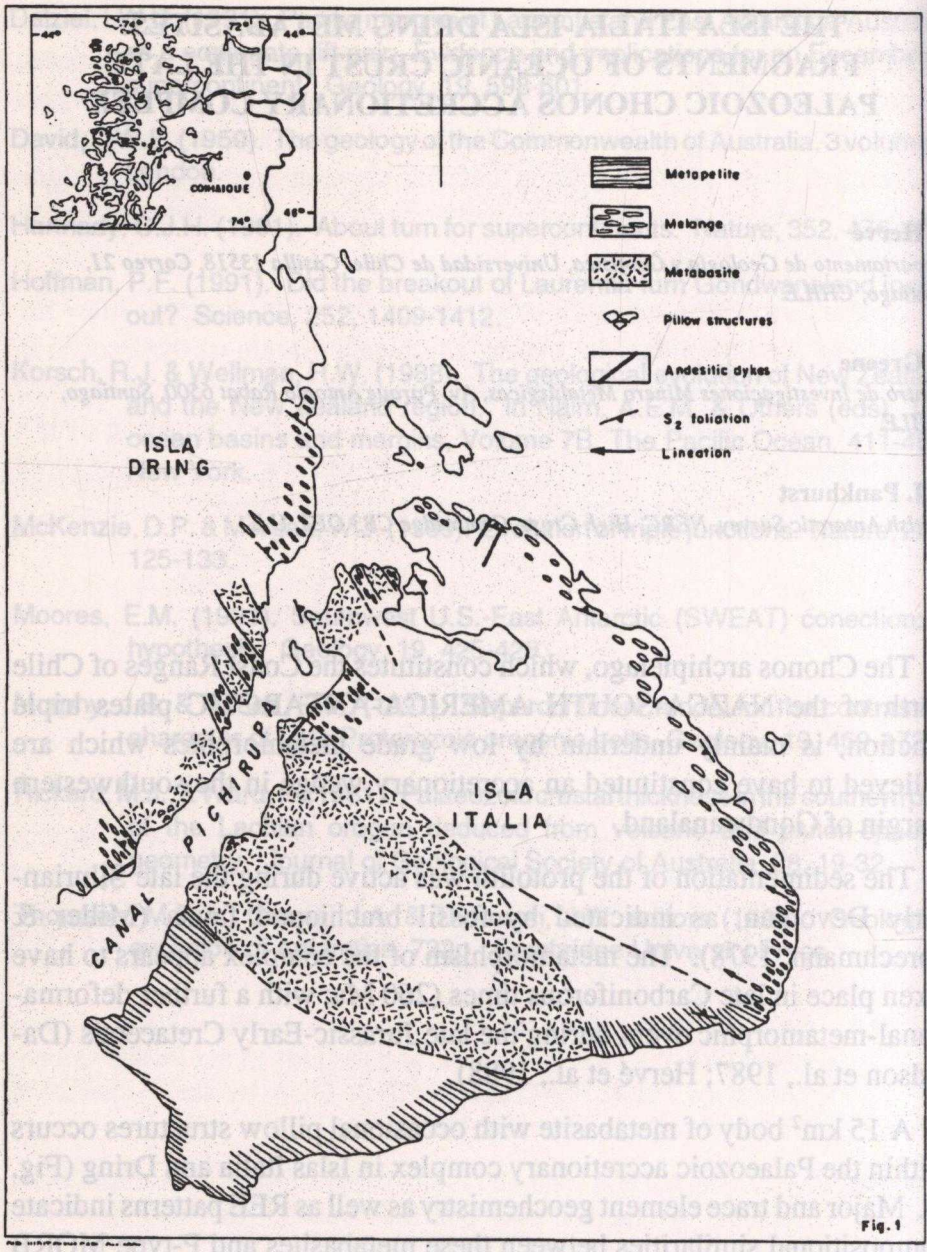

Fig. 1: Geological sketch map of Isla Italia and surroundings

Isotopic modifications of the Rb and Sr systems in the metabasites occurred during high fluid pressure metamorphism, probably by introduction of metamorphic fluids from the country rocks. Consequently, dating by the Rb-Sr whole rock isochron method is subject to uncertainties. There are

some indications that the time of isotopic exchange, i.e. metamorphism and deformation took place mainly 250 Ma ago (late Carboniferous), and that much later resetting or reactivation of the complex also occurred.

These characteristics point toward a relatively early emplacement of the metabasite rock body, generated in an oceanic environment into the subduction related accretionary prism, probably as a tectonic block during the melange formation events and not as a later intrusion as had been previously suggested (Godoy et al., 1984) on the basis of their massive appearance and predominant isotropic textures.

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