

DEBORAH KHIDER

PERSONAL INFORMATION

Address 4676 Admiralty Way, Suite 1001, Marina Del Rey, CA 90292
email khider@usc.edu
website <http://earth.usc.edu/~khider>
phone (M) +1 (310) 448 8460

EDUCATION

PhD 2006–2011 University of Southern California
GPA: 4.0 · Ocean Sciences
Thesis: *Paleoceanography of the Indonesian Seas over the last 25,000 years*
Advisors: Dr. Lowell D. STOTT & Dr. Julien EMILE-GEAY

Bachelor of Science 2004–2006 University of Southern California
GPA: 3.82 · Environmental Engineering
Graduated *Magna cum laude*, Presidential Scholar

Bachelor of Science 2001–2005 Hawaii Pacific University
GPA: 3.93 · Oceanography and Applied Mathematics
Graduated *Magna cum laude*

RESEARCH EXPERIENCE

University Of Southern California 2018–present Data Scientist, INFORMATION SCIENCES INSTITUTE
MINT: Model Integration through Knowledge-Rich Data and Process Composition
Supervisor: Dr. Yolanda GIL

2018 Postdoctoral Scholar, INFORMATION SCIENCES INSTITUTE
MINT: Model Integration through Knowledge-Rich Data and Process Composition
Supervisor: Dr. Yolanda GIL

2016–2017 Postdoctoral Scholar, EARTH SCIENCES
LinkedEarth: Crowdsourcing data curation and standards development in paleoclimatology.
Supervisor: Dr. Julien EMILE-GEAY

University Of California, Santa Barbara 2013–2015 Postdoctoral Scholar, EARTH SCIENCES
Probabilistic age modeling of paleoceanographic data.
Supervisor: Dr. Lorraine LISIECKI

The University of Texas at Austin 2011–2013 Postdoctoral Fellow, INSTITUTE FOR GEOPHYSICS
 Uncertainty quantification of paleoclimatic records and forward modeling of climate proxies using Bayesian Inference.
 Supervisors: Dr. Charles JACKSON and Dr. Terrence M. QUINN

University of Southern California 2006–2011 Research Assistant, EARTH SCIENCE
 Stable isotopes and trace elements geochemistry.
 Supervisor: Dr. Lowell D. STOTT

University of Southern California Spring 2006 Research Assistant, CIVIL ENGINEERING
 Compiled data on the 2006 "Boxing Day" Tsunami.
 Supervisor: Dr. Costas SYNOLAKIS

TEACHING EXPERIENCE

University Of Southern California 2019-present Lecturer, INFORMATICS
 INF549: Introduction to Computational Thinking and Data Science

University Of Utah 2016-2018 Guest Lecturer, SPATIAL SHORT COURSE
 Lecture on Data Management in the geosciences.

University Of California, Santa Barbara Fall 2015 Lecturer, EARTH SCIENCES
 EARTH130 – Global Warming: Science and Society.
 Introduction to the scientific and societal issues surrounding global climate change.

University of Southern California 2006–2010 Teaching Assistant, EARTH SCIENCES
 GEOL460L - Geochemistry and Geohydrology
 GEOL150L - Climate Change
 GEOL107L - Oceanography

PUBLICATION RECORD

Journal Articles Emile-Geay, J., **D. Khider**, D. Garijo, N.P. McKay, Y. Gil, V. Ratnakar, E. Bradley. (in revisions)
 The Linked Earth Ontology: A modular, extensible representation of open paleoclimate data.
Earth Science Informatics.
Khider, D., J. Emile-Geay, N.P. McKay, Y. Gil, D. Garijo, V. Ratnakar, M. Alonso-Garcia, S. Bertrand, O. Bothe, P. Brewer, A. Bunn, M. Chevalier, L. Comas-Bru, A. Csank, E. Dassie, K. DeLong, T. Felis, P. Francus, A. Frappier, W. Gray, S. Goring, L. Jonkers, M. Kahle, D. Kaufman, N. M. Kehrwald, B. Martrat, H. McGregor, J. Richey, A. Schmittner, N. Scroxton, E. Sutherland, K. Thirumalai, K. Allen, F. Arnaud, Y. Axford, T. T. Barrows, L. Bazin, S.E. Pilaar Birch, E. Bradley, J. Bregy, E. Capron, O. Cartapanis, H.-W. Chiang, K. M. Cobb, M. Debret, R. Dommain, J. Du, K. Dyez, S. Emerick, M. P. Erb, G. Falster, W. Finsinger, D. Fortier, Nicolas Gauthier, S.

