|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Number in Figure 2 | Formation | Section | Age Ma | Method | Autor |
| 1 | Lumbrera | Tres Cruces | 47,7 ± 7  | U/Pb age in calcite in pedogenic carbonate nodule | DeCelles et al. (2011) |
| 2 | Lumbrera | Monte Nieva | 40,6 ± 0.3  | Maximum age based on detritic zircon U/Pb age | DeCelles et al. (2011) |
| 3 | Lumbrera | El Simbolar | 39,9 ± 0.4  | U/Pb zircon age on tuff sample | del Papa et al. 2010 |
| 4 | Los Colorados | Angastaco | 37,6 ±1,2  | Maximum age based on detrital apatite fission track | Carrapa et al. (2011) |
| 5 | Los Colorados | Pucará | 37,6 ±1,2  | Maximum age based on detrital apatite fission track | Carrapa et al. (2011, 2012) |
| 6 | Los Colorados | Monte Nieva | 28,7 ±1.8  | Maximum age based on detrital apatite fission track | DeCelles et al. (2011) |
| 7 | Angastaco | Montenieva | 17.32 ± 0.17 | U-Pb zircon geochronological | Payrola et al. (2020) |
| 8 | Angastaco | Tonco Valley | 17.46 ± 0.08 | U-Pb zircon geochronological | Payrola et al. (2020) |
| 9 | Angastaco | Tonco Valley | 8.13 ± 0.05 | U-Pb zircon geochronological | Payrola et al. (2020) |
| 10 | Angastaco | Tonco | 13.7 ± 0.1  | U/Pb zircon age on tuff sample | Galli et al. (2014) |
| 11 | Angastaco | Amblayo | 13.7 ± 0.1  | U/Pb zircon age on tuff sample | Galli et al. (2014) |
| 12 | Angastaco | Calchaquí river | 13.6 ± 0.1  | U/Pb zircon age on tuff sample | Galli et al. (2014) |
| 13 | Angastaco | Corte El Cañon | 13.4 ± 0.4  | Ar/Ar age on tuff sample | Grier and Dallmeyer (1990) |
| 14 | Metán Supgroup base | Metán river | ~ 17.3 | Paleomagnetism | Reynolds et al. (2000), Galli et al. (2017) |
| 15 | Metán Soupgroup base | Arroyo González | ~ 15.1 | Paleomagnetism | Reynolds et al. 2000, Galli et al. 2017 |
| 16 | Metán Supgroup base | Piedras river | ~ 13.1 | Paleomagnetism | Reynolds et al. (2000), Galli et al. (1996, 2017) |
| 17 | Metán Supgroup top | Metán river | ~ 13.5 | Paleomagnetism | Reynolds et al. (2000), Galli et al. (2017) |
| 18 | Metán Supgroup top | Piedras river | ~ 13.1 | Paleomagnetism | Reynolds et al. 2000, Galli et al. (1996, 2017) |
| 19 | Metán Supgroup top | Arroyo González | ~ 9.7 | Paleomagnetism | Reynolds et al. (2000) |
| 20 | Anta | El Guayacán | 14.5 ± 1.4  | Zircon fission‐track on tuff sample | Reynolds et al. (2000) |
| 21 | Anta | Piedras river | 13.95 ± 0.72  | Ar/Ar | Reynolds et al. (2000) |
| 22 | Anta | González river | 13.2 ± 1.5  | Zircon fission-track age on tuff sample | Reynolds et al. (2000) |
| 23 | Río Grande | Cianzo | 16.34 ± 0.71  | 40Ar/39Ar | Siks and Horton 2011 |
| 24 | Río Grande | Cianzo | 13.89 ± 0.42  | 40Ar/39Ar | Siks and Horton 2011 |
| 25 | Río Grande | Cianzo | 12.76 ± 0.16  | 40Ar/39Ar | Siks and Horton 2011 |
| 26 | Río Grande | Cianzo | 11.35 ± 0.03  | 40Ar/39Ar | Siks and Horton 2011 |
| 27 | Río Grande | Cianzo | 9.69 ± 0.05  | 40Ar/39Ar | Siks and Horton 2011 |
| 28 | Palo Pintado | Quebrada El Estanque | 10.29 ± 0.11  | K/Ar | Galli et al., 2008 |
| 29 | Palo Pintado | Quebrada Tonco | 5.27 ± 0.28  | U/Pb | Coutand et al. 2006 |
| 30 | Palo Pintado | Quebrada Santa Rosa | 5.98 ± 0.32  |  U/Pb | Bywater-Reyes et al. 2010 |
| 31 | Palo Pintado | Calchaquí River | ~10 Ma  | Paleomagnetism | Galli et al. 2014 |
| 32 | Palo Pintado | Calchaquí River | ~5 Ma | Paleomagnetism | Galli et al. 2014 |
| 33 | Palo Pintado | Tonco Valley | 7.72 ± 0.06 | U-Pb zircon | Payrola et al. 2020 |
| 34 | Palo Pintado | Tonco Valley | 7.73 ± 0.06 | U-Pb zircon | Payrola et al. 2020 |
| 35 | Guanaco base | Río Piedras | ~ 9.4 | Paleomagnetism | Reynolds et al. 2000 |
| 36 | Guanaco base | Arroyo González | ~ 9 | Paleomagnetism | Reynolds et al. 2000 |
| 37 | Guanaco top | Río La Viña | ~ 6 | Paleomagnetism | Reynolds et al. 2000 |
| 38 | Guanaco | Río Yacones | 8.73 ± 0.25 | K/Ar | Viramonte et al. 1994 |
| 39 | Guanaco | Coronel Moldes | 9.31 ± 0.31 |  | Hain et al. 2011 |
| 40 | Guanaco | Río Xibi Xibi  | 5.7 ± 0.8  | U/Pb | Villalba Ulberich et al. 2021 |
| 41 | Maimará | Huichaira  | 5.8 ± 0.5 | U/Pb | Pingel et al., 2013 |
| 42 | Maimará | Incahuasi | 4.8 ± 0.1 | U/Pb | Pingel et al., 2013 |
| 43 | Maimará | Maimara locality | 5.8 ± 0.5 | Ar/Ar | Galli et al. 2016 |
| 44 | Maimará | Incahuasi | 4.8 ± 0.1  | U/Pb | Pingel et al., 2013 |
| 45 | Maimará | Quitiacara | 5.05 ± 0.14  | U/Pb | Streit et al., 2015 |
| 46 | Base Maimará | Maimara locality | ~7 | Paleomagnetism | Galli et al. 2016 |
| 47 | Top Maimará | Maimara locality | ~ 4.8 | Paleomagnetism | Galli et al. 2016 |
| 48 | San Felipe | Santa Rosa | 5.17 ± 0.23  | U/Pb | Bywater-Reyes et al.  |
| 49 | San Felipe | Quebrada Las Viñas | 4.95 ± 0.16 | U/Pb | Bywater-Reyes et al. 2010 |
| 50 | San Felipe | Quebrada Las Viñas | 4.04 +/-0.26 | U/Pb | Bywater-Reyes et al. 2010 |
| 51 | San Felipe | Quebrada Tonco | 3.99 ± 0.15 | U/Pb | Bywater-Reyes et al. 2010 |
| 52 | San Felipe | Quebrada Tonco | 3.28 ± 0.21 | U/Pb | Bywater-Reyes et al. 2010 |
| 53 | Piquete base | Río Metán | ~ 5.1 | Paleomagnetism | Reynolds et al. 2000 |
| 54 | Piquete base | Río Metán | ~ 2 | Paleomagnetism | Reynolds et al. 2000 |
| 55 | Uquía | Incahuasi | 3.52 ± 0.08  | U/Pb | Pingel et al., 2013 |
| 56 | Uquía | Incahuasi | 3.66 ± 0.2 | U/Pb | Pingel et al., 2013 |
| 57 | Uquía | El Rodero | 3.45 ± 0.25  | U/Pb | Galli et al. 2021 |
| 58 | Alonso | El Molino | 0.87 ± 0.03  | U/Pb | Streit et al., 2015 |
| 59 | Alonso | El Molino | 2.21 ± 0.08  | U/Pb | Streit et al., 2015 |
| 60 | Alonso | Alonso locality | 2.11 ± 0.02  | U/Pb | Coira et al. 2022 |

