

Matthew J. Church
Department of Oceanography
University of Hawaii at Mānoa
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EDUCATION

2003 The College of William and Mary, Ph.D., Marine Science
1999 The College of William and Mary, M.Sc., Marine Science
1994 The Evergreen State College, B.Sc.

ACADEMIC APPOINTMENTS

2011-present **Associate Professor** (with tenure), Department of Oceanography,
University of Hawaii
2007-2011 **Assistant Professor**, Department of Oceanography, University of
Hawaii
2004-2007 **Assistant Researcher**, University of Hawaii
2003-2004 **Postgraduate Research Scientist**, University of California Santa Cruz
1996-2002 **Graduate Research Assistant**, The College of William and Mary,
School of Marine Science

AWARDS AND SCHOLARSHIPS

2015 Recipient, Yentsch-Schindler Early Career Award, Association for the
Sciences of Limnology and Oceanography
2015 Recipient, Klaus Wrytki Graduate Teaching Award, Department of
Oceanography, University of Hawaii
2009 Co-recipient of 2009 Cozzarelli Prize from the *Proceedings of*
the National Academy of Sciences for Dore et al. (2009) "Physical and
biogeochemical modulation of ocean acidification in the central North
Pacific"
2003 DIALOG V Symposium Participant
2002 Best Student Publication Award, The College of William and Mary,
School of Marine Science
2000 Best Student Publication Award, The College of William and Mary,
School of Marine Science
1999-2001 Dean's Student Fellowship, The College of William and Mary, School
of Marine Science
1999 National Science Foundation Antarctic Service Medal

GRANTS:

Current Research and Education Support

CURRICULUM VITAE - Matthew J. Church

- “Simons Collaboration on Ocean Processes and Ecology (SCOPE)”. Funding agency: Simons Foundation with pass through UH Foundation. Project period: 07/2014-06/2017. Award: \$900,000.
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- “The Hawaii Ocean Time-series (HOT): Sustaining ocean ecosystem and climate observations in the North Pacific Subtropical Gyre”. Funding Agency: National Science Foundation. PI: M.J. Church (UH); co-P.I.s: D. Karl (UH), R. Bidigare (UH), R. Lukas (UH). Project period: 08/2013-07/2018. Award: \$8,148,909.
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- “Dimensions: Collaborative Research: Functional diversity of N metabolism and role in controlling marine phytoplankton community biodiversity”. Funding Agency: National Science Foundation. P.I.: J. Zehr (UCSC), Co P.I.s: M.J. Church (UH), M. Mills (Stanford U.), Z. Kolber (UCSC). Project period: 01/2012-12/2015. Award to UH: \$341,405.
- “Benthic biological baseline studies in the CCZ: Megafaunal, macrofaunal, microbial and larval studies, and project oversight”. Funding agency: Seabed Resources Development, Ltd. P.I.: C. Smith (UH), co-PIs: J. Drazen (UH), M. Church (UH), E. Vetter (HPU). Project period: 03/2013 - 02/2018. Award: \$1,304,862.
- “Center for Microbial Oceanography: Research and Education (C-MORE)” Funding Agency: National Science Foundation. P.I.: D.M. Karl (UH), co-P.I.’s J. Zehr (UCSC), S. Chisholm (MIT), E. DeLong (MIT). Church (Investigator). Project period: 08/2006-07/2016. Award: ~\$100,000/year supporting Church’s research.
- “Pacific Marine Environmental Laboratory (PMEL) and the Joint Institute for Marine and Atmospheric Research (JIMAR) at the University of Hawai’i at Manoa Ocean Carbon Research”. Funding agency: National Oceanic and Atmospheric Administration. P.I.: M. Church. Project period: 07/2014 - 06/2015. Total award: \$5011.

Past Research Support

- “Oceanic diazotroph community structure and activities in a high CO₂ world”; Funding Agency: National Science Foundation. P.I.: M.J. Church (UH), co-P.I. R. Letelier (OSU). Project Period: 02/2009-01/2013. Award: \$439,152.
- “Pacific Marine Environmental Laboratory (PMEL) and the Joint Institute for Marine and Atmospheric Research (JIMAR) at the University of Hawai’i at Manoa Ocean Carbon Research”. Funding agency: National Oceanic and Atmospheric Administration. Project period: 07/2013-06/2014. Award: \$4,649.
- “The Hawaii Ocean Time-series (HOT): Sustaining ocean ecosystem and climate observations in the North Pacific Subtropical Gyre”. Funding Agency: National Science Foundation. PI: M.J. Church (UH); co-P.I.s: D. Karl (UH), R. Bidigare (UH), R. Lukas (UH). Project period: 08/2009-07/2013. Award: \$6,201,878.

CURRICULUM VITAE - Matthew J. Church

- “Microbial Oceanography: Summer training course”. Funding agency: Gordon and Betty Moore Foundation. P.I.: D. M. Karl; co-P.I.: M.J. Church. Project period: 05/2010-04/2013. Award: \$453,578.
- “Pacific Marine Environmental Laboratory (PMEL) and the Joint Institute for Marine and Atmospheric Research (JIMAR) at the University of Hawai’i at Manoa Ocean Carbon Research”. Funding agency: National Oceanic and Atmospheric Administration. Project period: 10/2012-12/2013. Award: \$34,543.
- “Optimization of algae lipid yields in mass culture by regulation of growth physiology and microbial ecology”; subcontract from DARPA to Scripps Institution of Oceanography with pass through to UH; Project period: 03/2010- 03/2010, Award: \$29,988.
- “Collaborative: Biology and Ecology of Newly Discovered Diazotrophs in the Open Ocean”. Funding Agency: National Science Foundation. PI: J. Zehr (UCSC), co-PIs: M. Church (UH), J. Montoya (Ga. Tech). Project Period: 10/2004-07/2009. Subaward: \$230,673.

PUBLICATIONS:

Articles and Invited Book Chapters

* **NOTE:** Single underline indicates graduate student working under Church’s mentorship; double underline indicates undergraduate student working under Church’s mentorship; asterisk (*) indicates post-doc working under Church’s mentorship.

