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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

2019-present	Professor , Division of Biological Sciences; Ecology and Evolution; University of Montana
2016-2019	Associate Professor (with tenure); Division of Biological Sciences; Organismal Biology, Ecology, and Evolution; University of Montana
2018-present	Affiliate Graduate Faculty , Department of Oceanography, University of Hawaii
2016	Professor , Department of Oceanography, University of Hawaii
2011-2016	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

RESEARCH INTERESTS

Microbial ecology, nitrogen cycling, organic matter production and consumption, distributions and activities of microorganisms, biogeochemical and ecological time series

AWARDS AND RECOGNITION

2018	Fellow, Association for the Sciences of Limnology and Oceanography
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
2015	Recipient, 2015 Na Kama Kai Excellence in Teaching Award , Department of Oceanography Graduate Student Association, University of Hawaii

- 2009 Co-recipient, **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”
- 1999 National Science Foundation Antarctic Service Medal

REFEREED 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.

In Review

1. Isanta-Navarro, J., Prater, C., Peoples, L.M., Loladze, I., Phan, T., Jeyasingh, P.D., Church, M.J., Kuang, Y., Elser, J.J. 2022. The rules of life were meant to be broken: towards a Growth Rate Rule for biological stoichiometry. In Review, *Ecology Letters*.
2. Elser, J.J., Devlin, S.P., Yu, J., Baumann, A., Church, M.J., Dore, J.E., Hall, R.O., Hollar, M., Johnson, T., Vick-Majors, T., White, C. 2022. Sustained stoichiometric imbalance and its ecological consequences in a large oligotrophic lake. In Review, *PNAS*.
3. Karl, D.M., Bjorkman, K.M., **Church, M.J.**, Fujieki, L.A., Grabowski, E.M., Letelier, R.M. 2021. Temporal dynamics of total microbial biomass and particulate detritus at Station ALOHA. In Review, *Progress in Oceanography*.
4. Dugenne, M. Gradoville, M.R., **Church, M.J.**, Barone, B., Wilson, S.T., et al. 2021. Nitrogen fixation in mesoscale eddies of the North Pacific: patterns and mechanisms. In Review, *Global Biogeochemical Cycles*.
5. Wan, H.S., Sheng H.-X., Dai, M., Casciotti, K.L., **Church, M.J.**, Zou W., Liu L., Shen, H., Zhou, K., Ward, B.B., and S.-J. Kao. 2021. Multiple sources of N₂O in surface ocean weakens the biological pump. In Review, *Nature Geoscience*.

Published

6. Barone, B.[#], **Church, M.J.**[#], Dugenne, M., Hawco, N.J., Jahn, O. White, A.E., John, S.G., Follows, M.J., DeLong, E.F., Karl, D.M. 2022. Biogeochemical dynamics in adjacent mesoscale eddies of opposite polarity. *Global Biogeochemical Cycles* 36: <https://doi.org/10.1029/2021GB007115>. [#] indicates authors contributed equally.
7. Ross, A.M., Peoples, L.M., Bilbrey, E.M., **Church, M.J.** 2022. Draft metagenome-assembled genomes from methane-rich Echo Lake, Montana. *Microbial Resource Announcements*. <https://doi.org/10.1128/mra.01112-21>.
8. Hawco, N.J., Barone, B., **Church, M.J.**, Babcock-Adams, L., Repeta, D.J., Wear, E.^{*}, Foreman, R.H., Björkman, K.M., Bent, S., Van Mooy, B.A.S., Sheyn, U., DeLong, E.F., Acker, M., Kelly, R.L., Nelson, A., Ranieri, J., Clemente, T., Karl, D.M., John, S.G. 2022. Iron depletion in the deep chlorophyll maximum: mesoscale eddies as natural iron fertilization experiments. *Global Biogeochemical Cycles*, doi.org/10.1029/2021GB007112
9. Wan, X.S., Sheng, H.-X., Ward, B.B., **Church, M.J.**, Zou, W., Li, X., Hutchins D.A., Dai, M. Kao, S.-J. 2022. Phytoplankton-nitrifier interactions control the geographic

