

Dustin Carroll

CONTACT INFORMATION

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RESEARCH INTERESTS

Coastal and high-latitude physical oceanography, estuarine and fjord circulation, numerical ocean modeling, ocean-ice interactions

EDUCATION

University of Oregon, Eugene, Oregon USA
Department of Earth Sciences

Ph.D. Candidate (Physical Oceanography), expected May 2017
Dissertation: *Modeling meltwater plume dynamics and circulation in outlet glacier fjords.*
Advisor: Dr. David Sutherland

Moss Landing Marine Laboratories, California State University Monterey Bay,
Moss Landing, California USA

M.S. Marine Science (Physical Oceanography), 2009
Thesis: *Carmel Bay: oceanographic dynamics and nutrient transport in a small embayment of the central California coast.*
Advisor: Dr. Erika McPhee-Shaw

Westmont College, Santa Barbara, California USA

B.S., Computer Science, 2004

PEER-REVIEWED PUBLICATIONS

11. Amundson, J.M and **D. Carroll**. Glacier-ocean feedbacks amplify the tidewater glacier instability, "In review".
10. Shroyer, E.L., Bartholomaus, T.C., Catania, G.A., **Carroll, D.**, Felikson D., Fried, M.J., Jackson, R., Nash, J.D., Stearns, L.A., and D.A. Sutherland. Surface temperature, salinity, and circulation in a Greenland outlet glacier fjord, "In review".
9. **Carroll, D.**, Sutherland, D.A., Hudson, B., Moon T., Catania, G.A., Shroyer, E.L., Nash, J.D., Bartholomaus, T.C., Felikson D., Stearns, L.A., Noël, B.P., and M.R. van den Broeke. 2016. The impact of glacier geometry on meltwater plume structure and submarine melt in Greenland fjords. *Geophysical Research Letters*, 43(18): 9739-9748
8. Breaker, L.C., Loor, H.R., and **D. Carroll**. 2016. Trends in sea surface temperature off the coast of Ecuador and the major processes that contribute to them. *Journal of Marine Systems*, 164, 151-164
7. Bartholomaus, T.C., Stearns, L.A., Sutherland, D.A., Shroyer, E.L., Nash, J.D., Walker, R., Catania, G., Felikson, D., **Carroll, D.**, Fried, M.J., Noël, B.P., and M.R. van den Broeke. 2016. Contrasts in the response of adjacent fjords and glaciers to ice-sheet surface melt in West Greenland. *Annals of Glaciology*, 1-14.

6. **Carroll, D.**, Sutherland, D.A., Shroyer, E.L., Nash, J.D., Catania G.A., and L.A. Stearns. 2015. Modeling turbulent subglacial meltwater plumes: implications for fjord-scale buoyancy-driven circulation. *Journal of Physical Oceanography*, 45(8): 2169-2185
5. Breaker L.C., Murty T.S., and **D. Carroll**. 2013. A frequency domain approach for predicting the signal strength of tsunamis at coastal tide gauges. *Journal of Coastal Research* 30(3): 562-574.
4. Breaker, L.C., Murty T.S., **Carroll, D.**, and W.J Teague. 2011. The response of the Monterey Bay to the Great Tohoku Earthquake of 2011. *Science of Tsunami Hazards* 30(3): 153-163.
3. Cazenave, F., Zook, R., **Carroll, D.**, Flagg, M., and S. Kim. 2011. Development of the ROV SCINI (Submersible Capable of under Ice Navigation and Imaging) and deployment in McMurdo Sound, Antarctica. *Journal of Ocean Technology* 6(3): 39-57.
2. Breaker, L.C., Murty T.S., Norton J. G., and **D. Carroll**. 2009. Comparing sea level response at Monterey, California from the 1989 Loma Prieta earthquake and the 1964 Great Alaskan Earthquake. *Science of Tsunami Hazards* 28(5): 255-271.
1. **Carroll, D.**, Broadus, R., Hanson, J., Conant, T., and A.M Nishimura. 2005. Study of the phosphorescent triplet state of 2-Indanone: Use of a microcontroller based photon counter and pulse train generator. *Journal of Undergraduate Chemistry Research* 1: 85-89.

