

CURRICULUM VITAE

NAME

Ricardo M Letelier

BIRTHDATE

August 28, 1961

GRADUATE EDUCATION

B.S., Marine Biology, Universidad de Concepción, Chile, 1988

Ph.D., Oceanography, University of Hawaii, 1994

ACADEMIC POSITIONS

1988-1994 - Graduate Research Assistant, University of Hawaii

1994-1996 - Associate Researcher (Postdoctoral), College of Oceanic & Atmospheric Sciences, Oregon State University

1996-2000 - Assistant Professor (Senior Researcher), College of Oceanic & Atmospheric Sciences, Oregon State University

2000-2007 - Associate Professor, College of Oceanic & Atmospheric Sciences, Oregon State University

2006-present - Profesor Auxiliar, Departamento de Ecología, Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile

2007-present - Professor, College of Oceanic & Atmospheric Sciences, Oregon State University

FIELDS OF SPECIALIZATION

Microbial Ecology/Phytoplankton Physiology & Nitrogen Fixation

Bio-optics

Ocean Color Remote Sensing

Spatial and temporal scales of variability

HONORS AND AWARDS

Fundación Andes Travel Fellowship, Chile, 1998

Watumull Scholarship, SOEST-University of Hawaii, 1991

Jack Dymond Memorial Excellence in Mentoring, COAS-Oregon State University, 2006

PROFESSIONAL ACTIVITIES

Professional Organizations

American Society of Limnology and Oceanography

American Geophysical Union

The Phycological Society of America

The Oceanography Society

Conference Session Chair, Workshop Convener, etc. (Since 2005)

ASLO Convener of a Special Session on "The Role of Ocean Biota in Carbon Flux", Honolulu, February 2006.

ASLO Convener of a Special Session on "Microbial Ecology and Biogeochemical Cycles in the Subtropical Gyres", Santiago de Compostela, Spain, June 2005

Committees, Commissions and Editorial Boards (2000 to present)

Member of the Editorial Board of Ocean Optics (2013-)

Member of the US Ocean Time-series steering committee (2012-)

Member of the US Ocean Carbon & Biogeochemistry Scientific Steering Committee (2012-)

Member of the Editorial Board of *Ecosystems* (2008- 2011)

Member, North Pacific Research Council (NPRC) Science Steering Committee (2006-2007)
Member, National Science Foundation (NSF) Ocean Carbon Research Program workgroup (2000-2004)
Member, Ocean Carbon Cycle Research Implementation workgroup (2001-2004)
Co-chair (with Douglas Capone), NSF Ecological Determinants of Ocean Carbon Cycle (1999-2001)
Member, Scientific Committee on Problems of the Environment (SCOPE), committee on Nitrogen Fixation in the Worlds Oceans (1998-2001)

ISI PUBLICATIONS

- 2015 White, A.E., R.M. Letelier, A.L. Whitmire, B. Barone, R.R. Bidigare, M.J. Church and D.M. Karl. Phenology of particle size distributions and primary productivity in the North Pacific subtropical gyre (Station ALOHA). *J. Geophys. Res. Oceans*, 120 doi:10.1002/2015JC01897.
- 2015 Wilson, S.T., et al. Short-term variability in euphotic zone biogeochemistry and primary productivity at Station ALOHA: A case study of summer 2012. *Global Biogeochem. Cycles*, 29,1145-1164, doi: 10.1002/2015GB005141.
- 2015 Barone, B., R.R. Bidigare, M.J. Church, D.M. Karl, R.M. Letelier and A.E. White. Particle distribution and dynamics in the euphotic zone of the North Pacific Subtropical Gyre: Particle distributions at Station ALOHA. *J. Geophys. Res. Oceans*, 120, doi: 10.1002/2015JC010774.
- 2014 Kavanaugh, M.T., S.R. Emerson, B. Hales, D.M. Lockwood, P.D. Quay and R.M. Letelier. Physiochemical and biological controls on primary and net community production across northeast Pacific seascapes. *Limnol. Oceanogr.* 59(6): 2013-2027.
- 2014 Gradoville, M.R., A.E. White and R.M. Letelier. Physiological response of *Crocospaera watsonii* to enhanced and fluctuating carbon dioxide conditions. *PLoS One* 9(10): e110660. Doi:10.1371/journal.pone.0110660
- 2014 Muller-Karger, F.E., M.T. Kavanaugh, E. Montes, W.M. Balch, M. Breitbart, F.P. Chavez, S.C. Doney, E.M. Johns, R.M. Letelier, M.W. Lomas, H.M. Sosik, and A.E. White. A framework for a marine biodiversity observing network within changing continental shelf seascapes. *Oceanography* 27(2):18–23, <http://dx.doi.org/10.5670/oceanog.2014.56>.
- 2014 Dore, J.E., M.J. Church, D.M. Karl, D.W. Sadler and R.M. Letelier. Paired windward and leeward biogeochemical time series reveal consistent surface CO₂ trends across the Hawaiian Ridge. *Geophys. Res. Lett.* DOI: 10.1002/2014GRL06725
- 2014 Böttjer, D., D.M. Karl, R.M. Letelier, D.A. Viviani, and M.J. Church. Experimental assessment of diazotroph responses to elevated pCO₂ in the North Pacific Subtropical Gyre. *Global Biogeochem. Cycles*, 28:601-616, doi: 10.1002/2013GB004690.
- 2014 Laws, E.D., R.M. Letelier and D.M. Karl. Estimating the compensation irradiance in the ocean: The importance of accounting for non-photosynthetic uptake of inorganic carbon. *Deep-Sea Res. I*: doi: 10.1016/j.dsr.2014.07.011
- 2014 Gradoville, M.R., A.E. White, D. Böttjer, M.J. Church and R.M. Letelier. Diversity trumps acidification: Lack of evidence for carbon dioxide enhancement of *Trichodesmium* nitrogen or carbon fixation at Station ALOHA. *Limnol. Oceanogr.* 59(3):645-659.
- 2014 Kavanaugh, M.T., B. Hales, M. Saraceno, Y.H. Spitz, A.E. White and R.M. Letelier. Hierarchical and dynamic seascapes: A quantitative framework for scaling pelagic biogeochemistry and ecology. *Progr. Oceanogr.*, 120:291-304.
- 2013 Li, B.L., D.M. Karl, R.M. Letelier, R.R. Bidigare and M.J. Church. Variability of chromophytic phytoplankton in the North Pacific Subtropical Gyre. *Deep-Sea Res. Part-II*, 93:84-95.

