

MARCOS SIMÓN MACCHIOLI GRANDE

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PERSONAL INFORMATION

Place and date of birth	Olavarría, Argentina – 31 st May 1989
ID number	34532753
Cellphone	+54 9 221 5117510
Nationality	Argentinian

CURRENT POSITION

2022 – 2025	Postdoctoral Fellow (ANID – Fondacyt). Project: <i>Concentration-discharge patterns in a Mediterranean watershed under increasing drought: insights on solute and water sources and fluxes, and chemical weathering rates in the Maipo River, central Chile.</i> Advisor: Dr. Alida Pérez Fodich.
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PAST RESEARCH POSITIONS

2019 – 2022	Postdoctoral Fellow (CONICET). Project: <i>Dissolution, transport and evaporative concentration of fluoride in semiarid mountainous catchments.</i> Advisors: Dr. Esteban Jobbágy and Dr. Mariano Larrovere.
2014 – 2019	Doctoral Fellow (CONICET): Project: <i>A petrological, geochemical and structural study of A-type Carboniferous granites from the central sector of Sierra de Velasco, La Rioja.</i> Advisors: Dr. Pablo Alasino and Dr. Juan Dahlquist.

RESEARCH INTERESTS

With a background in igneous petrology, at the moment I am interested in the geochemistry and hydrology of rivers from semiarid mountains. My goal is to understand solute generation and release to rivers from water-rock interactions, and their controls such as weathering reaction rates and water residence time in bedrock, through concentration-discharge relationships. Also, I aim to understand hydrological processes in these environments and water sources and flowpaths in the bedrock-soil-plant-stream continuum. The methodological approach involves using multiple tracers such as major ions (including non-classical ones, like fluoride), water stable isotopes, and radiogenic isotopes (strontium). To achieve these goals, I am studying granitic catchments from the center of the Sierra de Velasco, the study area of my PhD, and currently mediterranean catchments in central Chile.

ACADEMIC FORMATION

2014 - 2019	Doctor in Geological Sciences – National University of Córdoba
2010 - 2015	Graduate in Geology – National University of La Plata, Argentina
2007 - 2014	Graduate in Geochemistry – National University of La Plata, Argentina

ACADEMIC TRAINING COURSES

2021	“Geohydrology applied at soil conservation”, dictated by Dr. Eduardo Kruse (UNLP), Dr. Fernanda Gaspari (UNLP) and Dr. Mario Pérez Bidegain (UdelaR).
2020	“R programming”, dictated by Lic. Federico Carballo (SEGEMAR). Organized by the Argentinian Geological Association (AGA).
2020	“Isotopes in catchment hydrology”, dictated by Dr. Jeffrey McDonnell and collaborators. University of Saskatchewan (online workshop assistant).
2020	“ODS 6.4. (Water sustainable use goal from “FAO’s Sustainable Development Goals”) online interactive course”, organized by the FAO.
2017	“Statistics applied to geology”, dictated by Dr. Marcelo Smrekar and Dr. Aldana González Montoro (UNC – CONICET) at Universidad Nacional de Córdoba
2017	“Magmatic processes and the origin of igneous rocks”, dictated by Dr. Theodoros Naftlos (Universität Wien) at Universidad Nacional del Sur
2016	“Geotectonics”, dictated by Dr. Andrés Folguera (UBA –CONICET) at Universidad Nacional de San Juan
2015	“Philosophy of Earth Sciences”, dictated by Dr. Guillermo Albanesi (UNC – CONICET) at Universidad Nacional de Córdoba
2015	“Isotope geochronology and geology”, dictated by Dr. Marcio Pimentel (Brasilia University) at Universidad Nacional de San Juan
2014	“Remote sensing applied to geology”, dictated by Dr. Daniel Pérez (UBA) at Universidad Nacional de San Juan
2014	“Field school on the rocks of sierra de San Luis basement”, supervised by Dr. Eduardo Llambías (UNLP – CONICET) and Dr. Ariel Ortiz Suárez (UNSL) at Universidad Nacional de San Luis
2014	“Advanced geochemistry of igneous rocks”, dictated by Dr. Juan Dahlquist (UNC – CONICET) at Universidad Nacional de San Juan

TEACHING EXPERIENCE

2019 – present	General Geochemistry and Applied Geochemistry (isotopic and exploration Geochemistry) – Department of Applied Sciences to Production, Environment and Urbanism – National University of La Rioja <i>Adjunct professor (part-time, tenured): In charge of weekly lectures and practical exercises (calculations)</i>
2015 – present	Mineralogy I (crystallography and systematic mineralogy) and Mineralogy II (optical mineralogy) –Department of Applied Sciences to Production, Environment and Urbanism – National University of La Rioja

Teacher Assistant (part-time, non-tenured): Selection and preparation of material and assistance to students in class, and collaboration in practical guides for students

2020 – 2021 Introductory course of geology (February) for first year students – Department of Applied Sciences to Production, Environment and Urbanism – National University of La Rioja
Teacher Assistant (graduate): Field trip guide

PARTICIPATION IN RESEARCH PROJECTS

2021 – 2023 UNLaR (Secyt) – “Fluoride as a geochemical and hydrological tracer in semiarid mountain watersheds: comparing to other geochemical and isotopic tracers”. Under current evaluation. Role: Director.