- *Articles submitted and in review*
 1. Björkman, K.M., M.J. Church, J.K. Doggett, D.M. Karl. Differential assimilation of inorganic carbon and leucine by *Prochlorococcus* and non-pigmented bacteria in the oligotrophic North Pacific Subtropical Gyre. In review. *Applied and Environmental Microbiology*.
 2. Viviani, D.A., D.M. Karl, **M.J. Church**. Photosynthetic production of dissolved and particulate organic carbon in the North Pacific Subtropical Gyre. In review. *Marine Ecology Progress Series*.
 3. 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. In review. *Journal Geophysical Research – Oceans*.
 4. Wilson, S.T., B. Barone, F. Ascani, R. Bidigare, **M. Church**, D.del Valle, S. Dyrman, S. Ferron, J. Fitzsimmons, L. Juranek, Z. Kolber, R. Letelier, S. Martinez-Garcia, D. Nicholson, K. Richards, Y. Rii, M. Rouco, D. Viviani, A. White, J. Zehr, D. Karl. Short-term variability in euphotic zone biogeochemistry and primary productivity at Station ALOHA: A case study of summer 2012. In review. *Global Biogeochemical Cycles*.

5. Bryant, J.A., J.M. Eppley, D.M. Karl, **M.J. Church**, E.F. DeLong. The influence of wind and solar radiation on microbial community diversity in the North Pacific Subtropical Gyre. In review *The ISME Journal*.

- *Articles and invited book chapters published or in press*

2015

6. *Barone, B., R.R. Bidigare, **M.J. Church**, D.M. Karl, R.M. Letelier, A.E. White. 2015. Particle distributions and dynamics in the euphotic zone of the North Pacific Subtropical Gyre. In press. *Journal Geophysical Research - Oceans*.

2014

7. Dore, J. E., **M. J. Church**, D. M. Karl, D. W. Sadler and R. M. Letelier. 2014. Paired windward and leeward biogeochemical time series reveal consistent surface ocean CO₂ trends across the Hawaiian Ridge. *Geophysical Research Letters*, 41: 6459-6467.
8. Lincoln, S.A., B. Wai, J.M. Eppley, **M. J. Church**, R. E. Summons, E. F. DeLong. 2014. Reply to Schouten et al.: Marine Group II planktonic Euryarchaeota are significant contributors to tetraether lipids in the ocean. *Proceedings of the National Academy of Sciences, USA*, doi:10.1073/pnas.1416736111.
9. Karl, D.M. and **M.J. Church**. 2014. Microbial oceanography and the Hawaii Ocean Time-series programme. *Nature Reviews Microbiology*, 12: 699–713.
10. Lincoln, S.A., B. Wai, J.M. Eppley, **M.J. Church**, R. E. Summons, E.F. DeLong. 2014. Planktonic Euryarchaeota are a significant source of archaeal tetraether lipids in the ocean. *Proceedings of the National Academy of Sciences, USA*, 111: 9858–9863.
11. *Böttjer, D., D. M. Karl, R. M. Letelier, D.A. Viviani, **M. J. Church**. 2014. Experimental assessment of diazotroph responses to elevated seawater pCO₂ in the North Pacific Subtropical Gyre. *Global Biogeochemical Cycles*, 28: 601-616.
12. Bates, N., Y. Astor, **M. Church**, K. Currie, J. Dore, M. Gonzalez-Davila, L. Lorenzoni, F. Muller-Karger, J. Olafsson, J. M. Santana-Casiano. 2014. Changing ocean chemistry: A time-series view of ocean uptake of anthropogenic CO₂ and ocean acidification. *Oceanography*, 27: 12-15.

13. Gradoville, R., A. White, D. Böttjer*, **M. Church**, R. Letelier. 2014. Diversity trumps acidification: No carbon dioxide enhancement of *Trichodesmium* community nitrogen or carbon fixation at Station ALOHA. *Limnology and Oceanography*, 59: 645-659.
14. Robidart, J. C., **M. J. Church**, J. P. Ryan, F. Ascani, S. T. Wilson, D. Bombar, R. Marin III, K. J. Richards, D. M. Karl, C. A. Scholin and J. P. Zehr. 2014. Ecogenomic sensor reveals controls on N₂-fixing microorganisms in the North Pacific Ocean. *The ISME Journal*, 8: 1175-1185.
15. Durham, B. P., J. Grote, K. A. Whittaker, S. J. Bender, H. Luo, S. L. Grim, J. M. Brown, J. R. Casey, A. Dron, L. Florez-Leiva, A. Krupke, C. M. Luria, A. H. Mine, O. D. Nigro, S. Pather, A. Talarmin, E. K. Wear, T. S. Weber, J. M. Wilson, **M. J. Church**, E. F. DeLong, D. M. Karl, G. F. Steward, J. M. Eppley, N. C. Kyripdes, S. Schuster and M. S. Rappe. 2014. Draft genome sequence of marine alphaproteobacterial strain HIMB11, the first cultivated representative of a unique lineage within the Roseobacter clade possessing an unusually small genome. *Standards in Genomic Sciences*, 9: 632-645.

2013

16. **Church, M.J.**, M. Lomas, F.M. Karger. 2013. Sea Change: Charting the course for biogeochemical ocean time series research in a new millennium. *Deep-Sea Research II*, 93: 2-15.
17. Li, B., D. Karl, R. Letelier, R. Bidigare, and **M.J. Church**. 2013. Temporal and depth variability of chromophytic phytoplankton in the North Pacific Subtropical Gyre. *Deep-Sea Research II*. 93: 84-95.
18. Pasulka, A.L., M.R. Landry, D.A.A. Taniguchi, A.G. Taylor, **M.J. Church**. 2013. Temporal dynamics of phytoplankton and heterotrophic protists at station ALOHA. *Deep-Sea Research II*, 93: 44-57.
19. **Church, M.J.**, D. Böttjer*. 2013. Diversity, ecology, and biogeochemical influence of N₂ fixing microorganisms in the sea. In: Levin S.A. (ed.) *Encyclopedia of Biodiversity*, second edition, Volume 2, pp. 608-625. Waltham, MA: Academic Press.