- 2013 Peloquin J. et al. The MAREDAT global database of high performance liquid chromatography marine pigment measurements. *Earth Syst. Sci. Data*, 5:109-123.
- 2012 Ulloa, O., D.E. Canfield, E.F. DeLong, R.M. Letelier and F.J. Stewart. Microbial oceanography of anoxic minimum zones. *Proc. Nat. Acad. Sci.*, 109(40):15996-16003.
- 2012 Hales, B., P.G. Strutton, M. Saraceno, R. Letelier, T. Takahashi, R. Feely, C. Sabine and F. Chavez. Satellite-based prediction of pCO₂ in coastal waters of the eastern North Pacific. *Progr. Oceanogr.*, 103:1-15.
- 2012 Saldias, G.S., M. Sobarzo, J. Largier, C. Moffat and R.M. Letelier. Seasonal variability of turbid river plumes off central Chile based on high-resolution MODIS imagery. *Rem. Sens. Environ.*, 123: 220-233.
- 2012 Guidi, L., P.H.R. Calil, S. Duhamel, K.M. Bjorkman, S.C. Doney, G.A. Jackson, B.L. Li, M.J. Church, S. Tozzi, Z.S. Kolber, K.J. Richards, A.A. Fong, R.M. Letelier, G. Gorski, L. Stemmann and D.M. Karl. Does eddy-eddy interaction control surface phytoplankton distribution and carbon export in the North Pacific Subtropical Gyre? *J. Geophys. Res. Biogeosciences.*, doi: 10.1029/2012JG001984
- 2012 Karl, D.M., M.J. Church, J.E. Dore, R.M. Letelier and C. Mahaffey. Predictable and efficient carbon sequestration in the North Pacific Ocean supported by nitrogen fixation. *Proc. Nat. Acad. Sci.*, 109(6):1842-1848
- 2011 Li, B., D.M. Karl, R.M. Letelier, and M.J. Church. Size-dependent variability of photosynthesis in the North Pacific Subtropical gyre. *Marine Ecology Progress Series*, 440:27-40.
- 2011 Watkins-Brandt, K., R. M. Letelier, Y. H. Spitz, M. Church, D. Bottjer and A. E. White.(2010) Addition of inorganic or organic phosphorus enhances nitrogen and carbon fixation in the oligotrophic North Pacific. *Marine Ecology Progress Series*. 432:17-29.
- 2011 White, A. E., K. Björkman, E. Grabowski, R. M. Letelier, S. Poulos, B. Watkins, and D.M. Karl Comments on "An Open Ocean Trial of Controlled Upwelling Using Wave Pump Technology" Reply. *Journal of Oceanic and Atmospheric Technology*. 28:850-851.
- 2010 Somes, C.J., A. Schmittner, E.D. Galbraith, M.F. Lehmann, M.A. Altabet, J.P. Montoya, R.M. Letelier, A.C. Mix, A. Bourbonnais, and M. Eby. Simulating the global distribution of nitrogen isotopes in the ocean. *Global Geochemical Cycles*. 24:GB4019
- 2010 Beversdorf, L.J., A.E. White, K.M. Bjorkman, R.M. Letelier, and D.M. Karl. Phosphonate metabolism of *Trichodesmium* IMS101 and the production of greenhouse gases. *Limnol. Oceanogr.* 55:1768-1778.
- 2010 White, A.E., D.M. Karl, K.M. Bjorkman, L.J. Beversdorf, and R.M. Letelier. Production of organic matter by *Trichodesmium* IMS101 as a function of phosphorus source. *Limnol. Oceanogr.* 55: 1755-1767.
- 2010 White, A., K. Bjorkman, E. Grabowski, R. Letelier, S. Poulos, B. Watkins, and D. Karl. An open ocean trial of controlled upwelling using wave pump technology. *J. Atmos. Ocean. Tech.* 27(2):385-396.
- 2009 Whitmire, A.L., R.M. Letelier, V. Villagran, and O. Ulloa. Autonomous observations of in vivo fluorescence and particle scattering in an oceanic oxygen minimum zone. *Optics Express*, 17(24):21,992-22,004.
- 2009, Church, M.J., C. Mahaffey, R.M. Letelier, R. Lukas, J.P. Zehr, and D.M. Karl. Physical forcing of nitrogen fixation and diazotroph community structure in the North Pacific Subtropical Gyre. *Global Biogeochem. Cycles*. 23;GB2020.
- 2009, Laney, S.R., R.M. Letelier, and M.R. Abbott. Using a stochastic approach to model nonlinear dynamics in photosynthesis at the photosystem level. *J. Phycol.* 45:298-310.
- 2009 Kavanaugh, M.T., B.A. Menge, K.J. Nielsen, F.T. Chan, R.M. Letelier, and L.M. Goodrich. Experimental assessment of the effects of shade on an intertidal kelp: do phytoplankton blooms inhibit growth of open coast macroalgae? *Limnol. Oceanogr.* 54:276-288.