**References**

Bywater-Reyes, S., Carrapa, B., Clementz, M., Schoenbohm, L., 2010. Effect of late Cenozoic aridification on sedimentation in the Eastern Cordillera of northwest Argentina (Angastaco basin). Geology 38, 235–238.

Carrapa, B., Trimble, J., Stockli, D., 2011. Patterns and timing of exhumation and deformation in the Eastern Cordillera of NW Argentina revealed by (U-Th)/He thermochronology. Tectonics 30, TC3003. https://doi.org/10.1029/2010TC002707

Coira, B., Galli, C.I., Mahlburg Kay, S., Alonso, R.N., Flores, P., Gonzalez, E., 2022. Cenozoic ash-fall deposits in the Andean foreland basins, Northwest Argentina (23◦- 26◦S) - key to reconstruct their chrono-stratigraphy and to identify links to the Andean Neogene ignimbrite flare-up. J. S. Am. Earth Sci. https://doi.org/10.1016/j.jsames.2022.103792.

Coutand, I., Carrapa, B., Deeken, A., Schmitt, A.K., Sobel, E., Strecker, M.R., 2006. Orogenic plateau formation and lateral growth of compressional basins and ranges: insights from sandstone petrography and detrital apatite fission-track thermochronology in the Angastaco Basin, NW Argentina. Basin Res. 18, 1–26.

DeCelles, P.G., Carrapa, B., Horton, B., Gehrels, G.E., 2011. Cenozoic foreland basin system in the central Andes of northwestern Argentina: implications for Andean geodynamics and modes of of deformation. Tectonics 30, TC6013. https://doi.org/10.1029/2011TC002948.

del Papa, C., Kirschbaum, A., Powell, J., Brod, A., Hongn, F., Pimentel, M., 2010. Sedimentological, geochemical and paleontological insights applied to continental omission surfaces: a new approach for reconstructing an Eocene foreland basin in NW Argentina. J. S. Am. Earth Sci. 29, 327–345.