2020 – 2022 FONCYT – “Hydrological services of sub-humid to arid mountains: dynamics, controls and management”. Director: Dr. María Poca

2017 – 2021 CONICET (PUE-125) – “Geological and environmental evolution of the sierra de Velasco and antropic impact: its effect over biota and human societies of past and present”. Director: Dr. Francisco Prevosti (Institucional multidisciplinar Project)

2017 – 2018 UNLaR (SeCyT) – “Lithological control on concentration and distribution of fluorine in waters from rivers of the Costa Riojana, sierra de Velasco, La Rioja”. Director: Dr. Mariano Larrovere.

CONGRESSES, SYMPOSIA AND OTHER MEETINGS ATTENDED

February 2020 I Regional Workshop on Isotope Ecohydrology – San Luis, Argentina (poster)

September 2018 XVII Reunión de Tectónica - La Rioja, Argentina (oral presentation)

August 2017 XX Congreso Geológico Argentino – San Miguel de Tucumán, Argentina (poster)

October 2015 III Simposio de Petrología Ignea y Metalogénesis Asociada (III PIMA) – General Roca, Rio Negro, Argentina (oral presentation)

ACADEMIC AND RESEARCH GRANTS AND AWARDS

2019 – 2021 Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) internal postdoctoral grant
2-year grant for postdoctoral research

2014 – 2019 Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET) internal doctoral grant
5-year grant for PhD studies

PROFESSIONAL MEMBERSHIPS

2018 - present International Association of Geochemistry

2016 – present Asociación Mineralógica Argentina (Argentinian Mineralogical Association)

2014 – present Asociación Geológica Argentina (Argentinian Geological Association)

SCIENTIFIC NETWORKS

2018 – present National Observatory of Land Degradation and Desertification – Pilot site: Costa Riojana

PUBLICATIONS

Published papers

2021 – **Macchioli Grande, Marcos**, Alasino, P., Dahlquist, Juan, Morales Cámara, Matías, Galindo, Carmen, Basei, Miguel: Thermal maturation of a complete crustal column in Carboniferous magmatic plumbing systems. *Geological Magazine* 158, 537-554, doi: 10.1017/S0016756820000692.

2021 – Odino-Barreto, A. Lorena, Gómez-Peral, Lucía, Richiano, Sebastián, **Macchioli Grande, Marcos**, Borya, Ailén, Poiré, Daniel G., Bahniuk, Anelise M., Cury, Leonardo F.: Geochemical and mineralogical evidence of an offset in the Andean arc recorded in the Upper Cretaceous marine deposits of the Austral-Magallanes basin, Argentina. *Journal of South American Earth Sciences* 111, 103426, doi: 10.1016/j.jsames.2021.103426.

2021 – Rocher, Sebastián, Alasino, Pablo H., Larrovere, Mariano A., **Macchioli Grande, Marcos**, Dahlquist, Juan A., Moreno, Juan A., Morales Cámara, Matías M.: Sheeted intrusion of granitic magmas in arc settings and formation of upper crustal magmatic systems: the Guandacolin pluton, NW Argentina. *Tectonophysics*

2020 – Dahlquist, Juan A., Galindo, Carmen, Morales Cámara, Matías M., Moreno, Juan A., Alasino, Pablo H., Basei, Miguel A.S., **Macchioli Grande, Marcos**: A combined zircon Hf isotope and whole-rock Nd and Sr isotopes study of Carboniferous A-type granites, Sierras Pampeanas of Argentina. *Journal of South American Earth Sciences* 100, 102545, doi: 10.1016/j.jsames.2020.102545.

2019 – Dahlquist, Juan A., **Macchioli Grande, Marcos**, Alasino, Pablo H., Basei, Miguel A.S., Galindo, Carmen, Moreno, Juan A., Morales Cámara, Matías M.: New geochronological and isotope data for the Las Chacras-Potrerrillos and Renca batholiths: a contribution for the Middle-Upper Devonian magmatism in the pre-Andean foreland (Sierras Pampeanas, Argentina), SW Gondwana. *Journal of South American Earth Sciences* 93, 348-363, doi: 10.1016/j.jsames.2019.04.026.

