

## **TIME- DEFORMATION RELATIONS OF ORDOVICIAN METAMORPHISM AND MAGMATISM OF THE PRE-ANDEAN CRUST: THE SIERRA DE QUILMES (NW ARGENTINA)**

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The Sierra de Quilmes consists mainly of metapelites that were consolidated within a mobile belt at the south-western margin of Gondwana before ca. 500-420 Ma. These metapelites are possibly metamorphic equivalents of the Precambrian to Cambrian Puncoviscana formation, and are intruded by Ordovician granitoids. The spatial relationship and age dating of migmatites (ca. 800 °C, 600-800 MPa) and low to medium grade metamorphic metapelites suggest a high geothermal gradient during the Ordovician. In non-anatectic metapelites, relics of a previous sedimentary bedding are common. Abundant schollen of this poorly deformed rock type in migmatites indicate non-penetrative deformation before, during, and after crustal anatexis. Polyphase deformation at a temperature close to the T-maximum of metamorphism has been identified. The pre-Andean deformation ceased at the transition of amphibolite to greenschist facies. Indications for major prograde deformation are not present, neither in the low- to medium-grade rocks nor in the migmatites. The granitic to tonalitic Cafayate pluton was emplaced synkinematically near the boundary of anatectic to non-anatectic rocks. Locally, the interaction of granitic melt and leucosomes in the country rock suggests the intrusion of the Cafayate pluton during crustal anatexis. The age relations of high grade metamorphism, granitic and pegmatitic magmatism will be discussed in the light of new and published age data. The P-T-d-t evolution of the Sierra de Quilmes favours the activity of an external heat source that was not coeval with major tectonic events within the crust.