- 2008 Fong, A.A., D.M. Karl, R. Lukas, R.M. Letelier, J.P. Zehr, and M.J. Church. Nitrogen fixation in an anticyclonic eddy in the oligotrophic nNorth Pacific Ocean, *Int. Soc. Microb. Ecol.* 364:257-268.
- 2008 Venegas, R.M., P.T. Strub, E. Beier, R.M. Letelier, A.C. Thomas, T. Cowles, C. James, L. Soto-Mardones, and C. Cabrera. Satellite-derived variability in chlorophyll, wind stress, sea surface height, and temperature in the northern California Current system. *J. Geophys. Res.* 113, C03015, doi:10.1029/2007JC004481
- 2008 Corno, G., R.M. Letelier, M.R. Abbott, and D.M. Karl. Temporal and vertical variability of photosynthesis in the North Pacific Subtropical gyre. *Limnol. Oceanogr.* 53: 1252-1265.
- 2008 Letelier, R.M., P.G. Strutton, and D.M. Karl. Physical and Ecological uncertainties in the widespread implementation of controlled upwelling in the North Pacific Subtropical Gyre. *Mar. Ecol. Prog. Ser.* 371:305-308.
- 2008 Karl, D.M. and R.M. Letelier. Nitrogen fixation-enhanced carbon sequestration in low nitrate, low chlorophyll seascapes. *Mar. Ecol. Prog. Ser.* 364: 257-268.
- 2008 Laney, S.R. and R.M. Letelier. Artifacts in measurements of chlorophyll fluorescence transients, with specific application to fast repetition rate fluorometry. *Limnol. Oceanogr.: Methods* 6: 40-50.
- 2008 Dore, J.E., R.M. Letelier, M.J. Church, R. Lukas, and D.M. Karl. Summer phytoplankton blooms in the oligotrophic North Pacific Subtropical Gyre: Historical perspective and recent observations. *Progress in Oceanography* 76:2-38.
- 2007 Desiderio, R., S. Laney, R. Letelier, and S. Giovannoni. Using lasers to probe the transient light absorption by proteorhodopsin in marine bacterioplankton. *Applied Optics.* 46:7329-7336.
- 2007 White, A.E., Y.H. Spitz, and R.M. Letelier. What factors are driving summer phytoplankton blooms in the North Pacific subtropical gyre? *J. Geophys. Res.* 112(c2): C12006, doi:10.1029/2007JC004129
- 2007 Bane, J.M., Y.H. Spitz, R.M. Letelier, and W.T. Peterson. Jet stream intraseasonal oscillations drive dominant ecosystem variations in Oregon's summertime coastal upwelling system. *Proc. Nat. Acad. Sci.* 104: 13,262-13,267.
- 2007 Corno, G., D.M. Karl, M.A. Abbott, M.J. Church, R. Lukas, and R.M. Letelier. Impact of climate forcing on ecosystem processes in the North Pacific subtropical gyre. *J. Geophys. Res.*, 112, C04021, doi:10.1029/2006JC003730.
- 2007 Huyer, A., M. Kosro, R. Letelier, R.L. Smith, and P.A. Wheeler. The Newport Line off Oregon: Studies in the North East Pacific. *Progress in Oceanography*, doi: 10.1016/j.pocean.2007.08.003
- 2007 White, A. E., F.G. Prahl, R.M. Letelier, and B.N. Popp. Summer surface waters in the Gulf of California: prime habitat for biological N₂ fixation. *Global Biogeochemical Cycles*, 21, GB2017, doi:10.1029/2006GBC002779.
- 2006 Behrenfeld, M.J., R.T. O'Malley, D.A. Siegel, C.R. McClain, J.L. Sarmiento, G.C. Feldman, A.J. Milligan, P.G. Falkowski, R.M. Letelier, E.S. Boss. Climate-driven trends in contemporary ocean productivity. *Nature*, 444: 752-755.
- 2006 White, A.E., Y.H. Spitz, and R.M. Letelier, Modeling carbohydrate ballasting by *Trichodesmium* spp. at Station ALOHA. *Mar. Ecol. Prog. Ser.*, 323: 35-45
- 2006 Church, M.J., H.W. Ducklow, R.M. Letelier, and D.M. Karl. Temporal dynamics in heterotrophic picoplankton productivity in the subtropical North Pacific Ocean. *Aquat. Microb. Ecol.* 45: 41-53.
- 2006 White, A.E., Y. Spitz, D.M. Karl, and R.M. Letelier. Ecological implications of flexible elemental stoichiometry in *Trichodesmium* spp. *Limnol. Oceanogr.* 51(4): 1777-1790
- 2005 Corno, G., R.M. Letelier, M.R. Abbott, and D.M. Karl. Assessing primary production variability in the North Pacific subtropical gyre: A comparison of Fast Repetition Rate fluorometry and ¹⁴C measurements. *J. Phycol.* 42: 51-60

