

David A. Koweek

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Education

Ph.D., Earth System Science 2016
Stanford University, Stanford, CA
Dissertation: *Field and modeling insights into carbon cycling in coastal marine ecosystems: understanding natural variability and preparing for the future*

Sc.B. (with Honors), Geology-Biology 2009
Brown University, Providence, RI

Professional Experience

Carnegie Institution for Science, Stanford, CA Sep 2016-present
Postdoctoral Research Scientist

Stanford University, Stanford, CA 2011-2016
Graduate Student/NSF Graduate Research Fellow/Doctoral Candidate

Marine Biological Laboratory, Woods Hole, MA 2009-2011
Research Assistant

Woods Hole Oceanographic Institution, Woods Hole, MA 2010-2011
Guest Investigator

Publications

Rebecca Albright, Yuichiro Takeshita, **Koweek, David A.**, Aaron Ninokawa, Kennedy Wolfe, Tanya Rivlin, Yana Nebuchina, Jordan Young, and Ken Caldeira. Carbon dioxide addition to coral reef waters suppresses net community calcification. *Nature*, 2018.

Tyler Cyronak, Andreas J. Andersson, Christopher J. Langdon, Rebecca Albright, Nicholas R. Bates, Ken Caldeira, Renee Carlton, Jorge E. Corredor, Robert B. Dunbar, Ian C. Enochs, Jonathan Erez, Bradley D. Eyre, Jean-Pierre Gattuso, Dwight K. Gledhill, Hajime Kayanne, David I. Kline, **Koweek, David A.**, Coulson A. Lantz, Boaz Lazar, Derrick P. Manzello, Ashly McMahon, Melissa Melendez, Heather N. Page, R. Santos, Isaac, Kai G. Schulz, Emily C. Shaw, Jacob Silverman, Atsushi Suzuki, Lida T. Teneva, Atsushi Watanabe, and Shoji Yamamoto. Taking the metabolic pulse of the world's coral reefs. *PLoS One*, 13(1):e0190872, 2018.

Justin S. Rogers, Stephen G. Monismith, **Koweek, David A.**, and Robert B. Dunbar. Wave Dynamics of a Pacific Atoll with High Frictional Effects. *Journal of Geophysical Research: Oceans*, 121(1):350–367, 2016.

Hans B. DeJong, Robert B. Dunbar, **Koweek, David A.**, David A. Mucciarone, Sarah K. Bercovici, and Dennis A. Hansell. Net community production and carbon export during the late summer in the Ross Sea, Antarctica. *Global Biogeochemical Cycles*, 31(3):473–491, 2017.

Justin S. Rogers, Stephen G. Monismith, Oliver B. Fringer, **Koweek, David A.**, and Robert B. Dunbar. A coupled wave-hydrodynamic model of an atoll with high friction: mechanisms for flow, connectivity, and ecological implications. *Ocean Modelling*, 110:66–82, 2017.

Koweek, David A., Kerry J. Nickols, Paul R. Leary, Steve Y. Litvin, Tom W. Bell, Timothy Luthin, Sarah Lummis, David A. Mucciarone, and Robert B. Dunbar. A year in the life of a central California kelp forest: physical and biological insights into biogeochemical variability. *Biogeosciences*, 14:31–44, 2017.

Justin S. Rogers, Stephen G. Monismith, **Koweek, David A.**, Walter I. Torres, and Robert B. Dunbar. Thermodynamics and hydrodynamics in an atoll reef system and their influence on coral cover. *Limnology and Oceanography*, 61(6):2191–2206, 2016.

Koweek, David A., David A. Mucciarone, and Robert B. Dunbar. Bubble Stripping as a Tool To Reduce High Dissolved CO₂ in Coastal Marine Ecosystems. *Environmental Science & Technology*, 50:3790–3797, 2016.

Hans B. DeJong, Robert B. Dunbar, David A. Mucciarone, and **Koweek, David A.** Carbonate saturation state of surface waters in the Ross Sea and Southern Ocean: controls and implications for the onset of aragonite undersaturation. *Biogeosciences*, 12:6881–6896, 2015.

Koweek, David A., Robert B. Dunbar, Stephen G. Monismith, David A. Mucciarone, C. Brock Woodson, and Lianna Samuel. High-resolution physical and biogeochemical variability from a shallow back reef on Ofu, American Samoa: an end-member perspective. *Coral Reefs*, 34(3):979–991, 2015.