2012

20. Hunt, D., Y. Lin, **M.J. Church**, D.M. Karl, S.G. Tringe, L.K. Izzo, Z.I. Johnson. 2012. Uncoupling of abundance and activity of bacterioplankton in open ocean surface waters. *Applied and Environmental Microbiology*, 79: 177-184.

21. Wilson, S.T., D. Böttjer*, **M.J. Church**, D.M. Karl. 2012. Comparative assessment of nitrogen fixation methodologies conducted in the oligotrophic North Pacific Ocean. *Applied and Environmental Microbiology*, 78: 6516-6523.
22. Luo, Y. et al. 2012. Database of diazotrophs in global ocean: Abundances, biomass and nitrogen fixation rates. *Earth System Science Data (ESSD)*, 5: 47-106.
23. Luo, Y., S.C. Doney, M.A.M. Friedrichs, **M.J. Church**, D.M. Karl, H.W. Ducklow. 2012. Interpreting the decadal primary production increase in the North Pacific Subtropical Gyre. *Journal of Geophysical Research: Biogeosciences*, 117, G03019, doi:10.1029/2011JG001830.
24. Juarnek, L. P. Quay, R. Feely, D. Lockwood, D. Karl, **M. Church**. 2012. Biological regulation of North Pacific air-sea CO₂ flux: Evidence from dissolved oxygen isotopes and O₂/Ar. *Journal of Geophysical Research: Oceans*, 117: C05022, doi:10.1029/2011JC007450.
25. Guidi, L., P.H.R. Calil, S. Duhamel, K.M. Bjorkman, G.A. Jackson, **B. Li**, **M.J. Church**, S.C. Doney, L. Stemmann, S. Tozzi, Z.S. Kolber, K.J. Richards, A.A. Fong, R.M. Letelier, G. Gorsky, D.M. Karl. 2012. Does eddy-eddy interaction promote phytoplankton production and carbon export? *Journal of Geophysical Research*, 117: G02024, doi:10.1029/2012JG001984.
26. Karl, D.M., **M.J. Church**, J.E. Dore, R.M. Letelier, C. Mahaffey. 2012. Predictable and efficient carbon sequestration in the North Pacific Ocean supported by symbiotic nitrogen fixation. *Proceedings of the National Academy of Sciences USA*, 109: 1842-1849.
27. Friedrich, T., A. Timmermann, A. Abe-Ouchi, N. R. Bates, M. O.Chikamoto, **M.J. Church**, J. E. Dore, D. K. Gledhill, M. Gonzalez-D'Avila, M. Heinemann, T. Ilyina, J. H. Jungclaus, E. McLeod, A. Mouchet, J. M. Santana-Casiano. 2012. Detecting regional anthropogenic trends in ocean acidification against natural variability. *Nature Climate Change*, 2: 167-171.

2011

28. Grote, J., C. Bayindirli, K. Bergauer, P. Carpintero de Moraes, H. Chen, L. D'Ambriso, B. Edwards, B. Fernandez-Gomez, M. Hamisi, R. Logares, D. Nguyen, **Y. M. Rii**, E. Saeck, C. Schutte, B. Winder, **M. J. Church**, G. F. Steward, D. M. Karl, E. F. DeLong, J. M. Eppley, S. Schuster, N. C. Kyrpides, M. S. Rappé. 2011. Complete genome sequence of strain HIMB100, a cultured representative of the SAR116 clade of marine Alphaproteobacteria. *Standards in Genomic Sciences*, 5: 269-278.

29. Li, B., R. Letelier, D. Karl, **M.J. Church**. 2011. Size-dependent photosynthetic variability in the North Pacific Subtropical Gyre. *Marine Ecology Progress-Series*, 440: 27-40.
30. Brzezinski, M.A., J.W. Krause, **M.J. Church**, D.M. Karl, B. Li, J.L. Jones, B. Updyke. 2011. The annual silica cycle of the oligotrophic North Pacific Ocean. *Deep-Sea Research I*, 58: 988-1001.
31. Watkins-Brandt, K.S., R.M. Letelier, Y.H. Spitz, **M.J. Church**, D. Böttjer*, A.E. White. 2011. Enhancement of nitrogen and carbon fixation in the oligotrophic North Pacific via inorganic and organic phosphorus additions. *Marine Ecology Progress-Series*, 432: 17-29.
32. Viviani, D.A., K.M. Bjorkman, D.M. Karl, **M.J. Church**. 2011. Plankton metabolism of the surface waters in the tropical and subtropical Pacific Ocean. *Aquatic Microbial Ecology*, 62: 1-12.

2010

33. Luo, Y., H.W. Ducklow, M.A.M. Friedrichs, S.C. Doney, **M.J. Church**. 2010. Oceanic heterotrophic bacterial nutrition by semilabile DOM as revealed by data assimilative modeling. *Aquatic Microbial Ecology*, 60: 273-287.
34. Saba, V. S., M. A. M. Friedrichs, M.-E. Carr, D. Antoine, R. A. Armstrong, I. Asanuma, O. Aumont, N. R. Bates, M. J. Behrenfeld, V. Bennington, L. Bopp, J. Bruggeman, E. T. Buitenhuis, **M.J. Church**, A. M. Ciotti, S. C. Doney, M. Dowell, J. Dunne, S. Dutkiewicz, W. Gregg, N. Hoepffner, K. J. W. Hyde, J. Ishizaka, T. Kameda, D. M. Karl, I. Lima, M. W. Lomas, J. Marra, G. A. McKinley, F. Mélin, J. K. Moore, A. Morel, B. Salihoglu, M. Scardi, T. J. Smyth, S. Tang, J. Tjiputra, J. Uitz, M. Vichi, K. Waters, T. K. Westberry, A. Yool. 2010. The challenges of modeling depth-integrated marine primary productivity over multiple decades: A case study at BATS and HOT. *Global Biogeochemical Cycles*, doi:10.1029/2009GB003655.
35. **Church, M.J.**, B. Waj, D.M. Karl, E.F. DeLong. 2010. Transcriptional activities and distributions of ammonia oxidizing Archaea in the Pacific Ocean. *Environmental Microbiology*, 12: 679-688.