- 2005 Laney, S.R., R.M. Letelier, and M.R. Abbott. Parameterizing the natural fluorescence kinetics of *Thalassiosira weissflogii*. *Limnol. Oceanogr.* 50(5): 1499-1510
- 2004 Wetz, M.S., P.A. Wheeler, and R.M. Letelier. Light induced growth of winter phytoplankton collected from the benthic boundary layer off Oregon, USA. *Mar. Ecol. Prog. Ser.* 208: 95-104.
- 2004 Sakamoto C, et al., Influence of Rossby waves on nutrient dynamics and plankton community structure in the North Pacific subtropical gyre. *J. Geophys. Res.* 109: C05032
- 2004 Letelier, R.M., D.M. Karl, M.R. Abbott, and R.R. Bidigare. Light driven seasonal patterns of chlorophyll and nitrate in the lower euphotic zone of the North Pacific Subtropical Gyre. *Limnol. Oceanogr.* 49: 508-519
- 2003 Hogue, F.E., P.E. Lyon, R.N. Swift, J.K. Yungel, M.R. Abbott, R.M. Letelier, W.E. Esaias. Validation of Terra-MODIS Phytoplankton Chlorophyll Fluorescence Line Height. I. Initial Airborne Lidar Results. *Appl. Optics*, 42(15): 2761-2771.
- 2002 Karl, D.M., A. Michaels, B. Bergman, D.G. Capone, E. Carpenter, R. Letelier, F. Lipschultz., H. Pearl, D. Sigma, and L. Stal. Nitrogen fixation in the world's oceans. *Biogeochemistry*, 57/58: 47-98.
- 2002 Fennel, K., Y.H. Spitz, R.M. Letelier, and M.R. Abbott. A deterministic model for N₂-fixation at the HOT site in the subtropical North Pacific. *Deep-Sea Res. II*, 49: 149-174.
- 2001 Landry, M.R., S.L. Brown, K.E. Selph, M.R. Abbott, R.M. Letelier, S. Christensen, R.R. Bidigare, and K. Casciotti, Initiation of the spring phytoplankton increase in the Antarctic Polar Front Zone at 170°W. *Journal of Geophysical Research*, 106: 13,903-13,915.
- 2001 Nahorniak, J.S., M.R. Abbott, R.M. Letelier, and W.S. Pegau. Analysis of a method to estimate chlorophyll-a concentration from irradiance measurements at varying depths. *J. Atmos. Ocean. Tech.*, 18: 2063-2073.
- 2001 Laney, S.R., R.M. Letelier, R.A. Desiderio, M.R. Abbott, D.A. Kiefer, and C.R. Booth. Measuring the natural fluorescence of phytoplankton cultures. *J. Atmos. Ocean. Tech.*, 18: 1924-1934.
- 2001 Mengelt, C., M. Abbott, R.M. Letelier, J.A. Barth, C. Measures, and S. Vink, Phytoplankton pigment distribution in relation to the physics across the Antarctic Polar Front, 170°W, *Deep-Sea Res. II*, 48: 4081-4100.
- 2001 Karl, D.M., R.R. Bidigare and R.M. Letelier, Long-term changes in plankton community structure and productivity in the subtropical North Pacific Ocean: The domain shift hypothesis, *Deep-Sea Res. II*, 48: 1449-1470.
- 2001 Karl, D.M., K.M. Björkman, J.E. Dore, L. Fujieki, D.V. Hebel, T. Houlihan, R.M. Letelier, and L.M. Tupas. Ecological Nitrogen-to-Phosphorus Stoichiometry at Station ALOHA. *Deep-Sea Res. II*, 48: 1529-1566.
- 2000 Letelier, R.M., D.M. Karl, M.R. Abbott, P. Flament, M. Freilich, R. Lukas, and T. Strub, Role of late winter mesoscale events in the biogeochemical variability of the upper water column of the North Pacific Subtropical Gyre, *Journal of Geophysical Research*, 105: 28,723-28,740. Correction in *Journal of Geophysical Research*, 106: 7181-7182.
- 2000 Abbott, M.R., J.G. Richman, R.M. Letelier, and J.S. Bartlett. The spring bloom in the Antarctic Polar Frontal Zone as Observed from a Mesoscale Array of Bio-optical Sensors, *Deep-Sea Res. II*, 47: 3285-3314.
- 1998 Karl, D.M., D. Hebel, K. Bjorkman, and R.M. Letelier. The role of dissolved organic matter exudation in the productivity of the oligotrophic North Pacific Ocean. *Limnology and Oceanography*, 43(6): 1270-1286.
- 1998 Abbott, M.R. and R.M. Letelier. Decorrelation scales of chlorophyll as observed from bio-optical drifters in the California Current. *Deep-Sea Res.*, 45: 1639-1668.

- 1998 Letelier, R.M. and D.M. Karl. *Trichodesmium* spp. physiology and nutrient fluxes in the North Pacific subtropical gyre. *Aquatic Microbial Ecology* 15(3): 265-276.
- 1998 Essaias, W. et al. An overview of MODIS capabilities for ocean science observations. *IEEE Transactions of Geoscience and Remote Sensing* 36(4):1250-1265.
- 1997 Letelier, R.M., M.R. Abbott, and D.M. Karl. Chlorophyll natural fluorescence response to upwelling events in the Southern Ocean. *Geophysical Research Letters* 24(4): 409-412.
- 1997 Karl, D.M., R.M. Letelier, L. Tupas, J. Dore, J. Christian, and D. Hebel. The role of nitrogen fixation in biogeochemical cycling in the subtropical North Pacific Ocean. *Nature* 387: 533-538.
- 1996 Letelier, R.M. and M.R. Abbott. An analysis of chlorophyll fluorescence algorithms for the Moderate Resolution Imaging Spectrometer (MODIS). *Rem. Sens. Environ.* 58: 215-223.
- 1996 Letelier, R.M, D.M. Karl. The role of *Trichodesmium* spp. in the productivity of the subtropical North Pacific Ocean.. *Mar. Ecol. Prog. Ser.* 133:263-273.
- 1996 Letelier, R.M., J.E. Dore, C.D. Winn, and D.M. Karl. Seasonal and interannual variations in autotrophic carbon assimilation at Station ALOHA . *Deep-Sea Res.* 43:467-490.
- 1996 Karl, D.M., J.R. Christian, J.E. Dore, D.V. Hebel, R.M. Letelier, L.M. Tupas, and C.D. Winn. Seasonal and interannual variability in primary production and particle flux at station ALOHA. *Deep-Sea Res.* 43:539-568.
- 1995 Karl, D.M., R.M. Letelier, D. Hebel, L. Tupas, J. Dore, J. Christian, and C. Winn. Ecosystem changes in the North Pacific subtropical gyre attributed to the 1991-1992 El Niño. *Nature* 373:230-234.
- 1995 Winn, C.D., L. Campbell, J.R. Christian, R.M. Letelier, D.V. Hebel, J.E. Dore, L. Fujieki, and D.M. Karl. Seasonal variability in the phytoplankton community of the North Pacific Subtropical Gyre. *Global Biogeochem. Cycles* 9:605-620.
- 1993 Letelier, R.M, R.R. Bidigare, D.V. Hebel, M. Ondrusek, C.D. Winn, and D.M. Karl. Temporal variability of phytoplankton community structure based in pigment analysis. *Limnol. Oceanogr.* 38:1420-1437.