Stephen G. Monismith, Justin S. Rogers, **Koweek, David A.**, and Robert B. Dunbar. Frictional wave dissipation on a remarkably rough reef. *Geophysical Research Letters*, 42(10):4063–4071, 2015.

Koweek, David A., Robert B. Dunbar, Justin S. Rogers, Gareth J. Williams, Nichole N. Price, David A. Mucciarone, and Lida T. Teneva. Environmental and ecological controls of coral community metabolism on Palmyra Atoll. *Coral Reefs*, 34(1):339–351, 2015.

Justin S. Rogers, Stephen G. Monismith, Robert B. Dunbar, and **Koweek, David A.** Field observations of wave-driven circulation over spur and groove formations on a coral reef. *Journal of Geophysical Research: Oceans*, 120(1):145–160, 2015.

O. Shatova, **Koweek, David A.**, M. H. Conte, and J. C. Weber. Contribution of zooplankton fecal pellets to deep ocean particle flux in the Sargasso Sea assessed using quantitative image analysis. *Journal of Plankton Research*, 34(10):905–921, 2012.

Manuscripts Under Review and In Preparation

Koweek, David A. Zimmerman, R.C., Hewett, K.M., Gaylord, B., Giddings, S.N., Nickols, K.J., Ruesink, J.L., Stachowicz, J.J., Takeshita, Y., and Caldeira, K. *Expected limits on the ocean acidification buffering potential of a temperate seagrass meadow*. In review.

Conte, M.H., Carter, A.M., **Koweek, David A.**, Huang, S., and Weber, J.C. *The elemental composition of the deep particle flux in the Sargasso Sea*. In review

Koweek, David A., Forden, A., Albright, R., Takeshita, Y., Mucciarone, D.A., Ninokawa, A., and Caldeira, K. *Using stable isotopes of dissolved inorganic carbon to enhance insights into coral reef community metabolism*. In prep for April 2018 submission.

Invited Talks

Exploring new tools in the fight against ocean acidification along our coasts

Brown University

Nov 2017

Ecological and geochemical engineering to mitigate ocean acidification impacts

Dalhousie University

Oct 2017

Ecological and geochemical engineering to mitigate ocean acidification impacts

Princeton University

Aug 2017

Translating science to solutions along our coasts: insights from biogeochemistry

University of New Hampshire

Feb 2017

What can coral reef biogeochemistry teach us about mitigating ocean acidification in coastal ecosystems?

Carnegie DGE

Mar 2016

Conference Presentations (last 5 years only)

Nickols, K.J., **Koweek, D.A.**, Leary, P.R., Litvin, S.Y., Luthin, T., Lummis, S., Mucciarone, D.A., Dunbar, R.B., and Bell, T. *Daily variability of the carbon system within a giant kelp forest habitat across three seasons*. OSM 2018

Albright, R., Takeshita, Y., **Koweek, D.A.**, Ninokawa, A., Wolfe, K., Rivlin, T., Nebuchina, Y., Young, J., and Caldeira, K. *Carbon dioxide addition to coral reef waters suppresses net community calcification*. OSM 2018.

Koweek, D.A. Zimmerman, R.C., Hewett, K.M., Gaylord, B., Giddings, S.N., Nickols, K.J., Ruesink, J.L., Stachowicz, J.J., Takeshita, Y., and Caldeira, K. *Expected limits on the ocean acidification buffering potential of a temperate seagrass meadow*. OSM 2018.

Koweek, D.A. Zimmerman, R.C., Hewett, K.M., Gaylord, B., Giddings, S.N., Nickols, K.J., Ruesink, J.L., Stachowicz, J.J., Takeshita, Y., and Caldeira, K. *Expected limits on the ocean acidification buffering potential of a temperate seagrass meadow*. CERF 2017.

Rogers, J.S., Monismith, S.G., Fringer, O.B., **Koweek, D.A.**, and Dunbar, R.B. *A coupled wave-hydrodynamic model of an atoll with high friction: mechanisms for flow, connectivity, and ecological implications*. AGU Fall Meeting 2016.

Koweek, D.A. and Albright, R. *A re-evaluation of net community calcification sensitivity to carbonate saturation state.* 13th International Coral Reef Symposium.

