

U-Pb (SHRIMP) ages from detrital zircons of La Modesta Formation, Deseado Massif, Argentina

Pilar Moreira*¹, Raúl Fernández², Francisco Hervé³ and C. Mark Fanning⁴

(1) *Instituto de Recursos Minerales (UNLP)-CONICET, Calles 64 y 120, La Plata, Bs. As., Argentina.*

(2) *Instituto de Recursos Minerales (UNLP)-CICBA, Calles 64 y 120, La Plata, Bs. As., Argentina.*

(3) *Departamento de Geología, Universidad de Chile, Casilla 13518, Correo 21, Santiago, Chile.*

(4) *PRISE, Research School of Earth Sciences, The Australian National University, Mills Road, Canberra ACT 0200, Australia; mark.fanning@anu.edu.au*

* *Presenting Author's email: pilimoreira@yahoo.es*

The La Modesta Formation in the Deseado Massif (Argentina) is composed of intercalated muscovite-chlorite schists and metaquartzites, with minor calc-silicate rocks, basic to intermediate meta-volcanic rocks and stratabound rocks (graphitic tourmalinites, tourmaline-bearing schists and Fe-Mn horizons). At least two distinct structural and one metamorphic events affected the La Modesta Formation: (1) D₁-M₁, characterized by tight folds F₁ on compositional banding S₀, accompanied by penetrative NNE-NE trending schistosity S₁ and coeval with prehnite/pumpellite- to low greenschist facies regional metamorphism. (2) D₂ identified by F₂ kink folds that refolds F₁ and crenulation cleavage S₂ or C₂ shear planes. A forearc basin, associated to submarine arc related volcanism and sedimentary exhalative processes, is proposed as the tectonic setting of the protoliths of the La Modesta Formation. Pb isotope studies show an orogenic model fit, suggesting variable mixing of lead from different sources, mainly the upper crust rocks. A Rb-Sr whole rock errorchrone of 413 ± 17 Ma on schists was interpreted as a mixing age of detrital muscovite and feldspar, and the metamorphic minerals.

In this contribution we present the first results of U-Pb (SHRIMP) dating on zircon grains from two samples: a metasedimentary rock and a tourmalinite (n= 62 and 60 points respectively). The results indicate that the deposition in the La Modesta paleobasin should not be older than ~ 473 Ma (youngest zircons). Besides there are clusters of ages between 550-700, 950-1200, 1800-1900 and 2600-2700 Ma.

There are Ordovician U/Pb ages in granites of the Río Deseado Complex located east of La Modesta Formation. These granites could have contributed with the youngest zircons, and associated metapelites could have provided the older detrital zircons of La Modesta Formation, including the Grenvillian ages. However, the Neoproterozoic aged zircons have no known source rocks in the vicinities of the La Modesta outcrops.

The younger detrital zircon ages of some Patagonian terranes (Chonos, Madre de Dios, Fitzroy) indicate that these basins were originated after the deposition of the La Modesta Formation protoliths.

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