BOOK CHAPTERS and REPORT

2011. Hixon, M., Gregory, S. Robinson, W.D., Baker, S, Batchelder, H., Epps, C. Garcia, T.S., Haig, S. Letelier, R., Lytle, D., Menge, B., Miller, J., Noakes, D. Peterson, W. Rice, J., Rumrill, S., Schreck, C., Suryan, R., Systma, M. and White, A. (2010) Oregon's Fish and Wildlife in a Changing Climate. In: Oregon Climate Change Research Institute, The Oregon Climate Assessment Report K.D. Dello and P.W. Mote (eds). College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, Oregon.
2010. Karl, D.M. and R.M. Letelier. Seascapes microbial ecology: Habitat, structure, biodiversity and ecosystem function. In: S.E. Levin (ed.), *Guide to Ecology*, Princeton University Press.
- 2009, Karl, D.M. and R.M. Letelier. Marine habitats. Pp. 258-277. In: M. Schaechter (ed.), *Encyclopedia of Microbiology*, 3rd Edition, Elsevier.
- 2002 Karl, D.M., R. Bidigare, and R.M. Letelier. Sustained Seasonal and Interannual Variability of Phytoplankton Processes in the North Pacific Subtropical Gyre. In: P.J. Le B. Williams, D.N. Thomas, and C. Reynolds (eds.), *Phytoplankton Productivity: Carbon Assimilation in Marine and Freshwaters Ecosystems*, p. 222-264, Blackwell Science Ltd., Oxford, U.K.
- 1997 Abbott, M.R. and R.M. letelier. Going with the Flow - The use of Optical Drifters to Study Phytoplankton Dynamics. In: Mati Kahru and C. W. Brown (eds.), *Monitoring Algal Blooms: New Techniques for Detecting Large-Scale Environmental Change*, pp. 143-168, Landes Bioscience, USA.
- 1996 Karl, D.M., J.R. Christian, J.E. Dore, and R.M. Letelier. Microbial oceanography in the region west of the Antarctic Peninsula: Microbial Dynamics, Nitrogen Cycle and Carbon Flux. In: R.R. Ross et al.

(eds.), *Foundations for Ecological Research West of the Antarctic Peninsula*, pp. 303-332, American Geophysical Union, Antarctic Research Series 70.

1992 Karl, D.M., R.M. Letelier, D.V. Hebel, D.F. Bird, and C.V. Winn. Trichodesmium blooms and new nitrogen in the North Pacific gyre, In: E.J. Carpenter et al. (eds.), *Marine Pelagic Cyanobacteria: Trichodesmium and Other Diazotrophs*, pp. 219-237, Kluwer Academic Publishers, Netherlands.

1991 Lee, C., S. Henrichs, and R. Letelier. Organic inventories workshop report. In: D.C. Hurd and D.W. Spencer (eds), *Marine Particles: Analysis and Characterization*, pp. 101-117. American Geophysical Union, Geophysical Monograph 63.

Non peer reviewed (updated only to 1998)

1998 Bartlett, J.S., R.M., Abbott, R.M. Letelier, and J.C. Richman. Chlorophyll concentration estimated from irradiance measurements at fluctuating depths, in SPIE Ocean Optics XIV Conference Papers.

1997 Abbott, M.R and R.M. Letelier. Bio-optical drifters - Scales of variability of chlorophyll and fluorescence. Pp. 216-221. *Ocean Optics XIII*, SPIE volume 2963.

1996 Letelier, R.M., M.R. Abbott, and D.M. Karl. Southern Ocean Optical Drifter Experiment. *Ant. J. U.S.*, 30, 108-110.

1996 Letelier, R.M., M.R. Abbott, and D.M. Karl. Optical Drifter Deployments in the Southern Ocean, p. 189. *Abstract of the American Society of Limnology and Oceanography 1996 Ocean Sciences Meeting*, San Diego, California.

1996 Abbott, M.R., R.M. Letelier, and B.S. Barksdale. Lagrangian Statistics as Observed by Near-Surface Bio-Optical Drifters in the California, p.131. *Abstract of the American Society of Limnology and Oceanography 1996 Ocean Sciences Meeting*, San Diego, California.

1996 Hebel, D.V., D.M. Karl, J.R. Christian, J.E. Dore, R.M. Letelier, L.M. Tupas, and C.D. Winn. Seasonal and Interannual Variability in Primary Production and Particulate Flux at Sta. ALOHA, p. 85. *Abstract of the American Society of Limnology and Oceanography 1996 Ocean Sciences Meeting*, San Diego, California.