Koweek, D.A., Mucciarone, D.A., and Dunbar R.B. *Bubble stripping as a tool to reduce high dissolved CO₂ in coastal marine ecosystems.* OSM 2016.

Nickols, K.J., **Koweek, D.A.**, Leary, P.R., Litvin, S.Y., Luthin, T., Lummis, S., Mucciarone, D.A., Dunbar, R.B., and Bell, T.W. *A year in the life of a central California kelp forest: physical and biological insights into carbon cycling.* OSM 2016.

Rogers, J.S., Monismith, S.G., **Koweek, D.A.**, Torres, W.I., and Dunbar, R.B. *Hydrodynamics of a Pacific atoll system-mechanisms for flow and ecological implications.* OSM 2016.

Conte, M.H., Carter, A.M, **Koweek, D.A.** and Weber, J.C. *A Decadal record of elemental composition of the particle flux in the deep Sargasso Sea.* OSM 2016.

Nickols, K.J., **Koweek D.A.**, Luthin, T., Litvin, S.Y., Leary, P., Mucciarone, D., Dunbar, R., Lummis, S. *Spatial variability and context dependency of CO₂ chemistry in a central California kelp forest.* CERF 2015.

Nickols, K.J., **Koweek D.A.**, Leary, P., Litvin, S.Y., Lummis, S., Luthin, T., Mucciarone, D., Dunbar, R. *Physical contributions to spatial variability of carbon system parameters within a central California kelp forest.* EPOC 2015.

Rogers, J.S., Monismith, S.G., **Koweek, D.A.**, and Dunbar, R.B. *Wave Dynamics of a Pacific Atoll with High Frictional Effects.* Gordon Research Conference for Coastal Ocean Modeling, 2015.

Koweek, D.A., Mucciarone, D.A., and Dunbar, R.B., *Investigating the Utility of Bubble Plumes for Ecosystem Engineering.* 7th International Symposium on Gas Transfer at Water Surfaces.

Nickols, K.J., **Koweek, D.A.**, Leary, P., Litvin, S.Y., Lummis, S., Luthin, T., Mucciarone, D., Dunbar, R. *Spatial variability of carbon system parameters associated with kelp forests in an upwelling system.* EPOC 2014.

Koweek, D.A., Dunbar, R., Rogers, J., Williams, G., Price, N., Mucciarone, D., Teneva, L., Zabel, C. *High-resolution community metabolism from a healthy coral reef ecosystem: the balance between environmental and ecological controls.* OSM 2014.

Luisa Leal, M., Conte, M. H., **Koweek, D.A.**, Weber, J. C. *Elemental composition of the particle flux in the deep Sargasso Sea: seasonality and changes with depth.* OSM 2014.

Conte, M. H., Weber, J. C., **Koweek, D.A.**, Dickey, T. M. *Episodic advection of detrital reef sediments to the deep Sargasso Sea: a tale of two hurricanes.* OSM 2014.

Rogers, J. S., Monismith, S. G., **Koweek, D.A.**, Dunbar, R. *Hydrodynamics of a Pacific atoll.* OSM 2014.

Torres, W. I., **Koweek, D.A.**, Monismith, S. G., Barkdull, M. K., Dunbar, R., *The turbulent boundary layer over reef ecosystem substrates.* OSM 2014.

Zabel, C., **Koweek, D.A.**, Teneva, L., Dunbar, R. *Linking benthic community composition with reef metabolism on near-pristine backreef environments of Palmyra Atoll, central Pacific.* OSM 2014.

Nickols, K.J., **Koweek, D.A.**, Lummis, S., Litvin, S.Y., Dunbar, R.B., Mucciarone, D.A. *Establishing the natural variability of carbon system parameters and water mass properties within kelp forests.* Western Society of Naturalists 2013.