MANUSCRIPTS IN
PREPARATION

Carroll, D., Sutherland, D.A., Shroyer, E.L., Nash, J.D., Catania G.A., and L.A. Stearns. Modeling the influence of fjord-glacier geometry on buoyancy, wind, and tidally-forced circulation in outlet glacier fjords, "In preparation".

INVITED
ACADEMIC TALKS

2016 *Where ocean meets ice: modeling circulation dynamics and submarine melt in Greenland fjords*. University of Otago, Department of Marine Sciences

CONFERENCE
PRESENTATIONS

2016 *Modeling the impact of fjord-glacier geometry on subglacial plume, wind, and tidally-forced circulation in outlet glacier fjords*. Poster, AGU Fall Meeting, San Francisco, California.

2016 *Using an idealized ocean circulation model to assess the role of fjord-glacier geometry on circulation in tidewater glacier fjords*. Talk, IGS symposium on interactions of ice sheets and glaciers with the ocean, La Jolla, California.

2016 *The impact of fjord-glacier geometry on circulation and renewal in tidewater glacier fjords*. Talk, AGU Ocean Sciences, New Orleans, Louisiana.

2015 *Modeling subglacial meltwater plumes across Greenland's outlet glaciers: implications for ocean-ice coupling in a warming climate*. Talk, AGU Fall Meeting, San Francisco, California.

2014 *Numerical simulation and sensitivity analysis of subglacial meltwater plumes: implications for ocean-glacier coupling in Rink Isbrae, west Greenland*. Poster, AGU Fall Meeting, San Francisco, California.

2014 *Turbulent meltwater plumes: implications for ocean-ice coupling in Rink Isbrae Fjord, west Greenland*. Poster, FAMOS meeting, Woods Hole, Massachusetts.

2014 *Using a coupled observational and modeling approach to investigate buoyant plume structure in a Greenlandic outlet glacial fjord.* Poster, AGU Ocean Sciences, Honolulu, Hawaii.

2013 *Oceanic response to buoyancy, wind and tidal forcing in a Greenlandic glacial fjord.* Poster, AGU Fall Meeting, San Francisco, California.

2013 *The response of a fjord to subsurface buoyancy forcing and wind-driven circulation on the shelf.* Poster, Coastal Circulation Gordon Research Conference, Biddeford, Maine.

HONORS AND
AWARDS

UO Research Excellence Award, 2016.
UO Baldwin Scholarship, 2016.
UO Bayer Scholarship, 2015.
UO Thayer Scholarship, 2014.
AGU Outstanding Student Paper Award, 2013.
UO Johnston Fellowship, 2012.
NSF Antarctic Service Medal, 2010.

TEACHING
EXPERIENCE

2017, 2014 Teaching Assistant, Oceanography of the Oregon Coast (undergraduate/graduate level).
2016 Instructor, MATLAB for Earth Sciences (undergraduate/graduate level).
2016 Teaching Assistant, Introduction to Physical Oceanography (undergraduate level).
2015 Teaching Assistant, MATLAB for Earth Sciences (undergraduate/graduate level).
2015 Teaching Assistant, Geology of the Pacific Northwest (undergraduate level).
2012 Private Tutor, Advanced Placement Computer Science (high school).
2008 Teaching Assistant, Physical Oceanography (graduate level).
2007 Teaching Assistant, Data Analysis Techniques for Oceanography (graduate level).

UNDERGRADUATE
MENTORSHIP

2016-present Undergraduate mentor (4 students), University of Oregon Women in Graduate Science Joint Undergrad-Grad Mentorship Program (JUMP).