1996 Richman, J.G., R.M. Letelier, M.R. Abbott, and D. Pillsbury. Expandable optical mooring test at Station ALOHA (22°45'N;158°00'W), p. 64. *Abstract of the American Society of Limnology and Oceanography 1996 Ocean Sciences Meeting*, San Diego, California.

1996 Christian, J.R., J.E. Dore, D.M. Karl, and R.M. Letelier. Mixing and nutrient fluxes at the US-JGOFS Station ALOHA (22.45 N, 159.00 W), p. 65. *Abstract of the American Society of Limnology and Oceanography 1996 Ocean Sciences Meeting*, San Diego, California.

1994 Campbell, L., C. D. Winn, R. Letelier, D. Hebel and D. M. Karl. Temporal variability in phytoplankton fluorescence at Station ALOHA, p. 100. *Abstract of the American Society of Limnology and Oceanography 1994 Ocean Sciences Meeting*, San Diego, California.

1994 Bidigare, R. R., L. Campbell, M. E. Ondrusek, R. Letelier, D. Vaultot and D. M. Karl. Phytoplankton community structure at station ALOHA, p. 58. *Abstract of The Oceanography Society Pacific Basin Meeting*, Honolulu, Hawaii, July 1994.

1994 Letelier, R. M., J. Dore, C. D. Winn and D. M. Karl. Temporal variations in photosynthetic carbon assimilation efficiencies at Station ALOHA (22 45'N, 158 00'W), p. 60, *Abstract of The Oceanography Society Pacific Basin Meeting*, Honolulu, Hawaii, July 1994.

1993 Karl, D.M., J. Resing, G. Tien, and R. Letelier. Palmer LTER: Hydrogen peroxide in the Palmer LTER region: An introduction. *Ant. J. U. S.*, 28, 225-226.

1993 Resing, J., G. Tien, R. Letelier, D. Karl, and D. Jones. Palmer LTER: Hydrogen peroxide in the Palmer LTER region: II. Water column distribution. *Ant. J. U. S.*, 28, 227-229.

1992 Bidigare, R.R., L. Campbell, M. Ondrusek, R. Letelier, and D. Vaultot. 1992. Characterization of phytoplankton at Station ALOHA (22°45'N; 158°W) using HPLC, flow cytometry and immunofluorescence techniques. PACON 1992 Meeting, 1-5 June.

1992 Campbell, L., R.R. Bidigare, R. Letelier, M. Ondrusek, S. Hall, B. Tsai, and C. Winn. Phytoplankton population structure at the Hawaiian Ocean Time-series station. American Society for Limnology and Oceanography, *Aquatic Sciences Meeting, Santa Fe, NM*, February 1992.

1992 Winn, C. D., R. Lukas, D. Hebel, C. Carrillo, R. Letelier and D. M. Karl. Time-series measurements in the oligotrophic ocean: Resolving variability in the North Pacific subtropical gyre. In: N. Saxena (ed.), Recent advances in marine science and technology, 92, *Proceedings of the Pacific Ocean Congress (PACON)*, pp. 139-150.

1992 Karl, D., C. Winn, D. Hebel, R. Letelier, J. Dore and J. Christian. The U.S.-JGOFS Hawaii Ocean Time-Series (HOT) program. *American Society for Limnology and Oceanography Aquatic Sciences Meeting*, Santa Fe, NM, February 1992.

1991 Letelier, R., D. Karl, R. Bidigare, J. Christian, J. Dore, D. Hebel, and C. Winn. Temporal variability of phytoplankton pigments at the U.S.-JGOFS station ALOHA (22°45'N;158°W). *EOS, Transactions of the American Geophysical Union*, 72, 74.

1990 Karl, D., R. Letelier, D. Bird, D. Hebel, C. Sabine, and C. Winn. An Oscillatoria bloom in the oligotrophic North Pacific Ocean near the JGOFS station ALOHA. *EOS, Transactions of the American Geophysical Union*, 71, 177-178.

1990 Winn, C. D., D. Hebel, R. Letelier, D. Bird and D. Karl. Variability in biogeochemical fluxes in the oligotrophic central Pacific: Results of the Hawaii Ocean Time-Series Program. *EOS, Transactions of the American Geophysical Union*, 71, 190.

SOME RECENT INVITED SEMINARS, SYMPOSIA and WORKSHOPS (2005 to the present)

2005 Invited Speaker, American Association for the Advancement of Science Symposium “Anthropogenic warming and the oceans”. Title of talk: “Geochemical and biological changes in the North Pacific ocean due to anthropogenic warming”, Washington DC, February 2005.

2005 Invited Speaker, Department of Ecology, Universidad Católica de Chile. Title of talk: “Productividad oceanica y el rol de ecosistemas pelagicos en los ciclos de carbono”, Santiago, Chile, May 2005.

2005 Invited Speaker, NSF sponsored Ocean Carbon and Climate Change workshop, Woods Hole Oceanographic Institution. Title of talk: “New and Export Production in the North Pacific Subtropical Gyre: Lessons learned during the Hawaii Ocean Time-series program”, WHOI, August 2005.

2005 Invited speaker, Wenner-Gren Foundations International Symposium “Marine cyanobacteria: evolution, function, and genomes”. Title of talk: “N₂ fixation research in the North Pacific subtropical gyre”, Stockholm, Sweden, August 2005.

2005 Invited Lecturer, University of Rhodes Island summer course in Lagrangian Oceanography. Title of lecture: “Lagrangian studies in pelagic ecology”, Rhodes Island, August 2005.

2006 Invited speaker, PICES “Time Series of the Northeast Pacific: A symposium to mark the 50th anniversary of Line-P”, Victoria, BC, Canada, July 2006.

