

THE EVOLUTION OF THE ORDOVICIAN TACSARA BASIN IN THE SOUTH BOLIVIAN ANDES

¹ERDTMANN, B.-D., ²SUAREZ-SORUCO, R. ¹Institute of Applied Geosciences II, Technical University Berlin, Germany; ²Museo Geológico de Cochabamba, Bolivia

The Ordovician is Bolivia's geological "backbone" and, inclusive of the Contaya Basin, extends into Peru, and with the Tacsara Basin into northern Argentina. It represents the best exposed and probably most voluminous Ordovician clastic rock outcrop worldwide. Both basins probably originated from a triple junction which developed during the Late Proterozoic near Chapare, NE of Cochabamba. As the oldest rift, the Chiquitana Aulacogen, extending between Chapare and Corumbá at the Bolivian border with Mato Grosso in Brazil, was virtually unaffected by the Pampean Orogeny and contains Upper Proterozoic strata. The Tacsara Basin opened during the Late Cambrian and was closed already during the middle to upper Arenig, successively from South to North. The eastern and western margins of the Tacsara Basin are ill-defined because the basin submerges to the east, as a substantially thinned-out wedge, beneath Upper Paleozoic rocks of the tightly folded Subandean Ranges. West of the Guandacol uplift margin a parallel successor trough of the Tacsara Basin opened during Llanvirn and closed during Ashgill. At its western margin this tectonically active basin is now largely covered by continental deposits of the Tertiary Altiplano Basin with only small Ordovician inliers outcropping like "nunataks" as structural horsts near Soniquera, at San Pablo de López and Peña Barrosa. At these westernmost outcrops strongly distorted Ordovician slates and sandstones document a westward coarsening of the clastics, this being interpreted to indicate a possible western source area from the then outcropping Arequipa-Antofalla Massif. The initial opening and stepwise closing of the eastern rift subbasin first and subsequently of the western flysch subbasin are attributed to an initial clockwise rotation of the Arequipa-Antofalla Subplate and its Late Ordovician "rebounding" relative to the Guapore Plate to the NE.