- distribution of nitrite in the upper ocean. *Global Biogeochemical Cycles*.
<https://doi.org/10.1029/2021GB007072>
10. Böttjer, D., White, A.E., Björkman, K.M., **Church, M.J.**, Poulos, S., Shimabukuru, E., Rii, Y.M., Riebesell, U., Letelier, R.M., Karl, D.M. 2022. Effects of nutrient enrichments on oligotrophic phytoplankton communities: A mesocosm experiment near Hawai'i. In press. *Aquatic Microbial Ecology*.
 11. Rii, Y.M., Peoples, L.M*, Karl, D.M., **Church, M.J.** 2022. Seasonality and episodic variation in picoeukaryote diversity and structure reveals community resilience to disturbances in the North Pacific Subtropical Gyre. *Limnology and Oceanography*.
<https://doi.org/10.1002/lno.11916>
 12. **Church, M.J.**, Kyi, E., Hall, R.O., Karl, D.M., Lindh, M.*, Nelson, A., and E.K. Wear*. 2022. Production and diversity of microorganisms associated with sinking particles in the subtropical North Pacific Ocean. *Limnology and Oceanography* 66: 3255-3270. <https://doi.org/10.1002/lno.11877>
 13. Pendergraph, D.P., J. Ranieri, L. Ermatinger, A. Baumann, A.L. Metcalf, T. H. DeLuca, **M.J. Church**. 2021. Differentiating sources of fecal contamination to wilderness waters using droplet digital PCR and fecal indicator bacteria methods. *Wilderness and Environmental Medicine* 32: 332-339.
<https://doi.org/10.1016/j.wem.2021.04.007>
 14. Wear, E.K. *, **M.J. Church**, B.N. Orcutt, C.N. Shulse, M.V. Lindh, C.R. Smith. 2021. Bacterial and archaeal communities in the abyssal Clarion-Clipperton Zone: Emerging patterns and considerations for future monitoring studies. *Frontiers in Marine Science*. <https://doi.org/10.3389/fmars.2021.634803>
 15. Karl, D. M. R.M. Letelier, R.R. Bidigare, K.M. Björkman, **M.J. Church**, J.E. Dore, A.E. White. 2021. Seasonal-to-decadal scale variability in primary production and particulate matter export at Station ALOHA. *Progress in Oceanography* 195: 102563.
 16. Ferrón, S., Barone, B., Church, M. J., White, A. E., & Karl, D. M. 2021. Euphotic zone metabolism in the North Pacific Subtropical Gyre based on oxygen dynamics. *Global Biogeochemical Cycles*, 35, e2020GB006744.
<https://doi.org/10.1029/2020GB006744>
 17. Wear, E.K. *, Carlson, C.A., Church, M.J. 2020. Bacterioplankton use of phytoplankton lysates across a cyclone-anticyclone eddy dipole impacts the turnover and production of semi-labile organic matter in the photic zone. *Limnology and Oceanography* 65: 1608-1622. <https://doi.org/10.1002/lno.11409>
 18. Benway, H.M., L. Lorenzoni, A.E. White, B. Fiedler, N. Levine, D.P. Nicholson, M.D. DeGrandpre, H.M Sosik, **M.J. Church**, T.D. O'Brien, M. Leinen, R.A. Weller, D. M. Karl, S. Henson, R. M. Letelier. 2019. Ocean Time Series Observations of Changing Marine Ecosystems: An Era of Integration, Synthesis, and Societal Applications. *Frontiers in Marine Science*. Front. Mar. Sci., 12 July 2019
<https://doi.org/10.3389/fmars.2019.00393>
 19. Letelier, R.M., Björkman, K.M., **Church, M.J.**, Hamilton, D.S., Mahowald, N.M., Scanza, R.A., Schneider, N., White, A.E., Karl, D.M. 2019. Climate driven oscillation in phosphorus and iron limitation in the North Pacific Subtropical Gyre. 2019. *Proceedings of the National Academy of Science, USA*. 116: 12720-12728.
 20. Grant, S., **Church, M.J.**, Ferron, S., Laws, E., Rappé, M. 2019. Elemental Composition, Phosphorous Uptake, and Characteristics of Growth of a SAR11 Strain