George, E. Grimm, J. Hertzberg, F. Hibbert, A. Hillman, W. Hobbs, M. Huber, A.L.C. Hughes, S. Jaccard, J. Ruan, M. Kienast, B. Konecky, G. Le Roux, V. Lyubchich, V.F. Novello, L. Olaka, J.W. Partin, C. Pearce, S.J. Phipps, C. Pignol, N. Piotrowska, M.-S. Poli, A. Prokopenko, F. Schwanck, C. Stepanek, G. E. A. Swann, R. Telford, E. Thomas, Z. Thomas, S. Truebe, L. von Gunten, A. Waite, N. Weitzel, B. Wilhelm, J. Williams, J.J. Williams, M. Winstrup, N. Zhao, Y. Zhou (2019). PaCTS 1.0: A Crowdsourced Reporting Standard for Paleoclimate Data. *Paleoceanography and Paleoclimatology*, doi:10.1002/2019PA003632.

Zhu, F., J. Emile-Geay, T.R. Ault, N. McKay, G. Hakim, **D. Khider**, E.J. Steig, S. Dee, J.W. Kirchner. (2019) Climate models can correctly simulate the continuum of temperature variability. *Proceedings of the National Academy of Sciences of the United States of America*. doi:10.1073/pnas.1809951116.

Richey, J., K. Thirumalai, **D. Khider**, C. Reynolds, J. Partin, T. Quinn. (2019) Considerations for *Globigerinoides ruber* (white and pink) paleoceanography in the Atlantic Ocean: comprehensive insights from a long-running sediment trap. *Paleoceanography and Paleoclimatology*. doi:10.1029/2018PA03417.

Khider, D., S. Ahn, L. Lisiecki, C. Lawrence, M. Kienast. (2017) The role of uncertainty in estimating lead/lag relationships in marine sedimentary archives: A case study from the tropical Pacific. *Paleoceanography*. doi:10.1002/2016PA003057.

Ahn, S., **D. Khider**, L. Lisiecki, C. Lawrence. (2017) A probabilistic Pliocene-Pleistocene stack of benthic $\delta^{18}\text{O}$ using a profile hidden Markov model. *Dynamics and Statistics of the Climate System*. doi:10.1093/climsys/dzx002.

Tems, C., W. Berelson, R. Thunell, E. Tappa, X. Xu, **D. Khider**, S. Lund, O. Gonzalez-Yajimovich. (2016) Sedimentary $\delta^{15}\text{N}$ reveal decadal fluctuations in the intensity of the eastern tropical north Pacific oxygen minimum zone during the last 1200 years. *Paleoceanography*. doi:10.1002/2015PA002904.

Khider, D., G. Huerta, C. Jackson, L. Stott, J. Emile-Geay. (2015). A Bayesian, multivariate regression for *Globigerinoides ruber* Mg/Ca. *Geochemistry, Geophysics, Geosystems*. doi:10.1002/2015GC005844

Lin, L., **D. Khider**, L. Lisiecki, C. Lawrence. (2014). Probabilistic sequence alignment of stratigraphic records. *Paleoceanography*. doi:10.1002/2014PA002713

Khider, D., C. Jackson, L. Stott. (2014). Assessing millennial-scale variability during the Holocene: a western tropical Pacific perspective. *Paleoceanography*. doi:10.1002/2013PA002534

Khider, D., L. Stott, J. Emile-Geay, R. Thunell, D. Hammond. (2011). Assessing El Niño Southern Oscillation variability during the past millennium. *Paleoceanography*. doi:10.1029/2011PA002139

Reuter, J., L. Stott, **D. Khider**, A. Sinha, H. Cheng, R. Edwards. (2009). A new perspective on the hydroclimate variability in northern South America during the Little Ice Age. *Geophysical Research Letters*. doi:10.1002/2009GL041051

Peer-Reviewed
Conference Papers

Garijo, D., D. Khider, V. Ratnakar, Y. Gil, E. Deelman, R.F. da Silva, C. Knoblock, Y. Chiang, M. Pham, J. Pujara, B. Vu, D. Feldman, R. Mayani, K. Cobourn, C. Duffy, A. Kemanian, L. Shu, V. Kumar, A. Khandelwal, A., K. Tayal, S. Peckham, M. Stoica, A. Dabrowski, D. Hardesty-Lewis, S. Pierce. An intelligent interface for Integrating Climate, Hydrology, Agriculture, and Socioeconomic models. *Proceedings of the 24th International Conference on Intelligent User Interfaces: Companion, of IUI '19*.