2006 Invited lecturer, University of Hawaii Agouron Summer Course in Microbial Oceanography July 2006. http://hahana.soest.hawaii.edu/agouroninstitute/course/symposium_movies.htm

2006 NASA Ocean Color workshop on Sampling protocols and standards, Montreal, Canada, 6-7 October, 2006.

2006 Invited Speaker, American Geophysical Union Fall Meeting. “Characterization of phytoplankton role in marine biogeochemical cycles: A need to go beyond biomass and productivity”, San Francisco, December 2006.

2007 Invited speaker, Royal Society of London, A Discussion meeting on Sequencing the Seas – accessing unknown microbial function. Title of lecture: “Microbial diversity and function at the ALOHA time-series”, London, UK, April-May 2007.

- 2007 Invited speaker, Aquafluo Conference: Chlorophyll Fluorescence in Aquatic Systems. Title of lecture: “Characterizing and interpreting the spatial and temporal variability of chlorophyll fluorescence derived from MODIS-Aqua”, Nove Hradky, Czech Republic, May-June 2007.
- 2009 Invited speaker, Agouron Microbial Oceanography summer course symposium “Carbon cycling in a changing climate”, Honolulu, Hawaii, June 7 2009.
- 2009 Invited speaker, Symposium and workshop on ocean acidification and marine microbes sponsored by the Gordon and Betty Moore Foundation, Honolulu, Hawaii, February 24-26th.
2010. NASA Ocean Deoxygenation workshop, Mountainview, CA, March 30th -April 2nd.
- 2011 Invited speaker, C-MORE Microbial Oceanography summer course, Honolulu, Hawaii, June 24 2011.
- 2012 Invited Speaker, Puerto de Ideas Festival Puerto de Ideas. Title “History of a drop of water”, Valparaiso, Chile.

TEACHING AND ADVISING at OSU

Student Advisory Committee

Name	Major	Degree	Starting date	Graduation Date
Alice M. Murphy	Oceanography	M.Sc.	1994	1996
Claudia Mengelt	Oceanography	M.Sc.	1997	2000
Lisa Eisner	Oceanography	Ph.D.	1997	2003
Megan Carney*	Oceanography	M.Sc.	2000	2004
Rachel Sanders*	Oceanography	M.Sc.	2000	2004
Michael Wetz	Oceanography	Ph.D.	2000	2006
Krista Longnecker	Oceanography	Ph.D.	2001	2004
Robert Morris	Microbiology	Ph.D.	2001	2004
Angelicque White*	Oceanography	Ph.D.	2001	2006
Guido Corno*	Oceanography	Ph.D.	2002	2006
Samuel Laney*	Oceanography	Ph.D.	2002	2006
Cristina Lopes	Oceanography	Ph.D.	2002	2006
Maria Kavanaugh	Zoology	M.Sc.	2003	2005
Heather Lintz	Botany	M.Sc.	2003	2005
Aaron Hartz	Oceanography	M.Sc.	2004	2010
Rachael Roberts	Botany	M.Sc.	2005	2007
Maria Kavanaugh*	Oceanography	Ph.D.	2005	2012
Luis Vinueza	Zoology	Ph.D.	2006	2010
Karen Breitlow*	Oceanography	Ph.D.	2006	Dropped
Tory Fitchett*	Oceanography	Ph.D.	2007	Dropped
Katie Watkins	Oceanography	M.S.	2008	2010
Nathan A. Krzyaniak	Nuclear Eng.	M.S.	2011	2013
Peter Gaube	Oceanography	Ph.D.	2008	2013
Marie Rose Gradoville*	Oceanography	Ph.D.	2010	Enrolled

* Major advisor or co-advisor

Non-OSU Students advised:

Dalhousie University, Canada

Christina Schallenberg	Oceanography	M.Sc.	2001	2003
CICESE, Mexico				
Jushiro Cepeda Morales	Oceanography	Ph.D.	2005	2010
University of Hawaii				
Binglin Li	Oceanography	Ph.D.	2005	2011

Post-Doctoral Students

Angelique E White 2006 - 2009
Amanda Whitmire 2009 - 2012
Alexander Galan 2010 - present

Courses Taught at OSU

OC 644 Phytoplankton Ecology (taught in spring 2008 and 2010, replacing OC 645)
OC 645 Phytoplankton Physiology (Last taught in winter 2006)
OC 678 Satellite Oceanography (team taught with Ted Strub, last taught in fall 2010, 2012 and 2013)
OC 649-1 Special Topic in Oceanography – Bio-optical Oceanography (team taught with Timothy Cowles)
I also offer a Special Topics seminar every other year where we discuss papers related to the Philosophy of Science (last taught in spring 2007).
OC 540 Biological Oceanography (team taught with Charlie Miller during winter 2008-2009)
OC 440 Biological Oceanography (taught in spring 2011)
OC 599 Ocean Ecology (taught in Spring 2012 with Evelyn Sherr and Hal Batchelder, 2013 with Batchelder)

RESEARCH

Funded proposals (Principal Investigator in bold)