- in Batch and Continuous Culture. *mSystems*. 4(4). pii: e00218-18. doi: 10.1128/mSystems.00218-18.
21. Hampton, S., M.D. Scheuerell, **M.J. Church**, J.M. Melack. 2019. Long-term perspectives in aquatic research. *Limnology and Oceanography*, 64: S2-S10.
 22. Sweetman, A., Smith, C.R., Shulse, C.*; Mailliot, B., Lindh, M.*; **Church, M.J.**, Meyer, K., van Oevelen, D., Stratmann, T., Gooday, A. 2019. Key role of bacteria in the short-term cycling of carbon at the abyssal seafloor in a low POC flux region of the eastern Pacific Ocean. *Limnology and Oceanography*, 64: 694-713.
 23. **Church, M.J.**, Cullen, J.J., Karl, D.M. Approaches to Measuring Marine Primary Production. 2018. *Encyclopedia of Ocean Sciences*, 3rd edition. Volume 1, 2019, Pages 484-491.
 24. Wilson, S.T., **Church, M.J.** 2018. Editorial: Microbial ecology in the North Pacific Subtropical Gyre. *Frontiers in Marine Science*, doi: 10.3389/fmars.2018.00334.
 25. Björkman, K.M., S. Duhamel, **M.J. Church**, D.M. Karl. 2018. Spatial and temporal dynamics of inorganic phosphate and adenosine-5'-triphosphate in the North Pacific Ocean. *Frontiers in Marine Science*, 5: doi: 10.3389/fmars.2018.00235.
 26. Kavanaugh, M.T., **Church, M.J.**, Davis, C.O., Karl, D.M., Letelier, R.M., Doney, S. 2018. ALOHA from the Edge: Reconciling three decades of in situ Eulerian observations and geographic variability in the North Pacific Subtropical Gyre. *Frontiers in Marine Science*, 5: doi.org/10.3389/fmars.2018.00130.
 27. Martínez-García, S., Bidigare, R.R., del Valle, D.A., Juranek, L.W., Nicholson, D.P., Viviani, D.A., Wilson, S.T., **Church, M.J.** 2018. Control of net community production by microbial community respiration at Station ALOHA. *Journal of Marine Systems*, 184: 28-35.
 28. Peoples, L., Donaldson, S., Osuntokun, O., Xia, Q, Nelson, A., Blanton, J., **Church, M.J.**, Bartlett, D.H. 2018. Vertically distinct microbial communities in the Mariana and Kermadec trenches. *PLoS ONE* 13: e0195102.
<https://doi.org/10.1371/journal.pone.0195102>.
 29. Rii, Y., Bidigare, R.R., **Church, M.J.** 2018. Differential responses of eukaryotic phytoplankton to nitrogenous nutrients in the North Pacific Subtropical Gyre. *Frontiers in Marine Science*, 5: doi.org/10.3389/fmars.2018.00092.
 30. Zakem, E., Al-Haj, A., **Church, M.J.**, van Dijken, G., Dutkiewicz, S., Foster, S.Q., Fulweiler, R.W., Mills, M.M., Follows, M.J. 2018. Ecological control of nitrite in the upper ocean. *Nature Communications*, DOI: 10.1038/s41467-018-03553-w.
 31. Viviani, D.A., Böttjer, D.*, Letelier, R.M., **Church, M.J.** 2018. The influence of abrupt increases in seawater $p\text{CO}_2$ on plankton productivity in the subtropical North Pacific Ocean. *PLoS ONE* 13: e0193405.
<https://doi.org/10.1371/journal.pone.0193405>.
 32. White, A.E., K. Watkins-Brandt, **M.J. Church**. 2018. Temporal variability of *Trichodesmium* spp. and diatom-diazotroph assemblages in the North Pacific Subtropical Gyre. *Frontiers in Marine Science*, 5: doi.org/10.3389/fmars.2018.00027.
 33. Lindh, M.*, Mailliot, B., Smith, C.R., **Church, M.J.** 2018. Habitat filtering of bacterial communities above polymetallic nodule fields and sediments in the Clarion-Clipperton Zone of the Pacific Ocean. *Environmental Microbiology Reports* 10: 113-122. doi: 10.1111/1758-2229.12627.