SUMMER SCHOOLS
AND WORKSHOPS

2016 Speaker, Ice Sheet Model Intercomparison Project Workshop, San Francisco, California.
2016 UAF International Summer School in Glaciology, McCarthy, Alaska.
2015 Alan Alda Communicating Science Workshop, University of Oregon.
2014 Fluid Dynamics Summer School, University of Cambridge, UK.
2013 "Oceanography Boot Camp", student-led cruise, Oregon State University, Oregon.

PROFESSIONAL
EXPERIENCE

2012-present Graduate Teaching Fellow, University of Oregon.

2011-2012 Arctic LTER Research Technician, University of Michigan.

2009-2011 Chief Software Engineer, Moss Landing Marine Laboratories.

2007-2009 Research Assistant, Central and Northern California Ocean Observing System.

2006 Summer Intern, Monterey Bay Aquarium Research Institute (MBARI).

2005 Software Engineer, Scientific Drilling International.

2003-2004 Research Assistant, Department of Chemistry, Westmont College.

FIELD EXPERIENCE

R/V Sanna, 6 days, July 2015. Hydrographic surveys and mooring operations in Rink and Kangerlussuup Sermia fjords, west Greenland. Chief Scientist: Dr. Jonathan Nash.

R/V Sanna, 20 days, Jul-Aug 2014. Hydrographic surveys and mooring operations in Rink and Kangerlussuup Sermia fjords, west Greenland. Chief Scientist: Dr. Jonathan Nash.

R/V Oceanus, 4 days, March 2014. Hydrographic and biochemical survey in Cape Perpetua Marine Reserve, Oregon. Chief Scientist: Dr. Kipp Shearman.

R/V Sanna, 12 days, Sept 2013. Hydrographic surveys and mooring operations in Rink and Kangerlussuup Sermia fjords, west Greenland. Chief Scientist: Dr. Jonathan Nash.

R/V Fox, 15 days, Sept 2012. Hydrographic surveys and mooring operations in Sermilik and Kangerlussuaq fjords, southeast Greenland. Chief Scientist: Dr. Fiamma Straneo.

Toolik Field Station, Alaska, May-Aug 2011/2012. Deployed and maintained eddy flux towers to measure turbulent greenhouse gas fluxes in the Alaskan arctic. PI, Dr. George Kling.

Ross Ice Shelf, Antarctica, Nov-Jan 2010/2011. ANDRILL Project. Deployed ROV SCINI through a meltwater drill hole in the Ross Ice Shelf. PI, Dr. Frank Rack.

McMurdo Station, Antarctica, Aug-Nov 2009. Designed a through-ice remotely operated vehicle (ROV SCINI) to study polar benthic ecosystems. PI, Dr. Stacy Kim.

R/V Point Sur, 15 days, Sept 2005. LTER hydrographic and biogeochemical survey in the Santa Barbara Channel, California. Chief Scientist, Dr. Libe Washburn.

Numerous day cruises in California and Oregon: Monterey Canyon (*R/V Point Lobos* and *R/V Shana Rae*, 2005), Elkhorn Slough (*R/V Sheila B.*, 2005-2007), Carmel Bay (*R/V John Martin*, 2007-2008), Monterey Bay (*R/V Point Sur*, 2005-2008), Coos Bay (*R/V Pluteus*, 2014-2015)

PROFESSIONAL
SERVICE AND
ACTIVITIES

Reviewer for: Journal of Glaciology, Annals of Glaciology

Professional Society Memberships: American Geophysical Union (AGU), The Oceanography Society

MEDIA COVERAGE 2016 Washington Post, *How Greenland's ice is melting from both above and below*

TECHNICAL SKILLS Ocean Modeling: MIT General Circulation Model (MITgcm)

Programming: Assembly, C/C++, C#.NET, Fortran, Labview, MATLAB, Java, Python, PHP, SQL

Instrumentation: Seabird and RBR CTD, Teledyne RD ADCP, Cambell dataloggers, electronics and circuit design, machining and fabrication, research cruise and small boat experience.