

The Quebrada de Humahuaca Area and the Eastern Border of the Eastern Cordillera, Jujuy Province

M. Cristina Moya¹, Julio A. Monteros² and Susana Malanca²

¹ CONICET, CIUNSA. Universidad Nacional de Salta. Buenos Aires 177, 4400 Salta. E-mail: crismoya@unsa.edu.ar

² CIUNSA. Universidad Nacional de Salta. Buenos Aires 177, 4400 Salta. E-mail: smalanca@unsa.edu.ar / julpaleo@unsa.edu.ar

Introduction

The southern half of the Eastern Cordillera is divided into three areas, limited by important tectonic fronts: the Eastern Zone, the Maximum Imbrication Zone and the Western Zone (Figure 6). In all of them there appear basement rocks, Cambrian–Ordovician, and Cretaceous–Tertiary deposits.

The Eastern Zone is formed by the Alfarcito and Tilcara ranges and the Tilcara highs (Figure 5). These orographic units correspond to thrust sheets with eastern vergence. Faults have a N–S strike and dip to the W that generates a morphology of lengthened belts, with almost vertical oriental flanks and less sheer western flanks. The relative heights increase toward E until reaching the Tilcara Highs. From this orographic unit heights descend toward the Subandean Ranges.

In the ranges of the Eastern Zone, the basement is covered by Cambrian–Tremadocian deposits, which are in turn overlain by the Salta Group. This implies that post–Tremadocian units were suppressed by the erosion previous to the Middle–Upper Cretaceous (Moya, 1988). Most complete Tremadocian successions were observed to the north of the Angosto del Perchel (Figure 32, 33) (Moya *et al.*, 2003), which correspond to the Tilcara Range.

The Central or Maximum Imbrication Zone is limited to the east and west by the Río Grande and Pives Fronts. In this area, the Paleozoic deposits are intensely faulted, although all the units of the MG and almost all of the SVG are present. This means that the pre–Andean erosion of the Ordovician successions was reduced, although its deformation, as a result of the Cenozoic tectonics, was significant (Moya, 1988). On the eastern flank of this area, the Andean tectonics caused the thrust of Cretaceous deposits (limestones of the Yacoraite Formation) over Paleozoic ones, so that in short distances, the Yacoraite Formation covers Cambrian and Lower Ordovician successions, through a conspicuous fault breccia. Thick Quaternary deposits with magnificent cases of glacial valleys, and overprinted deep fluvial valleys, testify the intense tectonic activity of modern times.

The Western Zone is where Ordovician deposits are best preserved. In this area, the Andean tectonics was apparently not so intense. Structures that characterize this area correspond to folds of up to 50 km in length and to big monoclinical structures, in which the Paleozoic units

(MG and SVG) and Cretaceous cover intervene. Basement deposits are restricted to the southwestern border of the region.

Best known baritine and lead deposits of the region are lodged in Ordovician deposits of the area. In the southern part of the district, mineralizations are linked with N–S strike faults, taking the Tumbaya discordance as a detaching plane.

References

Moya, M.C. 1988. *Estratigrafía del Tremadociano en el tramo austral de la Cordillera Oriental argentina*. Tesis doctoral. Facultad de Ciencias Naturales, Universidad Nacional de Salta, (unpublished).

Moya, M.C., Malanca, S. & Monteros, J.A., 2003a. The Cambrian–Tremadocian Units of the Santa Victoria (Northwestern Argentina). A New Correlation Scheme. *In*: G.L. Albanesi, M.S. Beresi & S.H. Peralta (eds.), *Ordovician from the Andes*, of the 9th International Ordovician System, Instituto Superior de Correlación Geológica,