34. Lindh, M.*, Mailliot, B., Shulse, C.*, Gooday, A.J., Amon, D.J. Smith, C.R., **Church, M.J.** 2017. From the Surface to the Deep-Sea: Bacterial Distributions across Polymetallic Nodule Fields in the Clarion-Clipperton Zone of the Pacific Ocean. *Frontiers in Microbiology* 8: doi: 10.3389/fmicb.2017.01696.
35. Wilson, S.T., F.O. Aylward, F. Ribalet, B. Barone, J.R. Casey, P. E. Connell, J.A. Eppley, S. Ferrón, A.E. Romano, K.A. Turk-Kubo, A. Vislova, E. V. Armbrust, D.A. Caron, **M.J. Church**, J.P. Zehr, D.M. Karl, E.F. DeLong. 2017. Coordinated regulation of growth, activity and transcription in natural populations of the unicellular nitrogen-fixing cyanobacterium *Crocospaera*. *Nature Microbiology* Nat. Micro. 2:17118. doi: 10.1038/nmicrobiol.2017.118.
36. Limardo, A. J., Sudek, S., Choi, C. J., Poirier, C., Rii, Y. M., Blum, M., Roth, R., Goodenough, U., **Church, M. J.** and Worden, A. Z. 2017. Quantitative biogeography of picoprasinophytes establishes ecotype distributions and significant contributions to marine phytoplankton. *Environmental Microbiology*, doi:10.1111/1462-2920.13812
37. Shilova, I. N., Mills, M. M., Robidart, J. C., Turk-Kubo, K. A., Björkman, K. M., Kolber, Z., Rapp, I., van Dijken, G. L., **Church, M. J.**, Arrigo, K. R., Achterberg, E. P. and Zehr, J. P. 2017. Differential effects of nitrate, ammonium, and urea as N sources for microbial communities in the North Pacific Ocean. *Limnology and Oceanography*, doi:10.1002/lno.10590
38. Karl, D.M. and **M.J. Church**. 2017. Ecosystem structure and dynamics in the North Pacific Subtropical Gyre: New views of an old ocean. *Ecosystems* 3: 433–457.
39. Goldberg, S.J.*, C.E. Nelson, D.A. Viviani, C.N. Shulse*, and **M.J. Church**. 2017. Cascading influence of inorganic nitrogen substrate on DOM production, composition, lability and microbial community structure in the surface waters of the oligotrophic ocean. *Environmental Microbiology*. doi: 10.1111/1462-2920.13825
40. Gradoville, M.R., Crump, B.C., Letelier, R.M., **Church, M.J.**, White, A.E. 2017. Microbiome of *Trichodesmium* colonies from the North Pacific Subtropical Gyre. *Frontiers in Microbiology* 8: doi: 10.3389/fmicb.2017.01122
41. Viviani, D.A. and **M.J. Church**. 2017. Decoupling between bacterial production and primary production over multiple time scales in the North Pacific Subtropical Gyre. *Deep-Sea Research I* 121: 132-142.
42. Eichner, M.J., I. Klawonn, S.T. Wilson, S. Littmann, M. Whitehouse, **M.J. Church**, M.M. Kuypers, D.M. Karl, and H. Ploug. 2017. Chemical microenvironments and single-cell carbon and nitrogen uptake in field collected colonies of *Trichodesmium* under different $p\text{CO}_2$. *The ISME Journal* 11: 1305-1317.
43. Letelier, R.M., A.E. White, R.R. Bidigare, B. Barone, **M.J. Church**, and D.M. Karl. 2017. Light absorption by phytoplankton in the North Pacific subtropical gyre. *Limnology and Oceanography* 62: 1526-1540.
44. Böttjer, D.*, J.E. Dore, D.M. Karl, R.M. Letelier, C. Mahaffey, S.T. Wilson, and **M.J. Church**. 2017. Temporal variability in nitrogen fixation and particulate nitrogen export at Station ALOHA. *Limnology and Oceanography* 62: 200-216. doi: 10.1002/lno.10386.
45. Shulse, C. N.*, Mailliot, B., Smith, C. R. and **Church, M. J.** Polymetallic nodules, sediments, and deep waters in the equatorial North Pacific exhibit highly diverse and distinct bacterial, archaeal, and microeukaryotic communities. *MicrobiologyOpen*. 2017;6:e00428. <https://doi.org/10.1002/mbo3.428>