Gil, Y., K. Cobourn, E. Deelman, C. Duffy, R. Ferreira da Silva, A. Kemanian, C. Knoblock, V. Kumar, S. Peckham, L. Carvalho, Y.-Y. Chiang, D. Garijo, **D. Khider**, A. Khandelwal, M. Pahl, J. Pujara, V. Ratnakar, M. Stoica, B. Vu. (2018) MINT: Model Integration Through Knowledge-Powered Data and Process Composition. *Proceedings of Modelling for Sustainable Food-Energy-Water Systems: 9th International Congress on Environmental Modelling and Software*.

Articles in
Refereed
Workshops

Conference
Abstracts

D. Garijo, **D. Khider**, Y. Gil, L. Carvalho, B. Essawy, S. Pierce, D. H. Lewis, V. Ratnakar, S. Peckham, C. Duffy, J. Goodall. (2018) A semantic model catalog to support composition and reuse. *Proceedings of Modelling for Sustainable Food-Energy-Water Systems: 9th International Congress on Environmental Modelling and Software*.

Gil, Y., D. Garijo, V. Ratnakar, **D. Khider**, J. Emile-Geay, N. McKay. (2017). A controlled crowdsourcing approach for practical ontology extensions and metadata annotations. In d'Amato C. et al. (eds) *The Semantic Web - ISWC2017*. ISWC2017. Lecture Notes in Computer Science, vol 10588. Springer, Cham.

Khider, D., L. Stott, R. Saikku, J. Partin, C. Jackson, D. Hammond, A. Newton, R. Thunell. (2013). How unusual is the 20th century within the Indo-Pacific Warm Pool? *The Third International Workshop on Climate Informatics*, Boulder, CO.

Khider, D., Y. Gil. (2018). AI in geosciences: progress, challenges, and opportunities. *AGU Fall Meeting*, Washington, D.C. (Invited)

Khider, D., N. McKay, J. Emile-Geay, D. Garijo, Y. Gil, V. Ratnakar. (2018). Supporting paleoclimate research with the FAIR principle: lessons from LinkedEarth. *AGU Fall Meeting*, Washington, D.C.

Zhu, F., J. Emile-Geay, T. Ault, N. McKay, G.J. Hakim, **D. Khider**, E.J. Steig, S. Dee, J.W. Kirchner. (2018) Climate models can correctly simulate the continuum of temperature variability. *AGU Fall Meeting*, Washington, D.C.

Garijo, D., Y. Gil, K.M. Cobourn, E. Deelman, C. Duffy, R. Ferreira de Silve, A. Kermanian, C. Knolblock, V. Kumar, S. Peckham, Y.-Y. Chiang, **D. Khider**, A. Khandelwal, J. Pujara, V. Ratnakar, M. Stoica, M. Pham, B. Vu. (2018) Integrating models through knowledge-powered data and process composition. *AGU Fall Meeting*, Washington, D.C.

McKay, N, J. Emile-Geay, **D. Khider**. (2018) Scientific workflows, reproducibility and uncertainty quantification in the paleogeosciences. *AGU Fall Meeting*, Washington, D.C.

Khider, D., J. Emile-Geay, N. McKay, D. Garijo, Y. Gil, V. Ratnakar (2018). LinkedEarth: Supporting paleoclimate research with crowdsourced ontologies, software, and data standards. *EarthCube All Hands Meeting*, Washington, D.C.

Khider, D., J. Emile-Geay, N. McKay, D. Garijo, V. Ratnakar, Y. Gil, F. Zhu (2017). LinkedEarth and 21st century paleoclimatology: reducing data friction through standard development. *AGU Fall Meeting*, New Orleans, LA. Abstract IN32A-03 (Invited)

Khider, D., J. Emile-Geay, N. McKay, C.S. Jackson, C. Rouston (2016). Testing the Millennial-Scale Holocene Solar-Climate Connection in the Indo-Pacific Warm Pool. *AGU Fall Meeting*, San Francisco, CA. Abstract PP43A-2309.

L.E. Lisiecki, S. Ahn, G. Gebbie, A.M. Jones, **D. Khider**, C. Lawrence. (2016). Incorporating the effects of age uncertainty derived from benthic $\delta^{18}\text{O}$ alignment into paleoceanographic data compilations. *AGU Fall Meeting*, San Francisco, CA. Abstract PP33D-04.

Khider, D., D. Garijo, J. Emile-Geay, Y. Gil, N. McKay, V. Ratnakar. (2016). The future of past climates: LinkedEarth and 21st century paleoclimatology. *SciDataCon*.

Khider, D., J. Emile-Geay, N. McKay, L. von Gunten, D. Kauffman. (2016). PAGES2k: data crowd-curation for collaborative paleoscience. *SciDataCon*.