Title	Agency	Duration	Amount
Collaborative Research: Hawaii Ocean Time-series Program: Biogeochemistry and Ecology Components	NSF	08/03-07/08	\$402,736
Collaborative: US-GLOBEC NEP Phase IIIa-CCS: Coupled physical/biological dynamics in the Northern California Current System (with T Cowles and others)	NSF	01/05-12/07	\$1,156,039
Development of algorithms for prediction of coastal CO ₂ air-sea fluxes using remote-sensing (with B Hales and P Strutton)	NASA	01/05-03/09	\$976,184
Collaborative: US-GLOBEC NEP Phase IIIa-CCS: Latitudinal variation of upwelling, retention, nutrient supply and freshwater effects in the California Current System (with M Kosro and others)	NOAA	12/04-05/09	\$485,281
The Coastal Ocean Applications and Science Team (COAST): Science Support for using GOES-R/HES for Imaging Coastal Waters (with M. Abbott and others)	NOAA	01/05-12/07	\$1,022,194
STC Center for Microbial Ecology: Research And Education (C-MORE, OSU component)	NSF	08/05-07/10	\$721,414
STC Science and Technology Center for Coastal Margin Observation and Prediction (OSU Bio-optics component)	NSF	07/05-06/10	\$750,000
Phosphorus Bioavailability and its Effect on The Role of <i>Trichodesmium</i> spp. in Elemental Cycling, Ecosystem Structure, and Export Production in the NPSG	NSF	07/06-06/09	\$800,000
The Coastal Ocean Applications and Science Team (COAST): Risk Reduction Activities Using GOES-R/HES for Imaging Coastal Waters (with C. Davis and others)	NOAA	05/06-04/09	\$4,500,000
Collaborative Research: Mechanisms Controlling Upper Ocean Carbon Fluxes in	NSF	10/06-09/09	\$367,758

North Pacific			
Microbial Oceanography of the oxygen Deficient waters of the eastern tropical south Pacific	Agouron	07/07-12/10	\$1,138,919
Microbial Diversity and activity in the Seasonal hypoxic coastal waters of central Chile and Oregon: A comparative study	GBMF	11/08-10/11	\$5,000,306
Collaborative Research: Oceanic Diazotroph Community structure and activity in a high Carbon dioxide world	NSF	02/09-01/12	\$231,667
Collaborative Research: The Hawaii Ocean Time-series (HOT): Biogeochemical Variability in the North Pacific Subtropical Gyre	NSF	08/08-07/11	\$395,269

Major Seagoing Expeditions

1984-1992: 4 Research in Antarctic Coastal Ecosystem Rates (RACER) cruises. This program was a precursor of the PALMER-LTER program. The length of each cruise varied between 4 weeks (in 1992) and 2 month (in 1984). All cruises were done onboard the R/V Polar Duke.

1988-1994: Hawaii Ocean Time-series (HOT) program. During this period I participated in at least 36 cruises in the North Pacific. The average duration of these cruises was 5 days. Several research vessels were used during this period including the R/V Moana Wave, the R/V Wecoma, the R/V Alpha Helix, the R/V Knorr, and the Kaimalino.

1994-Present: Hawaii Ocean Time-series. Sporadic participation in order to implement experiments and develop sampling protocols.

1997-1998: Two cruises aboard the R/V Wecoma to study with T. Cowles and B and E Sherr the dynamics of small-scale structures in the water-column.

1998: US Southern Ocean JGOFS, aboard the R/V Revelle

1999: MODIS validation cruise aboard the R/V Melville.

2000-2002: GLOBEC North East Pacific California Current System Survey aboard the R/V Wecoma

2001-2002: COAST cruise aboard the R/V Thompson in May-June (2001) and aboard the R/V Revelle (2002)

2007 and 2008: C-MORE summer cruise on board the R/V Kilo Moana (Chief Scientist in 2007)

2009: Open Ocean trial of upwelling pumps.

2010: Big Rapa South Pacific cruise onboard R/V Melville.

2010 and 2011. Diazotrophy in an enhanced CO₂ world. North Pacific Subtropical gyre onboard R/V Kilo Moana.

SERVICE ACTIVITIES

University Service

- 2001 COAS Promotion and Tenure Committee
- 2001 COAS Faculty Search Committee
- 2001-2003 COAS Computer Committee (Chair)
- 2002-2003 OSU Satellite Team #3: Role and Function of Centers, Institutes and Programs
- 2003 COAS Teaching Review Committee
- 2003 COAS Faculty Search Committee
- 2003 COAS Faculty Advisory Committee / Scientific Facilities Committee / Ship Operations Committee
- 2004 COAS Faculty Advisory Committee / Scientific Facilities Committee
- 2005 COAS MG&G and Geobiology Faculty Search Committee
- 2005 COAS Teaching Review Committee
- 2006 COAS Ship Operations Committee
- 2007 COAS Promotion and Tenure Committee
- 2008 COAS Ship Operations Committee

2008 COAS 50th Anniversary Organizing Committee
2009 COAS Ship Operations Committee
2010-2013 OSU Research Council Committee (Chair for 2011 and 2012 fiscal year)
2011 COAS Promotion and Tenure Committee
2011 OSU Research Council Chair
2012 CEOAS Dean Advisory Committee
2013 CEOAS Strategic Planning and Hiring Committee

Professional Service

Member, NSF Joint Global Ocean Fluxes Study Synthesis and Modeling Program review panel (1997 and 2000)
Member, FONDAP ocean program review panel (CONICYT-Chile 1997 and 1999)
Member, CONSOLIDER review panel for Spain's large scale Science and Technology proposals (2009 and 2010)
Served since 1997 in various Proposal Review Panels for NSF Biological and Chemical Oceanography and NASA Oceans and Ice and earth Science programs (last in 2008).
Ecosystem's Associate Editor (2008-2010)
Reviewer for Limnology and Oceanography, Nature, PNAS, Marine Ecology Progress Series, JGR, GRL, Photosynthesis Research, Deep-Sea Research, ISME, Applied Optics.

Public Service

Member of the Corvallis Police Department Advisory Panel on Minority issues (1996-1997).
Member of Saint Mary's Parish Social Justice Commission (1997-1998)
Board Member and Referee Administrator for the American Youth Soccer Organization AYSO Region 149 (2005-Present)
Member of Saint Mary's Parish Hispanic Advisory Commission (2005-Present)