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U-Pb and Lu-Hf zircon geochronology of the Cañadón Asfalto Basin, Chubut, Argentina: Implications for the magmatic evolution in central Patagonia

N. Hauser, N.G. Cabaleri, O.F. Gallego, M.D. Monferran, D. Silva Nieto, C. Armella, M. Matteini, P.A. Aparicio González, M.M. Pimentel, W. Volkheimer, W.U. Reimold



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1 **U-Pb and Lu-Hf zircon geochronology of the Cañadón Asfalto**
 2 **Basin, Chubut, Argentina: implications for the magmatic**
 3 **evolution in central Patagonia.**

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 5 N. Hauser^{(1)*}, N.G. Cabaleri⁽²⁾, O.F. Gallego⁽³⁾, M.D. Monferran⁽³⁾, D. Silva Nieto⁽⁴⁾, C.
 6 Armella⁽²⁾, M. Matteini⁽¹⁾, P.A. Aparicio González⁽²⁾, M.M. Pimentel⁽¹⁾, W.
 7 Volkheimer⁽⁵⁾, W.U. Reimold^(1,6,7)

8
 9 (1) *Laboratory of Geochronology, Instituto de Geociências, Universidade de Brasília, 70910 900 Brasília, DF, Brazil,*

10 (2) *Instituto de Geocronología y Geología Isotópica, Consejo Nacional de Investigaciones Científicas y Técnicas, Universidad de Buenos*
 11 *Aires, Ciudad Universitaria, C1428EHA Buenos Aires, Argentina*

12 (3) *Centro de Ecología Aplicada del Litoral, Asignaturas Geología Histórica-Micropaleontología (Área Ciencias de la Tierra) -*
 13 *CECOAL-CCT-Nordeste-CONICET, Departamento de Biología, FaCENA-UNNE, C.C.128, C.P. 3400 Corrientes, Argentina.*

14 (4) *Servicio Geológico Minero Argentino, Instituto de Geología y Recursos Minerales, Av. Julio A. Roca 651, 10° Piso,*
 15 *C1067ABB Buenos Aires, Argentina*

16 (5) *Instituto Argentino de Nivología, Glaciología y Ciencias Ambientales. Centro Científico Tecnológico Mendoza, Consejo Nacional de*
 17 *Investigaciones Científicas y Técnicas, C.C. 330. (5500) Mendoza, Argentina.*

18 (6) *Museum für Naturkunde – Leibniz-Institute for Evolution and Biodiversity Research, Invalidenstrasse 43, 10115 Berlin, Germany*

19 (7) *Humboldt Universität zu Berlin, Unter den Linden 6, 10099 Berlin, Germany.*

20
 21 *Corresponding author: e-mail address: nataliah@unb.br (Natalia Hauser)

22 *Universidade de Brasilia-IG-Laboratorio de Geocronología*

23 *Fax/tel.: +55 031 3559 1861*

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 25 **Keywords:** zircon geochronology; U-Pb and Hf isotopes; Middle Jurassic; Cañadón Asfalto
 26 **basin; Central Chubut; Magmatic evolution.**

27
 28 **Abstract**

29 The Cañadón Asfalto basin, central Chubut, Argentina, comprises a volcano-sedimentary sequence related to
 30 the opening of the Atlantic Ocean during Mesozoic times. The Lonco Trapial, Cañadón Asfalto and Cañadón
 31 Calcáreo formations are the main units related to the evolution of this basin. The Las Chacritas and Puesto
 32 Almada members are distinguished in the Cañadón Asfalto Formation. LA-HR-ICP-MS U-Pb and Lu-Hf data
 33 on zircon were obtained on these units. The Lonco Trapial Formation gave a weighted average age of
 34 172.3 ± 1.8 Ma. A pyroclastic level from the Las Chacritas Member gave a weighted average age of 168.2 ± 2.2
 35 Ma. Two U-Pb concordant ages of 160.3 ± 1.7 Ma on a laminated tuffite and 158.3 ± 1.3 Ma on a pyroclastic
 36 level were obtained for the Puesto Almada Member. Two maximum depositional ages constrain the
 37 sedimentary provenance areas for the basin: 1) A sample from the Sierra de la Manea range, where a

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