Tems, C., W. Berelson, R. Thunell, E. Tappa, X. Xu, **D. Khider**, S. Lund, O. Gonzalez-Yajimovich. (2016). High-frequency fluctuations in the eastern tropical North Pacific oxygen minimum zone during the last 1200 years. *AGU Ocean Sciences meetint*, Abstract PC51A-03.

Khider, D., S. Ahn, L. Lisiecki, C. Lawrence, M. Kienast. (2015). On the timing of glacial terminations in the equatorial Pacific. *AGU Fall Meeting*, San Francisco, CA. Abstract PP53C-2365.

Lisiecki, L., S. Ahn, **D. Khider**, C. Lawrence. (2015). Probabilistic Stack of Plio-Pleistocene benthic $\delta^{18}\text{O}$ records constructed using profile hidden Markov models. *AGU Fall Meeting*, San Francisco, CA. Abstract PP13D-07.

Khider, D., L. Lisiecki. (2014). Statistical constraints on the relative link between eccentricity forcing and the 100,000-year glacial cycle. *AGU Fall Meeting*, San Francisco, CA. Abstract PP41D-1436.

Stott, L., **D. Khider**, C. Jackson, G. Huerta. (2014). What forced Holocene millennial-scale variability? A tale from the Western Tropical Pacific. *AGU Fall Meeting*, San Francisco, CA. Abstract PP41C-1379 (Presenting Author).

Khider, D., L. Stott, R. Saikku, J. Partin, C. Jackson, D. Hammond, A. Newton, R. Thunell. (2013). How unusual is the 20th century within the Indo-Pacific Warm Pool? *AGU Fall Meeting*, San Francisco, CA. Abstract PP42A-03.

Khider, D., T. Quinn, C. Reynolds. (2012). Assessing the temperature variability from Mg/Ca and $\delta^{18}\text{O}$ in *Globigerinoides ruber* from the Northern Gulf of Mexico. *AGU Fall Meeting*, San Francisco, CA. Abstract PP43A-2008.

Reuter, J., L. Stott, **D. Khider**. (2012). Middle East Rainfall Variability during the Common Era. *AGU Fall Meeting*, San Francisco, CA. Abstract PP21B-1992.

Khider, D., L. Stott, R. Saikku, D. Hammond. (2011). Evidence for a Bipolar Seesaw during the Late Holocene. *AGU Fall Meeting*, San Francisco, CA. Abstract PP34A-02.

Khider D., L. Stott, J. Emile-Geay, R. Thunell (2010). Assessing ENSO over the past millennium: a western tropical Pacific perspective. *AGU Fall Meeting*, San Francisco, CA. Abstract PP51B-05.

Khider, D., L. Stott, J. Emile-Geay, R. Thunell (2010). Has El Niño changed over the past millennium? *Graduate Climate Conference*, Seattle, WA.

Khider, D., L. Stott, J. Emile-Geay, R. Thunell (2010). A history of ENSO variability over the past millennium as told by a marine sediment core from the western tropical Pacific. *10th International Conference on Paleoclimatology*, La Jolla, CA.

Khider, D., L. Stott, J. Emile-Geay, R. Thunell (2009). Inter- and intrannual variability in the production of planktonic foraminifera: implications for ENSO reconstruction based on the oxygen isotope distribution of individuals. *AGU Fall Meeting*, San Francisco, CA. Abstract PP13D-1434.

INVITED TALKS

- 2017 Testing the Millennial-Scale Holocene Solar-Climate Connection in the Indo-Pacific Warm Pool.
Department of Earth Sciences, University of Southern California.
- The future of past climates: LinkedEarth and 21st century paleoclimatology.
Department of Earth Science Speaker's Club, University of California, Santa Barbara. EarthCube Lecture
- The future of past climates: LinkedEarth and 21st century paleoclimatology.
Department of Earth Science, California State University, Bakersfield. EarthCube Lecture
- The future of past climates: EarthCube and 21st century paleoclimatology.
Department of Earth, Environmental, and Planetary Sciences, Brown University. EarthCube Lecture
- 2016 The future of past climates: LinkedEarth and 21st century paleoclimatology.
College of Earth, Ocean, and Atmospheric Sciences, Oregon State University. EarthCube Lecture
- The future of past climates: LinkedEarth and 21st century paleoclimatology.
Institute for Geophysics Seminar, The University of Texas at Austin. EarthCube Lecture
- The future of past climates: LinkedEarth and 21st century paleoclimatology.
Department of Earth Sciences Paleoenvironmental Seminar, University of Southern California.