2009

36. **Church, M.J.** 2009. The trophic tapestry of the sea. *Proceedings of the National Academy of Sciences USA*, 106: 15519–15520.

37. Dore, J.E., R. Lukas, D.W. Sadler, **M.J. Church**, D.M. Karl. 2009. Physical and biogeochemical modulation of ocean acidification in the central North Pacific. *Proceedings of the National Academy of Sciences USA*, 106: 12235-12240. *NOTE: This paper received the **Cozzarelli Prize in the Physical Sciences from *Proceedings of the National Academy of Sciences***.
38. Eiler, A., D.H. Hayakawa, **M.J. Church**, D.M. Karl, M.S. Rappé. 2009. Dynamics of the SAR11 bacterioplankton lineage in relation to environmental conditions in the oligotrophic North Pacific subtropical gyre. *Environmental Microbiology*, 11: 2291–2300.
39. **Church, M.J.**, C. Mahaffey, R.M. Letelier, R. Lukas, J.P. Zehr, D.M. Karl. 2009. Physical forcing of nitrogen fixation and diazotroph community structure in the North Pacific Subtropical Gyre. *Global Biogeochemical Cycles*, 23: doi:10.1029/2008GB003418.

2008

40. Karl, D.M., R.M. Bidigare, **M.J. Church**, J.E. Dore, R.M. Letelier, C. Mahaffey. 2008. The Nitrogen Cycle in the North Pacific Trades Biome: An evolving paradigm. In: D. Capone, D. Bronk, M. Mulholland, and E. Carpenter (eds.), *Nitrogen in the Marine Environment*, 2nd Edition, pp. 705-769. Academic Press, Burlington, Massachusetts.
41. Karl, D.M., L. Beversdorf, K.M. Björkman, **M.J. Church**, A. Martinez, E.F. DeLong. 2008. Aerobic production of methane in the sea. *Nature Geoscience*, 1: 473-478.
42. Grabowski, M., **M.J. Church**, D.M. Karl. 2008. Nitrogen fixation rates and controls at Station ALOHA. *Aquatic Microbial Ecology*, 52: 175-183.
43. **Church, M.J.** 2008. Resource control of bacterial dynamics in the sea. In *Microbial Ecology of the Oceans*, [ed] D.L. Kirchman. John Wiley & Sons, Inc. New Jersey.
44. **Fong, A.A.**, D.M. Karl, R. Lukas, R.M. Letelier, J.P. Zehr, **M.J. Church**. 2008. Nitrogen fixation in an anticyclonic eddy in the oligotrophic North Pacific Ocean. *The ISME Journal*, 2: 663-676.
45. **Church, M.J.**, K.M. Björkman., D.M. Karl, M.A. Saito, and J.P. Zehr. 2008. Regional distributions of nitrogen fixing bacteria in the Pacific Ocean. *Limnology and Oceanography*, 53: 63-77.
46. Dore, J.D., R.M. Letelier, **M.J. Church**, R. Lukas, D.M. Karl. 2008. Summer phytoplankton blooms in the oligotrophic North Pacific Subtropical

Gyre: Historical perspective and recent observations. *Progress in Oceanography*, 76: 2-38.

2007

47. Goebel, N.L., C.A. Edwards, **M.J. Church**, J.P. Zehr. 2007. Modeled contributions of three types of diazotrophs to nitrogen fixation at Station ALOHA. *The ISME Journal*, 1: 606–619.
48. Mincer, T.J., **M.J. Church**, L.T. Taylor, C. Preston, D.M. Karl, E.F. DeLong. 2007. Quantitative distribution of presumptive archaeal and bacterial nitrifiers in Monterey Bay and the North Pacific Subtropical Gyre. *Environmental Microbiology*, 9: 1162–1175.
49. Zehr, J.P., J. P. Montoya, C. M. Short, A. Hansen, B. D. Jenkins, **M. J. Church**, D. M. Karl. 2007. Nitrogenase gene expression in the North Pacific subtropical gyre. *Limnology and Oceanography*, 52: 169–183.
50. Corno, G., D.M. Karl, **M.J. Church**, R.M. Letelier, R. Lukas, M.R. Abbott. 2007. The impact of climate forcing on ecosystem processes in the North Pacific Subtropical Gyre. *Journal of Geophysical Research: Oceans*, 112: C04021, doi:10.1029/2006JC003730
51. McAndrew, P., K. Bjorkman, **M. Church**, P. Morris, N. Jachowski, P.J. leB Williams, D. Karl. 2007. The net metabolic balance of the open ocean: A test of the nutrient enrichment hypothesis. *Marine Ecology-Progress Series*, 332: 63-75.

2006

52. **Church, M.J.**, H.W. Ducklow, R.M. Letelier, D.M. Karl. 2006. Temporal dynamics in photoheterotrophic picoplankton productivity in the subtropical North Pacific Ocean. *Aquatic Microbial Ecology*, 45: 41-53.
53. Zehr, J.P., **M.J. Church**, P. Moisaner. 2006. Diversity, distribution, and biogeochemical significance of nitrogen fixing microorganisms in anoxic and suboxic oceans. In NATO Science Series Book Past and Present Water Column Anoxia [ed.] L. Neretin, pp. 337-372.

2005

54. **Church, M.J.**, C.M. Short, B.D. Jenkins, D.M. Karl, J.P. Zehr. 2005. Temporal patterns of nitrogenase (*nifH*) gene expression in the oligotrophic North Pacific Ocean. *Applied Environmental Microbiology*, 71: 5362-5370.

55. **Church, M.J.**, B.D. Jenkins, D.M. Karl, J.P. Zehr. 2005. Vertical distributions of nitrogen-fixing phylotypes at Station ALOHA in the oligotrophic North Pacific Ocean. *Aquatic Microbial Ecology*, 38: 3-14.