Teaching Experience

Instructor

Climate Engineering Workshop (Princeton AOS) Aug 2017

Invited Lectures

Ocean Acidification in Biological and Physical Oceanography (CSUMB) Dec 2015

Ocean Acidification in Biological and Physical Oceanography (CSUMB) Apr 2015

Kelp Forest Oceanography in Changes in the Coastal Ocean (Stanford) Feb 2015

Ocean Acidification in Introduction to Earth Systems (Stanford) Oct 2014

Teaching Assistant (with lectures given)

Measurements in Earth Systems (Stanford) 2015

Corals of Palau: Reefs at Risk (Stanford) 2013

Changes in the Coastal Ocean (Stanford) 2012

Teaching Assistant

Physical Processes in Geology (Brown) 2008

Environmental Issues: Policy and Science (Brown) 2006-2007

Service to the Scientific Community

Lead participant, new ethics policy at the Carnegie Institution for Science 2018-present

Mentor, Global Ocean Acidification Observing Network Pier2Peer Program 2018-present

Session co-chair and student presentation evaluator, Ocean Sciences Meeting 2018 2018

Mentor, Coastal and Estuarine Research Federation (CERF) 2017 Meeting 2017

Seminar committee member, Carnegie DGE 2017-present

Mentor, Aquatic Sciences Meeting 2017 Mentoring Program 2017

Session co-chair, Aquatic Sciences Meeting 2017: *Ocean and Coastal Acidification* 2017

Organizer, ESS Professional Development Panel Series, Stanford University Jan-Mar 2016

Organizer, ESS Graduate Student Oceans Reading Group, Stanford University 2012-2014

Journal Reviewer for:

Estuarine, Coastal, and Shelf Science; Coral Reefs; Limnology and Oceanography;

Biogeosciences; Estuaries and Coasts

Proposal Reviewer for:

NOAA Ocean Acidification Program; UK Natural Environment Research Council

Honors and Awards

McGee Grant, Stanford School of Earth, Energy, and Environmental Sciences 2015

Certificate of Outstanding Achievement in Mentoring, Stanford School of Earth Sciences 2014

United States Antarctic Service Medal 2013

National Science Foundation Graduate Research Fellowship 2013-2016

McGee Grant, Stanford School of Earth Sciences 2012

Student-Athlete Award, Brown University Department of Geological Sciences 2009

Royce Fellow, Brown University 2008-2009

CV Starr National Service Fellowship, Brown University (declined) 2008

Brown UTRA (declined) 2008

Workshops and Training

Seagrass and ocean acidification workshop, Bodega Marine Laboratory	Oct 2016
Negotiation Matters, VPGE, Stanford University	Nov 2015
Scientific Computing for Ecology and Environmental Science, Stanford University	Oct 2015
Management Matters, VPGE, Stanford University	Feb 2015
Best practices workshop for pH sensors, Scripps Institution of Oceanography	Aug 2014
Rising Environmental Leaders Program, Woods Institute, Stanford University	Mar 2014
Ocean acidification and other stressors of Pacific coral reefs, Honolulu, HI	Feb 2014

Field Experience

Searsville Lake, Woodside, California (~5 days; hydrography)	Oct 2017-present
Ischia, Italy (14 days; larval ecology and ocean acidification)	Sep 2017
Lighthouse Reef, Belize (6 days; coral reef biogeochemistry and ecology)	Aug 2017
One Tree Island, Great Barrier Reef (49 days; coral reef biogeochemistry)	Sep-Oct 2016
Palmyra Atoll (16 days; physical oceanography and biogeochemistry)	July 2014
Pacific Grove, California (~ 25 days; kelp forest biogeochemistry)	2013-2014
Palmyra Atoll (16 days; physical oceanography and biogeochemistry)	Aug-Sep 2013
Corals of Palau undergraduate seminar (20 days; Republic of Palau)	Jun-Jul 2013
TRACERS cruise (54 days aboard the R/V NBP in the Ross Sea and S.O.)	Feb-Apr 2013
Palmyra Atoll (45 days; coral reef biogeochemistry)	Aug-Oct 2012
Ofu and Ta'u, American Samoa (21 days; coral reef biogeochemistry and drilling)	Nov 2011
Palmyra Atoll (28 days; coral reef biogeochemistry)	Sep-Oct 2011
OFP Mooring Recovery and Redeployments (~10 days/trip)	Apr, Nov 2010, April 2011
Sediment coring expeditions in Narragansett Bay, RI (~4 days)	Jul-Aug 2008
Benthic chamber deployments in Narragansett Bay, RI (~4 days)	Jul-Aug 2007
AAUS-certified SCUBA diver (~195 dives)	2011-present

Last updated 19 Mar 2018