- 2015 Probabilistic timing of glacial terminations in the Tropical Pacific.
Department of Earth Sciences Paleoenvironmental Seminar, University of Southern California
- 2014 How unusual is the 20th century within the Indo-Pacific Warm Pool?
Department of Earth Science Speaker's Club, University of California, Santa Barbara
- Assessing millennial-scale variability during the Holocene: a western tropical Pacific perspective.
Department of Geography Climate Research seminar, University of California, Santa Barbara
- Assessing millennial-scale variability during the Holocene: a western tropical Pacific perspective.
Interdepartmental graduate program in Marine Science seminar, University of California, Santa Barbara
- 2011 Evidence for a Bipolar Seesaw over the Holocene.
Institute for Geophysics Seminar, The University of Texas at Austin
- 2010 Effect of salinity on foraminiferal Mg/Ca: Paleooceanographic implications.
Department of Earth Sciences Paleoenvironmental Seminar, University of Southern California
- Is El Niño changing? A perspective from the Indonesian Seas.
Department of Earth Sciences Paleoenvironmental Seminar, University of Southern California
- 2008 How unusual is the 20th century?
Department of Earth Sciences Paleoenvironmental Seminar, University of Southern California

SYNERGISTIC ACTIVITIES

- | | |
|------------------------------------|---|
| <i>Workshops
Participation</i> | <p>2017 · GeoChronR.
<i>Northern Arizona University, Flagstaff, AZ.</i></p> <p>2017 · PAGES OC3.
<i>Oregon State University, Corvallis, OR.</i></p> <p>2016 · GeoChronR.
<i>Northern Arizona University, Flagstaff, AZ.</i></p> <p>2016 · Workshop on Paleoclimate Data Standards.
<i>NOAA, Boulder, CO.</i></p> <p>2015 · Expert Witness Training Academy: Effectively Communicating Science.
<i>William Mitchell College of Law, St Paul, MN.</i></p> <p>2013 · PMIP Ocean Workshop 2013: Understanding changes since the Last Glacial Maximum.
<i>Corvallis, OR.</i></p> <p>2013 · PAGES COMPARE Workshop: LGM sea surface temperatures.
<i>Corvallis, OR.</i></p> <p>2010 · ENSO variability workshop.
<i>Scripps Institution of Oceanography, University of California San Diego, San Diego, CA.</i></p> |
| <i>Reviewer</i> | <p>Science, Nature, Nature Communications, Nature Geoscience, Geology, Geophysical Research Letters, Paleooceanography, Marine Micropaleontology, Palaeogeography Palaeoclimatology Palaeoecology, Journal of Geophysical Research-Oceans, Geochemistry Geophysics Geosystems, Climate of the Past, Quaternary Science Reviews, Journal of Climate.</p> |
| <i>Community
Service</i> | <p>2019 · Organizing Committee, <i>EarthCube Annual Meeting</i></p> <p>2014 · Session convener and chair, <i>AGU Fall Meeting</i></p> |

- 2012–2013 · Judge, Outstanding Student Paper Awards, *AGU Fall Meeting*
- 2011 · Organizer, USC Paleoenvironmental Seminar Series
- 2010 · Wrigley Institute Summer Outreach Program

SKILLS

<i>Technical</i>	Dual-inlet mass spectrometry Inductively coupled plasma atomic emission spectroscopy (ICP-AES) Familiarity with continuous flow isotope mass spectrometry
<i>Analytical</i>	Bayesian Inference, Time series analysis
<i>Computer</i>	Python, R, Matlab, HTML, CSS, SQL
<i>Languages</i>	French, English (fluent)

AWARDS AND FUNDING

2019	JP Morgan AI Research Faculty Award Program
2014-2015	Editor's citation for contribution in refereeing for <i>Nature</i>
2011-2013	UTIG Postdoctoral Fellowship
2011	USC Final Summer Dissertation Fellowship
2010	USC Earth Science Departmental Teaching Assistant Award (Geochemistry)
	USC Wrigley-Sonosky Fellowship
	1 st Place USC GPSS Poster Symposium
	WISE Award for nomination as Merit PhD candidate
	USC Department of Earth Science Graduate Research Grant
2008	USC Summer Fellowship for Diversity Enhancement
2006	David M. Wilson and Associate Senior Award for Outstanding Scholastic Achievement in Environmental Engineering
2004-2006	University of Southern California Presidential Scholarship
2005-2006	Rose-Hills Foundation Award
	Wilson Endowed Scholarship

PROFESSIONAL AFFILIATIONS

2007-present	Member of the American Geophysical Union
2018-present	Member of the International Environmental Modelling and Software Society