1997-2004

56. **Church, M.J.**, H.W. Ducklow, D.M. Karl. 2004. Light dependence of ³H-leucine incorporation in the oligotrophic North Pacific Ocean. *Applied and Environmental Microbiology*, 70: 4079-4087.
57. Zehr, J. P., L.L. Crumbliss, **M.J. Church**, E.O. Omoregie, B.D. Jenkins. 2003. Nitrogenase genes in commercial PCR and RT-PCR reagents and implications for studies of diversity of nitrogenase and other genes. *Biotechniques*, 35: 996-1005.
58. **Church, M.J.**, E.F. DeLong, H.W. Ducklow, M.B. Karner, C.M. Preston, D.M. Karl. 2003. Abundance and distributions of planktonic *Archaea* and *Bacteria* in the waters west of the Antarctic Peninsula. *Limnology and Oceanography*, 48: 1893-1902.
59. **Church, M.J.**, H.W. Ducklow, D.M. Karl. 2002. Multiyear increases in dissolved organic matter inventories at Station ALOHA in the North Pacific Subtropical Gyre. *Limnology and Oceanography*, 47:1-10.
60. Ducklow, H.W., C. Carlson, **M. Church**, D. Kirchman, D. Smith, G. Steward. 2001. The seasonal development of the bacterioplankton bloom in the Ross Sea, Antarctica, 1994-1997. *Deep-Sea Research II*, 48: 4199-4221.
61. **Church, M.J.**, D. A. Hutchins, H.W. Ducklow. 2000. The limitation of bacterial growth by dissolved organic matter and iron in the Southern Ocean. *Applied and Environmental Microbiology*, 66: 455-466.
62. Falkner, K.K., **M. Church**, C.I. Measures, G. LeBaron, D. Thouson, C. Jeandel, M.C. Stordal, G.A. Gill, R. Mortlock, P. Froelich, L.H. Chan. 1997. Minor and trace element chemistry of Lake Baikal, its tributaries, and surrounding hot springs. *Limnology and Oceanography*, 42: 329-345.

Non-Peer Reviewed Publications:

- Church, M.J.**, R. Bidigare, J. Dore, D. Karl, M. Landry, R. Letelier, R. Lukas. 2009. The Ocean is HOT: 20 years of Hawaii Ocean Time-Series Research in the North Pacific Subtropical Gyre. *Ocean Carbon Biogeochemistry Newsletter* 2: 1-5.

Church, M.J., K.M. Björkman, D.M. Karl. 2013. HOT turns 25: A quarter century of Hawaii Ocean Time-series measurements in the North Pacific Subtropical Gyre. *Ocean Carbon Biogeochemistry Newsletter* 6: 1-6.

STUDENT ADVISING AND MENTORSHIP:

Postdoctoral Fellows:

- Dr. Jennifer Edmonds, 2007-2008; currently Assistant Professor at University of Alabama
- Dr. Daniela Böttjer, 2009-present
- Dr. Benedetto Barone, 2012-present
- Dr. Christine Shulse, 2013-present
- Dr. Stuart Goldberg, 2013-present

Graduate Students Supervised as Major Advisor:

- Allison Fong, Department of Oceanography, University of Hawaii (M.S.)-degree received November, 2006.
- Donn Viviani, Department of Oceanography, University of Hawaii (M.S.)-degree received June, 2009.
- Binglin Li, Department of Oceanography, University of Hawaii (Ph.D.)-degree received June 2011.
- Brenner Wai, Department of Oceanography, University of Hawaii (M.S.)-degree received December 2013.
- Sara Thomas, Department of Oceanography, University of Hawaii (M.S.)- degree received April 2014.
- Donn Viviani, Department of Oceanography, University of Hawaii (Ph.D.)-current
- Yoshimi Rii, Department of Oceanography, University of Hawaii (Ph.D.)-current

Undergraduate Student Mentor:

- Brenner Wai, Global Environmental Sciences, University of Hawaii (B.S., 2010)
- Christina Johnson, Global Environmental Sciences, University of Hawaii (B.S., 2013)
- Lisa Hall, Global Environmental Sciences, University of Hawaii (2014-present)

Graduate Student Thesis Committee Member:

- Marcie Grabowski, Department of Oceanography, University of Hawaii, M.S. degree received December 2005
- Trisha McAndrew, Department of Oceanography, University of Hawaii, M.S. degree received November 2006
- Allison Fong, Department of Oceanography, University of Hawaii, M.S. degree received November 2006
- Tara Clemente, Department of Oceanography, University of Hawaii, M.S. degree received June 2007
- Daniel Wagner, Department of Oceanography, University of Hawaii, M.S. degree received March 2008

CURRICULUM VITAE - Matthew J. Church

- Anna Ritchie, Department of Oceanography, University of Hawaii, M.S. degree received May 2008
- Lucas Beversdorf, Department of Oceanography, University of Hawaii, M.S. degree received June 2008
- Carli Bober, Department of Oceanography, University of Hawaii, M.S. degree received December 2008
- Amy Apprill, Department of Oceanography, University of Hawaii, Ph.D degree received June 2009
- Jennifer Brum, Department of Oceanography, University of Hawaii, Ph.D degree received June 2009
- Donn Viviani, Department of Oceanography, University of Hawaii, M.S. degree received June 2009
- Tracy Campbell, Department of Oceanography, University of Hawaii, M.S. degree received May 2009
- Sarah Yeo, Department of Oceanography, University of Hawaii, M.S. degree received May 2008
- Darin Hayakawa, Microbiology Department, University of Hawaii, Ph.D, degree received May 2012
- Gordon Walker, Department of Oceanography, University of Hawaii, M.S. degree received August 2012
- Olivia Nigro, Department of Oceanography, University of Hawaii, M.S. degree received August 2012
- Sherril Leon-Soon, Department of Oceanography, University of Hawaii, Ph.D candidate
- Jackie Mueller, Department of Oceanography, University of Hawaii, Ph.D. degree received May 2015.
- Liana Jean Auli'i Murillo, Department of Oceanography, University of Hawaii, M.S. degree received May 2013
- Pavica Srsen, Department of Oceanography, University of Hawaii, M.S degree received May 2013
- Joy Lei Lei Shih, Department of Oceanography, University of Hawaii, Ph.D. candidate
- Scott Grant, Department of Oceanography, University of Hawaii, Ph.D degree received 07/2014
- Sean Jungbluth, Department of Oceanography, University of Hawaii, Ph.D degree received 09/2014
- Phoebe Woodworth-Jefcoats, Marine Biology Program, University of Hawaii, Ph.D. candidate
- Emily Johnston, Botany Department, University of Hawaii, Ph.D. candidate