46. Rii, Y., D.M. Karl, and **M.J. Church**. 2016. Temporal and vertical variability in picoplankton primary productivity in the North Pacific Subtropical Gyre. *Marine Ecology Progress Series* 562: 1-18. doi.org/10.3354/meps11954. **Feature article for this issue**
47. Ferron, S., del Valle, D.A., Björkman, K.M., Quay, P.D., **Church, M.J.**, Karl, D.M. 2016. Application of membrane inlet mass spectrometry to measure aquatic gross primary production by the ^{18}O *in vitro* method. *Limnology and Oceanography: Methods*, doi: 10.1002/lom3.10116.
48. Rii, Y.M., S. Duhamel, R.R. Bidigare, D.M. Karl, D.J. Repeta, **M.J. Church**. 2015. Diversity and productivity of photosynthetic picoeukaryotes in biogeochemically distinct regions of the South East Pacific Ocean. *Limnology and Oceanography* doi: 10.1002/lno.10255.
49. Björkman, K.M., **M.J. Church**, J.K. Doggett, D.M. Karl. 2015. Differential assimilation of inorganic carbon and leucine by *Prochlorococcus* and non-pigmented bacteria in the oligotrophic North Pacific Subtropical Gyre. *Frontiers in Marine Science* doi: 10.3389/fmicb.2015.01401
50. Viviani, D.A., D.M. Karl, **M.J. Church**. 2015. Photosynthetic production of dissolved and particulate organic carbon in the North Pacific Subtropical Gyre. *Frontiers in Marine Science* doi:10.3389/fmars.2015.00073.
51. White, A.E., R.M. Letelier, A.L. Whitmire, B. Barone, R.R. Bidigare, **M.J. Church**, and D.M. Karl. 2015. Phenology of particle size distributions and primary productivity in the North Pacific Subtropical gyre. *Journal Geophysical Research – Oceans* 120: 7381–7399.
52. Bryant, J.A., F.O. Aylward, J.M. Eppley, D.M. Karl, **M.J. Church**, E.F. DeLong. Wind and sunlight shape microbial diversity in surface waters of the North Pacific Subtropical Gyre. *The ISME Journal* doi: 10.1038/ismej.2015.221.
53. Wilson, S.T., B. Barone, F. Ascani, R. Bidigare, **M. Church**, D. del Valle, S. Dyhrman, 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. 2015. Short-term variability in euphotic zone biogeochemistry and primary productivity at Station ALOHA: A case study of summer 2012. *Global Biogeochemical Cycles* 29: 1145–1164.
54. 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. *Journal Geophysical Research – Oceans* 120: 3229–3247.
55. 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.
56. 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.
57. Karl, D.M. and **M.J. Church**. 2014. Microbial oceanography and the Hawaii Ocean Time-series programme. *Nature Reviews Microbiology*, 12: 699–713.

58. 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.
59. *Böttjer, D., D. M. Karl, R. M. Letelier, D.A. Viviani, **M. J. Church**. 2014. Experimental assessment of diazotroph responses to elevated seawater $p\text{CO}_2$ in the North Pacific Subtropical Gyre. *Global Biogeochemical Cycles*, 28: 601-616.
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61. 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.
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64. **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.
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91. **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.
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93. **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.

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103. **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.
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105. 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.
106. **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.
107. **Church, M.J.**, H.W. Ducklow, D.M. Karl. 2002. Multiyear increases in dissolved organic matter inventories a Station ALOHA in the North Pacific Subtropical Gyre. *Limnology and Oceanography*, 47:1-10.

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109. **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.
110. 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, Reports, and White Papers:

1. Karl, D.M. and **Church, M.J.** 2018. Station ALOHA: A gathering place for discovery, education and scientific collaboration. *Limnology and Oceanography Bulletin*.
2. Neuer, S., Benway, H.M., Bates, N., Carlson, C.A., **Church, M.**, DeGrandpre, M., Dunne, J. Letelier, R., Lomas, M., Lorenzoni, L., Muller-Karger, F., Perry, M.J., and Quay, P. 2017. Monitoring Ocean Change in the 21st Century. *Eos*, 98, <https://doi.org/10.1029/2017EO080045>.
3. Burd, A., A. Buchan, **M. Church**, M. Landry, A. McDonnell, U. Passow, D. Steinberg, H. Benway. Towards a transformative understanding of the ocean's biological pump: Priorities for future research. Report of the NSF Biology of the Biological Pump Workshop, February 19-20, 2016. 67 pp. DOI: 10.1575/1912/8263.
4. Mathis, J.T., Feely, R.A., Sutton, A., Carlson, C., Chai, F., Chavez, F., **Church, M.**, Cosca, C., Ishii, M., Mordy, C., Murata, A., Resing, J., Strutton, P., Takahashi, T., and Wanninkhof, R. 2014. Tropical Pacific Biogeochemistry: Status, Implementation and Gaps (White Paper #6). Tropical Pacific Observing System 2020 (TPOS 2020). http://tpos2020.org/wp-content/uploads/WP06_Tropical-Pacific_biogeochemistry.pdf
5. Portner, Hans-O., Karl, David M., Boyd, Philip W., Cheung, William W. L., Lluch-Cota, Salvador E. L., Nojiri, Yukihiro, Schmidt, Daniela N., Zavialov, Peter O., Alheit, Jürgen, Aristegui, Javier, Armstrong, Claire, Beaugrand, Gregory, Belkovich, Vsevolod, Bowler, Chris, Brewer, Peter, **Church, Matthew**, Cooley, Sarah R., del Monte-Luna, Pablo, Edwards, Martin, Flint, Mikhail, Follows, Michael J., Frölicher, Thomas, Fulton, Elizabeth A., Gattuso, Jean-Pierre, Hoegh-Guldberg, Ove, Hofmann, Eileen E., Knoll, Andrew H., Levin, Lisa A., Menzel, Lena, Moloney, Coleen L., Perry, R. Ian, Poloczanska, Elvira S., Roberts, J. Murray, Rost, Björn, Sarmiento, Jorge L., Sedláček, Jan, Storch, Daniela, Wiencke, Christian and Wittmann, Astrid C. 2014. Ocean systems. In Christopher B. Field, Vicente R. Barros, David Jon Dokken, Katharine J. Mach, Michael D. Mastrandrea, T. Eren Bilir, Monalisa Chatterjee, Kristie L. Ebi, Yuka Otsuki Estrada, Robert C. Genova, Betelhem Girma, Eric S. Kissel, Andrew N. Levy, Sandy MacCracken and Patricia R. Mastrandrea (Ed.), *Climate change 2014: Impacts, adaptation, and vulnerability. Part A: Global and sectoral aspects* (pp. 411-484) New York, United States: Cambridge University Press.
6. **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.
7. Lampitt, R., P. Favali, C. R. Barnes, M.J. Church, M.F. Cronin, K.L. Hill, Y. Kaneda, D.M. Karl, A.H. Knap, M.J. McPhaden, K.A. Nittis, I. G. Priede, J-F. Rolin, U. Send, C-C Teng, T.W. Trull, D.W.R. Wallace, R.A. Weller. 2009. *In situ* sustained eulerian

- observations. In Proceedings of OceanObs'09: Sustained Ocean Observations and Information for Society (Vol. 2), Venice, Italy, 21-25 September 2009, Hall, J., Harrison, D.E. & Stammer, D., Eds., ESA Publication WPP-306.
8. **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.
 9. **Church, M.J.**, Wear, E.K., Orcutt, B.N., Young, C.R., Smith, J.N. 2020. Taxonomic diversity of Bacteria and Archaea in the Clarion-Clipperton Zone of the North Pacific Ocean. Report to the International Seabed Authority, Deep CCZ Biodiversity Synthesis Workshop. Friday Harbor, WA, USA, 1-4 October 2019

GRANTS

Current Grants and Contracts

- SCOPE ALOHA: Mineralization, stoichiometry, and microbial metabolism in the subtropical North Pacific. PI: Church, M.J. (University of Montana). Funding agency: Simons Foundation. Project period: 07/01/2020 – 06/30/2024. Award to University of Montana: \$1,291,400
- Collaborative Research: Influence of phosphorus deficiency on enigmatic biological methane production in oxic freshwater lakes. PI: **Church, M.J.** (University of Montana), co-PIs: Dore, J. (Montana State University), Devlin, S. (University of Montana). Funding agency: National Science Foundation. Project period: 03/2020 – 2/2023. Award to University of Montana: \$485,905.
- Collaborative Research: RoL: The rules of life were made to be broken - Connecting physiology, evolutionary ecology, and mathematics to identify a Growth Rate Rule. PI: J. Elser (University of Montana), co-PIs: **M. Church** (University of Montana), Y. Khang (Arizona State University), P. Jeyasingh (Oklahoma State University). Project period: 8/2019 – 10/2022. Funding agency: National Science Foundation. Award to University of Montana: \$1,520,943.
- SCC-PG: Leveraging community partnerships and intelligent technologies to address septic system water quality risks in the Flathead Basin. PI: S. Halverson (UM), co-PIs: N. Nelson, **M. Church** (FLBS, UM). Project period: 10/2021-09/2022. Funding agency: National Science Foundation. Award to University of Montana: \$149,998.

