

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

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, Robert B. Dunbar, and B Robert. Thermodynamics and hydrodynamics in an atoll reef system and their influence on coral cover. *Limnology and Oceanography*, pages 1–10, 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.

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.

H.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 in Submission and Preparation

Cryonak, Andersson, *et al.* (including **Koweek, D.A.**) *Taking the pulse of the world's coral reefs.* In revision.

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.* In review.

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

Invited Seminars

- 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)

- 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, June 7-12, 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.

Koweek, D.A., Samuels, L., Mucciarone, D., Woodson, C.B., Monismith, S.G., and Dunbar, R. *Does high diurnal variability in a reef flat from Ofu, American Samoa confer resistance to ocean acidification?*. AGU Fall Meeting 2012.

Teneva, L., Dunbar, R., Fleischfresser, J., **Koweek, D.A.**, Koseff, J., Mucciarone, D. *Diurnal carbon system variability and hydrodynamics on coral reefs of Palau and Palmyra Atoll*. AGU Fall Meeting 2012.

Koweek, D.A., Teneva, L., Archambault, A., Mucciarone, D.A., and Dunbar, R.B., *Palmyra Atoll's anoxic lagoons: Understanding the hydrography and assessing risk for the coral reefs*. OSM 2012.

Teneva, L.T., Dunbar, R.B., Mucciarone, D.A., **Koweek, D.A.**, and Archambault, A. *Assessing coral reef vulnerability to ocean acidification via high-resolution baseline monitoring of carbon budgets on Palmyra Atoll*. OSM 2012.

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

Seminar committee member, Carnegie DGE 2017-present
Mentor, Aquatic Sciences Meeting 2017 Mentoring Program 2017

Session co-chair, Aquatic Sciences Meeting 2017: <i>Ocean and Coastal Acidification</i>	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: <i>Estuarine, Coastal, and Shelf Science; Coral Reefs; Limnology and Oceanography; Biogeosciences; Estuaries and Coasts</i>	
Proposal Reviewer for: <i>NOAA Ocean Acidification Program</i>	

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
CV Starr National Service Fellowship (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

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 (4 days/cruise)	Apr, Nov 2011, April 2012
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 (~185 dives)	2011-present

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