Member Ph.D. Qualifying and Comprehensive Exam Committees:

- Amy Apprill, Department of Oceanography, University of Hawaii
- Becky Briggs, Department of Oceanography, University of Hawaii
- Olivia Nigro, Department of Oceanography, University of Hawaii
- Maxine Grand, Department of Oceanography, University of Hawaii
- Fabio DeLeo, Department of Oceanography, University of Hawaii

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- Simi Rii, Department of Oceanography, University of Hawaii
- Sherril Leon-Soon, Department of Oceanography, University of Hawaii
- Jennifer Murphy, Department of Oceanography, University of Hawaii
- Christopher Jury, Department of Oceanography, University of Hawaii
- Patrick Drupp, Department of Oceanography, University of Hawaii
- Rebecca Simpson, Department of Oceanography, University of Hawaii
- Colette Kerry, Department of Oceanography, University of Hawaii
- Lydia Baker, Department of Oceanography, University of Hawaii
- LeiLei Joy Shih, Department of Oceanography, University of Hawaii
- Emily Johnston, Botany Department, University of Hawaii
- John Casey, Department of Oceanography, University of Hawaii
- Sean Jungbluth, Department of Oceanography, University of Hawaii

TEACHING:

Instructional Activities

- Spring 2015, Lead Instructor for Department of Oceanography graduate course OCN 621 “Biological Oceanography”.
- Fall 2014, Lead Instructor for Department of Oceanography graduate course OCN 626 “Marine Microplankton Ecology”.
- Summer 2014, co-Director “Microbial Oceanography: Genomes to Biomes”, funded by the National Science Foundation and the Agouron Institute.
- Spring 2014, Lead Instructor for Department of Oceanography graduate course OCN 621 “Biological Oceanography”.
- Fall 2013, Lead Instructor for Department of Oceanography graduate course OCN 626 “Marine Microplankton Ecology”.
- Summer 2013, co-Director “Microbial Oceanography: Genomes to Biomes”, funded by the National Science Foundation, the Agouron Institute, and the Gordon and Betty Moore Foundation.
- Spring 2013, Lead Instructor for Department of Oceanography graduate course OCN 621 “Biological Oceanography”.
- Fall 2012, Lead Instructor for Department of Oceanography graduate course OCN 626 “Marine Microplankton Ecology”.
- Summer 2012, co-Director “Microbial Oceanography: Genomes to Biomes”, funded by the National Science Foundation, the Agouron Institute, and the Gordon and Betty Moore Foundation.
- Spring 2012, Lead Instructor for Department of Oceanography graduate course OCN 621 “Biological Oceanography”.
- Fall 2011, Lead Instructor for Department of Oceanography graduate course OCN 626 “Marine Microplankton Ecology”.
- Summer 2011, co-Director “Microbial Oceanography: Genomes to Biomes”, funded by the National Science Foundation, the Agouron Institute, and the Gordon and Betty Moore Foundation.
- Spring 2011, Lead Instructor for Department of Oceanography graduate course OCN 621 “Biological Oceanography”.
- Fall 2010, Lead Instructor for Department of Oceanography graduate course OCN 626 “Marine Microplankton Ecology”.

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- Summer 2010, co-Director “Microbial Oceanography: Genomes to Biomes”, funded by the National Science Foundation, the Agouron Institute, and the Gordon and Betty Moore Foundation.
- Spring 2010, Lead Instructor for Department of Oceanography graduate course OCN 621 “Biological Oceanography”.
- Fall 2009, Lead Instructor for Department of Oceanography graduate course OCN 626 “Marine Microplankton Ecology”.
- Summer 2009, co-Director “Microbial Oceanography: Genomes to Biomes” course funded by the Agouron Institute.
- Spring 2009, Lead Instructor for Department of Oceanography graduate course OCN 621 “Biological Oceanography”.
- Fall 2008 Lead Instructor for Department of Oceanography graduate course OCN 626 “Marine Microplankton Ecology”.
- Summer 2008 co-Director “Microbial Oceanography: Genomes to Biomes” course funded by the Agouron Institute.
- Spring 2008 Sole Instructor for Department of Oceanography graduate course OCN 750: “Topics in Biological Oceanography: Biogeochemical variability in the North Pacific Ocean”.
- Fall 2007 OCN 780: Department of Oceanography Seminar Series Coordinator
- Fall 2007 Lead instructor for Department of Oceanography required graduate level course Ocean 626 “Marine Microplankton Ecology”.
- Summer 2007 co-Director “Microbial Oceanography: Genomes to Biomes” course funded by the Agouron Institute.
- Fall 2006: Lead instructor for Department of Oceanography required graduate level course OCN 626 Marine Microplankton Ecology.
- Summer 2006: co-Director “Microbial Oceanography: Genomes to Biomes” course funded by the Agouron Institute.