Galli, C.I., Coira, L.B., Alonso, R.N., Reynolds, J., Matteini, M., Hauser, N., 2014. Tectonic controls on the evolution of the andean cenozoic foreland basin: evidence from fluvial system variations in the Payogastilla Group, in the Calchaquí, Tonco, and Amblayo valleys, NW Argentina. J. S. Am. Earth Sci. 52, 234–259. ISSN 0895-9811.

Galli, C.I., Coira, L.B., Alonso, R.N., Iglesias Llanos, M.P., Prezzi, C.B., 2016. Tectonostratigraphic History of the Neogene Maimar´a Basin, Northwest Argentina. Journal of South American Earth Sciences, vol. 72. Pergamon Elsevier Science LTD, pp. 137–158. ISSN 0895-9811.

Galli, C.I., Alonso, R.N., Coira, L.B., 2017. “Integrated stratigraphy of the Cenozoic Andean foreland basin (northern Argentina)”. Stratigraphy book (Chapter 7). In: Gemma Aiello: InTech Open Acces, pp. 129–156. https://doi.org/10.5772/intechopen.69985, 978-953-51-5466-2.

Galli C.I., R. N. Alonso, E. Beamud Amoros, H. Pingel, E. Eveling, B. L. Coira, D. F. Stockli, D. Gonzalez, 2021. Plio-Pleistocene paleoenvironmental evolution of the intermontane Humahuaca Basin, southern Central Andes, Journal of South American Earth Sciences, 111(2021) 103502, <https://doi.org/10.1016/j.jsames.2021.103502>.

Galli C.I., A. Ramírez, C. Barrientos, J. Reynolds, J. Viramonte, B Idleman, 2008. Estudio de proveniencia de los depósitos del Grupo Payogastilla (Mioceno medio – superior) aflorantes en el río Calchaquí, provincia de Salta, Argentina. Diecisieteavo Congreso Geológico Argentino, Actas. Tomo I, p.353-354.

Grier, M.E., Dallmeyer, R.D., 1990. Age of the Payogastilla Group. Implications for forenland basin development, NW Argentina. Journal of South America Earth 4, 351–372.

Payrola P., C. del Papa, A. Aramayo, H. Pingel, F. Hongn, E. Sobel, G. Zeilinger, M. Strecker, S. Zapata, J. Cottle, N. Salado Paz, J. Glodny, 2020. Episodic out-of-sequence deformation promoted by Cenozoic fault reactivation in NW Argentina. Tectonophysics 776 (2020) 228276, https://doi.org/10.1016/j.tecto.2019.228276

Pingel, H., Strecker, M., Alonso, R.N., Schmitt, A., 2013. Neotectonic Basin and landscape evolution in the eastern cordillera of NW Argentina, Humahuaca basin (~24◦S). Basin Res. 25, 554–573. https://doi.org/10.1111/bre.12016.

Reynolds, J.H., Galli, C.I., Hernández, R.M., Idleman, B.D., Kotila, J.M., Hilliard, R.V., Naeser, C.W., 2000a. Neogene Foreland Uplift History in the Flat Subduction Region, Transition Zone, and Normal Subduction Region, NW Argentina, vol. 32. Geological Society of America, Abstr. Programs (Reno, NV), pp. 504–505, 7.

Reynolds, J.H., Galli, C.I., Hernández, R.M., Idleman, B.D., Kotila, J.M., Hilliard, R.V., Naeser, C.W., 2000b. Middle Miocene tectonic development of the transition zone, Salta province, NW Argentina: magnetostratigraphic constraints from the Oran Group, Sierra de González. Geol. Soc. Am. Bull. 112–11, 1736–1751.

Siks, B., Horton, B., 2011. Growth and fragmentation of the Andean foreland basin during eastward advance of fold-thrust deformation, Puna plateau and Eastern Cordillera, northern Argentina. Tectonics 30, TC6017. https://doi.org/10.1029/2011TC002944

Streit, R.L., Burbank, D.W., Strecker, M.R., Alonso, R.N., Cottle, J.M., Kylander-Clark, A. R.C., 2017. Controls on intermontane basin filling, isolation and incision on the margin of the Puna Plateau, NW Argentina (~23◦S). Basin Res. 29, 131–155. https://doi.org/10.1111/bre.12141.

Villalba Ulberich, J.P., Galli, C.I., Franzese, J.R., 2021. Sedimentary evolution of Tres Cruces basin: constraints on the development of the cenozoic foreland in central Andes, NW Argentina. J. S. Am. Earth Sci. https://doi.org/10.1016/j.jsames.2021.103594

Viramonte, J.G., Reynolds, J.H., del Papa, C., Disalvo, A., 1994. The Corte Blanco garnetiferous tuff: a distinctive late Miocene marker bed in northwestern Argentina applied to magnetic polarity stratigraphy in the Río Yacones, Salta Province. Earth Planet Sci. Lett. 121 (3–4), 519–531. https://doi.org/10.1016/0012-821X(94)90088-4.