2019 – **Macchioli Grande, Marcos**, Alasino, Pablo H., Rocher, Sebastián, Larrovere, Mariano A., Uran, Gimena M., Reinoso Carbonell, Virginia, Moreno, Gabriel : Thermal evolution of upper crustal magmatic systems, Sierra de Velasco, NW Argentina. *Journal of Structural Geology* 118, 1–20, doi: 10.1016/j.jsg.2018.10.006.

2018 – Morales Cámara, Matías M., Dahlquist, Juan A., Ramacciotti, Carlos D., Galindo, Carmen, Basei, Miguel A.S., Zandomeni, Priscila S., **Macchioli Grande, Marcos**: The strongly peraluminous A-type granites of the Characato suite (Achala batholith), Sierras Pampeanas, Argentina: Evidence of Devonian-Carboniferous crustal reworking. *Journal of South American Earth Sciences* 88, 561-567, doi: 10.1016/j.jsames.2018.09.008.

2018 – Dahlquist, Juan A., Alasino, Pablo H., Basei, Miguel A.S., Morales Cámara, Matías M.; **Macchioli Grande, Marcos**; da Costa Campos Neto, Mario; García Larrecharte, Matías: Recurrent intrusive episodes in the Paleozoic metasedimentary upper crust during the Early Carboniferous time: The Veladero granitoid stock and the peraluminous andesite. *Journal of South American Earth Sciences* 88, 80-93, doi: 10.1016/j.jsames.2018.08.011.

- 2018 – Dahlquist, Juan A., Alasino, Pablo H., Basei, Miguel A.S., Morales Cámara, Matías M.; **Macchioli Grande, Marcos**; da Costa Campos Neto, Mario: Petrological, geochemical, isotopic and geochronological constraints for the Late Devonian-Early Carboniferous magmatism in SW Gondwana (27-32° LS) : an example of geodynamic switching. *International Journal of Earth Sciences* 107, 1-29, doi: 10.1007/s00531-018-1615-9.
- 2018 – Rocher, Sebastián, Alasino, Pablo H., **Macchioli Grande, Marcos**, Larrovere, Mariano A., Paterson, Scott R.: K-feldspar megacryst accumulations formed by mechanical instabilities in magma chamber margins, Asha pluton, NW Argentina. *Journal of Structural Geology* 112, 154–173, doi: 10.1016/j.jsg.2018.04.017.
- 2017 – Alasino, Pablo H., Larrovere, Mariano A., Rocher, Sebastián, Dahlquist, Juan A., Basei, Miguel A.S., Memeti, Valbone, Paterson, Scott R., Galindo, Carmen, **Macchioli Grande Marcos**, da Costa Campos Neto, Mario: Incremental growth of an upper crustal pluton, Sierra de Velasco : evidence of a re-used magma pathway. *Lithos* 284-285, 347-366, doi: 10.1016/j.lithos.2017.04.013.
- 2015 – **Macchioli Grande, Marcos**, Alasino, Pablo H., Rocher, Sebastián, Larrovere, Mariano A., Uran, Dahlquist, Juan A.: Asymmetric igneous and structural patterns of a granitic body emplaced at shallow levels: The La Chinchilla pluton, northwestern Argentina. *Journal of South American Earth Sciences* 64, 58-68, doi: 10.1016/j.jsames.2015.09.011.