FIELD EXPERIENCE (totaling >480 days at sea):

1994-1996	R/V <i>Weatherbird II</i> (>20 oceanographic research cruises in the Sargasso Sea)
1995	R/V <i>Thomas Thompson</i> U.S. J.G.O.F.S. Arabian Sea Process Study
1996	RVIB <i>N.B. Palmer</i> (Ross Sea, Antarctica)
1998	RVIB <i>N.B. Palmer</i> (US JGOFS AESOPS Ross Sea process cruise)
1998	R/V <i>Aurora Australis</i> (Australian JGOFS Southern Ocean Process Study)
1999-2014	Participant in 25 Hawaii Ocean Time-series (HOT) cruises
2000	RV <i>L.M. Gould</i> (Palmer Basin, Antarctica)
2001	RVIB <i>N.B. Palmer</i> (Palmer Basin, Antarctica)
2002	R/V <i>Kaimikai-o-Kanaloa</i> (central North Pacific)
2003	R/V <i>Kilo Moana</i> (Honolulu, Hawaii to Kodiak, Alaska and return)
2006	R/V <i>Kilo Moana</i> , Chief Scientist, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2007	R/V <i>Kilo Moana</i> , Chief Scientist, 15 day research cruise: CMORE BULA (Suva, Fiji to Honolulu)

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2007	R/V <i>Kilo Moana</i> , Chief Scientist, 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2008	R/V <i>Kilo Moana</i> , Chief Scientist, 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2009	R/V <i>Kilo Moana</i> , Chief Scientist, 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2010	R/V <i>Kilo Moana</i> , Chief Scientist, 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2010	R/V <i>Kilo Moana</i> , Chief Scientist, 10 day research cruise, Diazotrophy in a high CO ₂ world cruise (central North Pacific)
2011	R/V <i>Kilo Moana</i> , Chief Scientist, 11 day research cruise, Diazotrophy in a high CO ₂ world cruise (central North Pacific)
2012	R/V <i>Kilo Moana</i> , Chief Scientist, 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2013	R/V <i>Kilo Moana</i> , Chief Scientist, 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2014	R/V <i>Kilo Moana</i> , Chief Scientist, 7 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)

PROFESSIONAL ACTIVITIES AND AWARDS

Invited Seminars and Talks

1. **Church, M.J.** 2013. 25 years of Hawaii Ocean time-series carbon flux determinations: Insights into productivity, export, and nutrient supply in the oligotrophic ocean. *Ocean Carbon Biogeochemistry Summer Workshop, Woods Hole Oceanographic Institution*. July 2013.
2. **Church, M.J.** 2012. The Hawaii Ocean Time-series (HOT): Highlights and perspectives from more than two decades of ocean observing. *Partnership for Observation of the Global Ocean (POGO) annual meeting. School of Ocean and Earth Science and Technology, University of Hawaii at Manoa, USA*. January 2012.
3. **Church, M.J.** 2011. Variability in the subtropical North Pacific Ocean nitrogen cycle. *University of Southern California Marine Biology and Biological Oceanography Program seminar series*. March 2011.
4. **Church, M.J., D. Bottjer, D.M. Karl, R.M. Letelier, D.A. Viviani, J.P. Zehr.** 2011. Nitrogen Fixation in the North Pacific Subtropical Gyre. *ASLO Aquatic Sciences Meeting, San Juan, Puerto Rico, February 2011*.
5. **Church, M.J.** 2010. Temporal dynamics in organic matter inventories and fluxes: A HOT-BATS comparison. *Integrating biogeochemistry and ecosystems in a changing ocean- Regional comparisons, IMBER (Integrated Marine Biogeochemistry and Ecosystems Research) workshop, Crete, Greece*.
6. **Church, M.J.** 2010. The Hawaii Ocean Time-series (HOT) program: Highlights and perspectives from two decades of ocean observations. *Sea*

- Change: An Ocean Carbon Biogeochemistry (OCB) Scoping Workshop*. Honolulu, HI.
7. **Church, M.J.** 2010. Spinning the Wheel: The Ocean's Nitrogen Cycle Viewed Through the Lens of Microbial Ecology. *Gordon Research Conference, From Genes to Global Cycles*. Tilton, NH.
 8. **Church, M.J.** 2010. Capturing the ephemeral: Time-series perspectives on the roles of ocean eddies in the North Pacific Ocean. *MBARI CANON Workshop*, Monterey Bay Aquarium and Research Institute, Moss Landing, CA.
 9. **Church, M.J.** 2008. The Hawaii Ocean Time-series (HOT): Temporal dynamics in ecosystem processes in the subtropical North Pacific Ocean. *Changing Times: An International Ocean Biogeochemical Time-Series Workshop*. Scripps Institution of Oceanography, La Jolla, CA.
 10. **Church, M.J.**, J.E. Dore, D.M. Karl, R.M. Letelier, R. Lukas. 2008. Implementation of quality assurance and control practices for ocean time series programs. *OceanSITES Annual Meeting*, Vienna, Austria.
 11. **Church, M.J.** 2008. Microbes and Climate: Stories from the Sea. *Hanauma Bay Evening Lecture Series*. Honolulu, HI.
 12. **Church, M.J.**, D.M. Karl, A. White, R.M. Letelier. 2007. The Hawaii Ocean Time-series (HOT): Assessing temporal variability in microbial dynamics and biogeochemistry in the subtropical North Pacific Ocean. *Workshop on the Implications and Opportunities of the Marine Genomics Revolution*. Bermuda Institute of Ocean Sciences, Bermuda.
 13. **Church, M.J.** 2007. Mesoscale forcing of microbial activity and biogeochemistry in the North Pacific Ocean. School of Oceanography, University of Washington.
 14. **Church, M.J.** 2007. Time Series Observations at Station ALOHA: Ecosystem Dynamics in the Oligotrophic North Pacific Ocean. *Japan Agency for Marine Science and Technology*. Tokyo, Japan.
 15. **Church, M.J.** 2006. Microbial Dynamics at Station ALOHA in the North Pacific Subtropical Gyre. *Pioneering Studies of Young Scientists on Chemical Pollution and Environmental Changes*. Ehime University, Matsuyama, Japan.
 16. **Church, M.J.** 2006. Advances in understanding the time and space dynamics of marine microbes. Department of Oceanography, University of Hawaii, Honolulu, HI.
 17. **Church, M.J.** 2006. Temporal and spatial dynamics of marine microbes. Monterey Bay Aquarium and Research Institute, Monterey, CA.
 18. Letelier, R.M., D.M. Karl, **M.J. Church**, and J.P. Zehr. 2005. N₂ fixation research in the subtropical Pacific Ocean. *Wenner-Gren Symposium on Marine Cyanobacteria*. Stockholm, Sweden.
 19. Letelier, R.M., D.M. Karl, R.R. Bidigare, J. Dore, **M.J. Church**. 2005. New and export production in the North Pacific: Lessons from the Hawaii Ocean Time-series. *Ocean Carbon and Climate Change Workshop*. Woods Hole Oceanography Institution, M.A..

