

Dr. Mark Albert Torres

Texaco / AGEP Postdoctoral Research Fellow

California Institute of Technology - Department of Geological and Planetary Sciences
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EDUCATION

UNIVERSITY OF SOUTHERN CALIFORNIA

PH.D. IN GEOCHEMISTRY

August 2015 | Los Angeles, CA

PITZER COLLEGE

B.A. IN GEOLOGY

(with honors)

May 2010 | Claremont, CA

minor: Environmental Studies

TEACHING

TEACHING ASSISTANT

Introductory Geology

(two semesters)

Geochemistry

Hydrogeology

RESEARCH SUPERVISOR

Travis Dagdigan (2012)^a

Natalie DeVries (2012)^b

David Hercules (2012)^c

Kevin DiBella (2013)^b

Daisy Arriaga (2013)^c

^aundergraduate thesis student

^bsummer undergraduate student

^csummer highschool student

PUBLIC OUTREACH

USC YOUNG RESEARCHERS

Program coordinator/Student Mentor
(2010-2014)

Program pairs high school students from under-represented communities with STEM graduate students

PROFESSIONAL

ACTIVITY

- Organizer for the 2014 Southern California Geobiology Symposium
- Invited reviewer: *Geochimica et Cosmochimica Acta*, *Chemical Geology*, *American Journal of Science*, and *Nature Geoscience*
- Invited lecturer: Stanford U., Brown U., Caltech, Pomona College, UCLA, and the 2014 Geobiology Summer Course

HONORS AND AWARDS

2015	Postdoctoral fellowship	California Alliance (AGEP)
2015	Postdoctoral fellowship	California Institute of Technology
2013	Graduate Fellowship	C-DEBI (NSF sponsored)
2013	Graduate Fellowship	USC (Research Enhancement)
2010	Graduate Fellowship	USC (College Doctoral)
2010	D.B. McIntyre-H. Stanton Hill Award	Pomona College

FUNDING

2015	Postdoctoral fellowship	California Institute of Technology
2013	Graduate Fellowship	C-DEBI (NSF sponsored)
2013	Graduate Fellowship	USC (Research Enhancement)
2013	Research Funding	Society for Sedimentary Geology (SEPM)
2013	Research Funding	International Association of Geochemistry

RESEARCH RECORD

CALIFORNIA INSTITUTE OF TECHNOLOGY | POSTDOCTORAL

Supervisors: Dr. Michael Lamb and Dr. Woodward Fisher

- On-going work on the links between organic carbon cycling and sediment transport processes.

UNIVERSITY OF SOUTHERN CALIFORNIA | PH.D.

Supervisor: Dr. A.J. West

- Found empirical evidence for a link between erosion and the hydrochemistry of weathering processes in the Andes-Amazon
- Developed a novel model of the Cenozoic carbon cycle
- Measured the effects of bacterial products on the dissolution rate of olivine

POMONA COLLEGE | UNDERGRADUATE

Supervisor: Dr. Robert Gaines

- Used the geochemistry of fossil soil deposits to infer paleoclimatic conditions during the late Paleocene in California.

RESEARCH SKILLS

FIELDWORK

- Field experience in remote locations in Iceland, Peru, and the U.S.A. including depth sampling of large rivers.

COMPUTING

- Modeling and data analysis with MATLAB and Python.

LABORATORY

- Experience with the routine operation and maintenance of ICP-OES, XRD, XRF, IC, SEM-WDS, and CRDS instruments.
- Experience with the preparation of samples for analysis by MC-ICP-MS and IRMS instruments.
- Experience with the culturing of bacteria in batch and continuous culture systems.

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Publications

In Preparation

[IP1] M.A. Torres, G. Paris, Jess F. Adkins, and W.W. Fischer. A “modern” perspective on mass balance in the Archean sulfur cycle. In Prep.

In Revision / Submitted / Accepted

[IR1] M.A. Torres, S. Dong, A.J. West, and K.H. Nealson. Microbial acceleration of olivine dissolution via siderophore production. In Revision.

[IR2] M.A. Torres, N. Moosdorf, J. Hartmann, Jess F. Adkins, and A. J. West. Glacial weathering, sulfide oxidation, and global carbon cycle feedbacks. In Review.

[IR3] M.A. Torres, A.B. Limaye, V Ganti, M.P Lamb, A.J. West, and W.W. Fischer. Model predictions of long-lived storage of organic carbon in river deposits. ESurf Discussions.

Published

[P1] M.A. Torres, J.J. Baronas, K.E. Clark, S.J. Feakins, and A.J. West. Mixing as a driver of temporal variations in river hydrochemistry. Part 1: insights from conservative tracers in the Andes-Amazon. *Water Resources Research*, 2017.

[P2] J.J. Baronas, M.A. Torres, K.E. Clark, and A.J. West. Mixing as a driver of temporal variations in river hydrochemistry. Part 2: Major and trace element concentration dynamics in the Andes-Amazon. *Water Resources Research*, 2017.

[P3] M. A. Torres, A.J. West, K.E. Clark, G. Paris, J. Bouchez, C. Ponton, S.J. Feakins, Galy V., and J.F. Adkins. The acid and alkalinity budgets of weathering in the andes-amazon system: Insights into the erosional control of global biogeochemical cycles. *Earth and Planetary Science Letters*, 2016.

[P4] M.A. Torres, A.J. West, and K. E. Clark. Geomorphic regime modulates hydrologic control of chemical weathering in the Andes-Amazon. *Geochimica et Cosmochimica Acta*, 2015.

[P5] M.A. Torres, A.J. West, and G. Li. Sulphide oxidation and carbonate dissolution as a source of CO₂ over geological timescales. *Nature*, 2014.

[P6] K.E. Clark, M.A. Torres, A.J. West, R.G. Hilton, M. New, A.B. Horwath, J.B. Fisher, J.M. Rapp, A. Robles Caceres, and Y. Malhi. The hydrological regime of a forested tropical Andean catchment. *Hydrology and Earth System Sciences*, 2014.

[P7] M.A. Torres and R.R. Gaines. Paleoenvironmental and Paleoclimatic Interpretations of the Late Paleocene Goler Formation, Southern California, USA, Based On Paleosol Geochemistry. *Journal of Sedimentary Research*, 2013.

Selected Abstracts

[A1] J.J. Baronas, M.A. Torres, A.J. West, D.E. Hammond, K.E. Clark, S. Opfergelt, and K.W. Burton. Combining Ge/Si, $\delta^{30}\text{Si}$, and $\delta^{74}\text{Ge}$ to Unravel Controls on Weathering and Solute Production in Tropical Catchments. In *Goldschmidt*, 2015.

[A2] M. A. Torres, A. J. West, and K. H. Nealson. Microbial Acceleration of Olivine Dissolution via Siderophore Production. In *Procedia Earth and Planetary Science*, 2014.

[A3] A.J. West, M.A. Torres, and K.H. Nealson. Understanding the potential for distributed carbon capture through (bio-)enhanced weathering. In *AGU #V14A-01*, 2014.