Finger KL, Nielsen SN, DeVries TJ, Encinas A, Peterson DE (2007) Paleontologic evidence for sedimentary displacement in Neogene forearc basins of central Chile. Palaios 22: 3-16

Schöning M, Bandel K (2004) A diverse assemblage of fossil hardwood from the upper tertiary (Miocene?) of the Arauco Peninsula, Chile. Journal of South American Earth Sciences 17: 59-71

Tavera J, Veyl C (1958) Reconocimiento geológico de la Isla Mocha. Anales de la Facultad de Ciencias Físicas y Matemáticas 14-15: 157-186

Provenance of Ordovician and Devonian sandstones from southern Peru and northern Bolivia - U-Pb and Lu-Hf isotope evidence of detrital zircons and its implications for the geodynamic evolution of the Western Gondwana margin (14°-17°S)

Reimann CR 1, Bahlburg H 1, Kooijman E 2, Berndt J 2, Gerdes A 3, Carlotto V4

1 Institut für Geologie und Paläontologie,Westfälische Wilhelms Universität Münster, reimannc@uni-muenster.de, bahlbur@uni-muenster.de
2 Institut für Mineralogie, Westfälische Wilhelms Universität Münster
3 Institut für Geowissenschaften, Mineralogie, J.W.Goethe Universität Frankfurt,
4 INGEMMET, Lima, Perú

In an attempt to trace the provenance of sedimentary detritus and to gain information on the crustal evolution of the Early Paleozoic western Gondwana margin (14°-17°S) we applied a combined *in situ* U-Pb and Lu-Hf LA-ICP-MS isotope analysis on detrital zircon from 12 Ordovician and Devonian sandstones in southern Peru and northern Bolivia.

The sandstones are exposed in the Eastern Cordillera, the Altiplano and the Coastal Cordillera. The sedimentary basins are part of the Peru-Bolivia trough. Few intrusive and extrusive Early Paleozoic rocks indicate that the Ordovician basins developed in a back-arc position, with the arc on the Arequipa Massif in the west and the Amazonian craton in the east. This plate-tectonic setting appears to have changed into a passive margin in the Early Devonian.

The U-Pb zircon age distribution of the Ordovician sandstones from the Eastern Cordillera has the most distinctive peak between 0.7 and 0.5 Ga (Brazilian interval). Contrastingly, the most prominent U-Pb zircon age peak of the Ordovician sandstones from the Altiplano is at 1.2-0.9 Ga (Grenvillian interval) with a smaller peak at 1.85-1.7 Ga. The Devonian sandstones from the same locality on the Altiplano contain zircons with a major age peak at 0.5-0.4 Ga (Famatinian interval). Smaller U-Pb age peaks can be connected to the Brazilian, Grenvillian and Transamazonian (2.2-1.8 Ga) intervals. Zircons of the Devonian sandstones from the Coastal Cordillera have a similar age distribution but the Grenvillian ages, in one case also the Transamazonian ages are significantly more pronounced than the Brazilian ages.

Zircons formed during the Brazilian interval could have been derived from various eastern sources on the Amazonian craton, those with Grenvillian ages were derived either from the Sunsas belt to the east or from the Arequipa Massif to the west of the sedimentary basin. Zircons related to the Famatinan event most probably originated in the Arequipa Massif, the closest place where respective magmatic arc rocks were available. Thus, the Ordovician sandstones of the Eastern Cordillera and the Altiplano had an eastern source, while the Altiplano locality was fed from a very limited source area, probably the Sunsas belt. The Devonian siliciclastic strata instead were mainly influenced by the Arequipa Massif. Minor influences of eastern sources are documented by the presence of Brazilian zircon ages.

The *in situ* Lu-Hf isotope signature provides information about crustal recycling. Together with the U-Pb zircon ages, crustal evolution paths can be reconstructed. εHf(t) values of the analysed zircons spread between –20 and +12. Zircons with a very juvenile signatures (less than 5 εHf-units below the respective depleted mantle composition) we detected only in the interval between 1.5 and 0.9 Ga. Hence, of the Brazilian and Famatinian events we only find zircons derived from an evolved crust. A striking feature is the common Hf model ages (c.1.5-1.2 Ga) of zircons formed during the Grenvillian, Brazilian and Famatinian orogenies. This indicates that Famatinian-aged crystalline rocks of the Arequipa Massif and the Brazilian-aged crystalline rocks of the Amazonian craton have a similar crustal origin.

Contaminacion de aguas subterranes, Sub Cuenca Oriental del Acuífero de Managua: Determinación de zonas de captura para pozos de Bombeo

de los Ángeles Hernández Calero R

Ingeniero Civil. MSc Recursos Hídricos. Investigador en el Centro de Investigaciones y Estudios en Medio Ambiente de la Universidad Nacional de Ingeniería, CIEMA-UNI.

Para Managua, la capital, las aguas subterráneas son la fuente más importante ya que se abastece casi en su totalidad de ellas. El acuífero de Managua esta dividido en tres subcuencas: La Oriental, Central y Occidental. La sub cuenca oriental y central su extensión es de unos 680 km² de los 1040 Km² que tiene el acuífero. La oriental es la más extensa de las tres subcuencas y su importancia está basada en que tiene la zona de mayor recarga del acuífero, el grado de complejidad hidrogeológica por encontrarse en ella el complejo volcánico Masaya, que esta ubicado en la parte sur de la sub cuenca que cubre una parte de la recarga, fallamientos geológicos de importancia como la de Cofradía en la parte norte del área, campos de pozos de importancia como el Managua I (campos de pozos de Ticuantepe), Managua II (campo de pozos camino a Sabana Grande) y el campo de pozos Las