20. **Church, M.J.** 2005. Hawaii Ocean Time-series (HOT): A window to ecosystem variability in the subtropical North Pacific Ocean. *International Census of Marine Microbes (ICoMM)*, Honolulu, HI.
21. **Church, M.J.** 2005. Photoenhanced heterotrophic production in the North Pacific Ocean. *ASLO Aquatic Sciences Meeting*, Salt Lake City, Utah.
22. Zehr, J.P., S.M. Short, C.M. Short, **M.J. Church**. 2005. Real time PCR applications for quantifying nitrogenase genes and gene expression. *ASLO Aquatic Sciences Meeting*, Salt Lake City, Utah.
23. **Church, M.J.** 2004. Dynamics of bacterioplankton growth and production in the oligotrophic North Pacific Ocean. *Ocean Sciences Department*, University of California Santa Cruz.
24. **Church, M.J.** 2003. Bacterial production sees the light: Strategies for growth in oligotrophic ocean ecosystems. *DIALOG V*. Bermuda.

PROFESSIONAL SERVICE

School and Departmental Committee Service:

2014	Member, Departmental teaching evaluation committee
2013	Member, SOEST Young Investigator Search Committee Member, Departmental Personnel Committee Member, <i>ad hoc</i> Departmental committee on graduate core course curriculum
2012	Chair, Departmental Personnel Committee
2012	Interim Biological Oceanography Division Head
2012	Chair, Search Committee for Department of Oceanography Sustainability Faculty Cluster Hire
2012	Committee member, Faculty search for Department of Oceanography Plankton Ecologist
2010-present	SOEST Research Council
2010-present	SOEST Ship Users Support Committee
2012-present	COSEE Island Earth, Science Advisory Committee
2009-2012	Department of Oceanography Graduate Student Recruitment Committee
2008	Member, SOEST Young Investigator Search Committee

Local and International Community Activities and Workshops:

2013-present	Vice Chair and Steering Committee Member , Ocean Carbon Biogeochemistry Program
2012	Guest Editor , Deep-Sea Research Special Issue on Ocean Time Series
2012	Session co-Chair , Ocean Sciences Meeting, Salt Lake City, UT., February 2012
2012	Associate Editor , <i>Frontiers in Aquatic Microbiology</i>

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- 2012 **Coordinator** and co-director of C-MORE Summer course at the University of Hawaii “Microbial Oceanography: Genomes to biomes”
- 2010 **Co-Chair**, “Sea Change: Charting the course of ecological and biogeochemical time series research”, a scoping workshop funded via the Ocean Carbon Biogeochemistry Program, September 2010, Honolulu, HI.
- 2010 **Co-Chair** workshop on Microbiological Targets for Ocean Observing Laboratories, January 2010, Gordon and Betty Moore Foundation.
- 2010 **Invited Speaker and participant** “Autonomous Sampling and Technologies Workshop”, April 2010, Monterey Bay Aquarium Research Institute.
- 2010 **Invited participant**, Ocean Global Change and Evolution Workshop, May 2010, National Science Foundation, USC Wrigley Institute, Catalina, CA.
- 2010 National Science Foundation **Panel member**, May 2010
- 2010 **Invited speaker**, Gordon Research Conference “From Genes to Global Cycles”, July 2010.
- 2010 **Judge**, Undergraduate Honors Program Spring Symposium, University of Hawaii, April 2010.
- 2010 Conducted **video interview** on ocean acidification for a Pearson Scientific DVD to accompany high school chemistry textbook, Aug. 18, 2010.
- 2009 **Session Co-chair** Ocean Carbon Biogeochemistry, Summer Meeting (July 2009), Woods Hole, MA.
- 2009 **Participant** in Gordon and Betty Moore Foundation Microbial Summer Course Directors Meeting, November 2009, Gordon and Betty Moore Foundation
- 2008 **Steering committee member**, OceanSITES Data Management Committee, April 2008.
- 2008 **Steering committee member** for “Changing Times: an International Ocean Biogeochemical Time-series Workshop” sponsored by the International Ocean Carbon Coordination Project (IOCCP).
- 2007 **Invited speaker and panelist** for evaluation of Ocean Time Series in the Western Subarctic North Pacific, Japan Agency for Marine-Earth Science and Technology
- 2007 **Invited speaker and participant** “Workshop on the Implications and Opportunities of the Marine Genomics Revolution”. Bermuda Institute of Ocean Sciences, Bermuda.
- 2007 **Judge**, Hawaii Academy of Science, Science Fair for the Pacific Science and Sustainability Symposium.
- 2007 **Judge**, Department of Oceanography Student Travel Awards Research (STAR) Symposium, University of Hawaii.
- 2006 **Invited speaker** “Pioneering Studies of Young Scientists on Chemical Pollution and Environmental Changes” (Ehime University, Japan)

CURRICULUM VITAE - Matthew J. Church

- 2005 **Invited speaker and participant** International Census of Marine
Microbes (ICoMM) Open Ocean and Coastal Systems workshop
(Honolulu, Hawaii).
- 2004 **Panelist** Ocean Observatories Initiative (OOI) Ocean Research
Interactive Observatory Networks (ORION) Global Buoy Science
Requirements (San Francisco, CA. 2004).

Editorial Service:

Associate Editor, *Frontiers in Aquatic Microbiology* (2010-present)
Review Editor, *Aquatic Microbial Ecology* (2008-present)

Journal Reviewer:

Aquatic Microbial Ecology
Applied and Environmental Microbiology
Aquatic Microbial Ecology
Deep-Sea Research I and II
Ecosystems
Environmental Microbiology
Estuaries
ISME Journal
Limnology and Oceanography
Microbial Ecology
Nature
Proceedings of the National Academy of Sciences
Science

Agency Panel Service:

National Science Foundation

Agency Proposal Reviewer:

National Science Foundation, NOAA, NERC, Schmidt Ocean Institute