Conference abstracts

- 2022 – **Macchioli Grande, Marcos**, Verdone, Matteo, Borga, Marco, Coccoza, Claudia, Dani, Andrea, Fabiani, Ginevra, Gourdol, Laurent, Klaus, Julian, Manca di Villahermosa, Francesca, Massari, Christian, Pfister, Laurent, Preti, Federico, Tailliez, Cyrille, Trucchi, Paolo, Zorzi, Ilaria, Zuecco, Giulia, Penna, Daniele. Seasonal hydrological response in nested forested catchments at different spatial scales: insights from Re della Pietra (Tuscan Apennines, Italy). *EGU General Assembly 2022*. Vienna, Austria.
- 2020 – **Macchioli Grande, Marcos**, Poca, María, Larrovere, Mariano A., Uran, Gimena M., Jobbágy, Esteban. Fluoride as an (eco)hydrological tracer in semiarid mountainous streams: insights from comparing F/Cl ratio and water stable isotopes ($\delta^{18}\text{O}$ y $\delta^2\text{H}$). *I Regional Workshop on Isotope Ecohydrology*. San Luis, Argentina
- 2018 - **Macchioli Grande, Marcos**, Alasino, Pablo H., Rocher, Sebastián, Larrovere, Mariano A., Uran, Gimena M., Reinoso Carbonell, Virginia, Moreno, Gabriel. Origen e interpretación de múltiples fábricas magmáticas en el Complejo intrusivo Huaco, Sierra de Velasco, La Rioja. *XVII Reunión de Tectónica*. La Rioja, Argentina.
- 2018 – Fracchia, S., Rothen, C., Brizuela, M., López, P., Yela, N., Sabatini, G., Amelotti, I., Miranda, V., Uran, G., Cavallo, M.J., Hamze, L., **Macchioli Grande, M.**, Aranda Rickert, A.: Desarrollo y difusión de buenas prácticas de utilización de recursos en zonas áridas, Sitio Piloto Costa Riojana. *I Jornada Nacional de Evaluación Integrada de la Desertificación : Enfoques y Metodologías Socioambientales*. Mendoza, Argentina.
- 2017 – **Macchioli Grande, Marcos**, Alasino, Pablo H., Rocher, Sebastián, Larrovere, Mariano A., Dahlquist, Juan A., Reinoso Carbonell, Virginia: Evolución estructural del Complejo ígneo Huaco, Sierra de Velasco, La Rioja. *XX Congreso Geológico Argentino*. San Miguel de Tucumán, Argentina.
- 2017 – Rocher, Alasino, Pablo H., Sebastián, Larrovere, Mariano A., **Macchioli Grande, Marcos**: Estructuras magmáticas formadas por acumulación de megacristales de feldespato alcalino en el plutón Asha (Carbonífero inferior), Sierra de Velasco. *XX Congreso Geológico Argentino*. San Miguel de Tucumán, Argentina.
- 2017 – Alasino, Pablo H., Larrovere, Mariano A., Rocher, Sebastián, Dahlquist, Juan A., Basei, Miguel A.S., Memeti, Valbone, Paterson, Scott R., Galindo, Carmen, **Macchioli Grande Marcos**, da Costa Campos Neto, Mario: Incremental growth of an upper crustal pluton, Sierra de Velasco : evidence of a re-used magma pathway. *XX Congreso Geológico Argentino*. San Miguel de Tucumán, Argentina.
- 2015 – **Macchioli Grande, M.**, Alasino, P., Rocher, S., Larrovere, M., Dahlquist, J. Irregular igneous and structural patterns in La Chinchilla pluton (NW Argentina): a case of asymmetrical body? *III Simposio de Petrología Ígnea y Metalogénesis Asociada*. General Roca, Río Negro, Argentina.
- 2014 – Alasino, P., Larrovere, M., Dahlquist, J., Galindo, C., Rocher, S., **Macchioli Grande, M.** Petrología y emplazamiento del plutón La Chinchilla, Sierra de Velasco, La Rioja. *IX Jornadas de Ciencia y Tecnología de la UNLaR*. La Rioja, Argentina.
- 2013 – López, Luciano, Etcheverry, Ricardo, Echeveste, Horacio, **Macchioli Grande, Marcos**, Pommarés, Nicole. Isótopos de plomo en el *Five Element Deposit* Purísima Rumicruz. Comparación con las mineralizaciones Pumahuasi y Aguilar, provincia de Jujuy. *XI Congreso de Mineralogía y Metalogénesis*. San Juan, Argentina.

PROFESSIONAL EXPERIENCE AND INTERNSHIPS

2021	Research stay at Università degli Studi Firenze in collaboration with Prof. Daniele Penna – Florence, Italy <i>Analysis of hydroclimatic and hydrological data from the Re della Pietra experimental catchment, Tuscan Apennines</i>
2012	Y-TEC (Former “Technology Direction”) YPF S.A. - La Plata, Argentina. <i>Interpretation of surface organic geochemistry exploration data</i>
2011	Institute of Mineral Resources (INREMI-CIC-UNLP) – La Plata, Argentina <i>Characterisation of supergenic minerals from the Five Element deposit type polymetallic district “Purísima-Rumicruz” and mineral separation for Pb stable isotopes</i>

LANGUAGES

Spanish (native), English (B2 level – CEFR), Italian (B1 – CEFR), French (A1/A2 – CEFR)

REFERENCES

Esteban G. Jobbágy, Grupo de Estudios Ambientales (GEA-UNSL), jobbagy@gmail.com
Mariano A. Larrovere, Centro Regional de Investigaciones Científicas y Transferencia Tecnológica de La Rioja (CRILAR - CONICET), marianlarro@gmail.com
María Poca, Grupo de Estudios Ambientales (GEA-UNSL), pocamaria@gmail.com