Past Research Support

- “EAGER Collaborative Research: Early career chief scientist training for biological and chemical oceanographers”. PI: **Church, M.J.** (University of Montana), co-PIs: Goetze, E., White, A.E., Ferron, S. (University of Hawaii). Funding agency: National Science Foundation. Project period: 01/2019 – 12/2020. Total award: \$297,637; award to University of Montana: \$82,569.
- “Ecosystem-wide survey of microbial biodiversity, connectivity and ecosystem function across the deep seafloor biome of the CCZ to help assess and manage the impacts of polymetallic nodule mining”. P.I.: C.R. Smith, co-PIs: J Drazen, **M. Church**. Funding agency: Gordon and Betty Moore Foundation. Project period: 03/2017 – 06/2021. Award to University of Montana: \$219,195.
- “Simons Collaboration on Ocean Processes and Ecology (SCOPE)”. P.I.s: D. Karl, E. DeLong. Funding agency: Simons Foundation – pass through University of Hawaii

- with subaward to University of Montana (**Church, P.I.**). Project period: 09/2016-06/2020. Award: \$958,909.
- “Request for BioRad QX200 Digital Droplet PCR System: Enhancing direct gene quantification for SCOPE research”. PI: M.J. Church. Funding agency: Simons Foundation. Project period: 11/1/17 – 10/31/18. Award to **Church (P.I.)**: \$109,190
 - “Simons Collaboration on Ocean Processes and Ecology (SCOPE)”. P.I.s: D. Karl, E. DeLong. Funding agency: Simons Foundation to the University of Hawaii with pass through subaward to University of Montana (**Church, P.I.**). Project period: 07/2017-06/2018. Award: \$505,415
 - “Functional assessment of microorganisms associated with polymetallic nodules in the Clarion-Clipperton Zone”. Funding agency: UK Seabed Resources, Ltd. **M.J. Church, P.I.** Project period: 01/2017-06/2018. Award to University of Montana: \$74,701
 - “Benthic biological baseline studies in the CCZ: Megafaunal, macrofaunal, microbial and larval studies, and project oversight”. Funding agency: Seabed Resources Development, Ltd. University of Montana via University of Hawaii. P.I.: **M.J. Church**. Project period: 09/2016 - 12/2016. Award: \$23,420.
 - “Simons Collaboration on Ocean Processes and Ecology (SCOPE)”. P.I.s: D. Karl, E. DeLong. Funding agency: Simons Foundation to University of Hawaii. Project period: 07/2014-06/2018. Award to **M. Church**: \$675,191
 - “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: 01/2012-12/2016 (with one year no-cost extension). Award to University of Hawaii: \$341,405.
 - “The Hawaii Ocean Time-series (HOT): Sustaining ocean ecosystem and climate observations in the North Pacific Subtropical Gyre”. Funding Agency: National Science Foundation. P.I.: **M.J. Church (UH)**; co-PIs: D. Karl (UH), R. Bidigare (UH), R. Lukas (UH). Project period: 08/2013-07/2018. Award to University of Hawaii: \$8,148,909.
 - “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-P.I.s: J. Drazen (UH), **M. Church (UH)**, E. Vetter (HPU). Project period: 03/2013 - 12/2015. Award to University of Hawaii: \$1,304,862; funds to Church \$250,311.
 - “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”. P.I.: **M.J. Church (UH)**. Funding agency: National Oceanic and Atmospheric Administration. Project period: 07/2015 - 06/2016. Award to University of Hawaii: \$5311.
 - “Oceanic diazotroph community structure and activities in a high CO₂ world”; **P.I.: M.J. Church (UH)**, co-P.I. R. Letelier (OSU). Funding Agency: National Science Foundation. Project Period: 02/2009-01/2013. Award to University of Hawaii: \$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”. P.I.: **M.J. Church (UH)**. Funding agency: National Oceanic and Atmospheric Administration. Project period: 07/2014-06/2015. Award to University of Hawaii: \$5011.
- “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: 08/2006-07/2015. Award: ~\$100,000/year supporting Church’s research (*i.e.* graduate students, post-docs, etc., totaling ~\$750,000 over 10 yr period).
 - “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”. P.I.: **M.J. Church (UH)**. Funding agency: National Oceanic and Atmospheric Administration. Project period: 07/2013-06/2014. Award to University of Hawaii: \$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. P.I.: **M.J. Church (UH)**; co-PIs: D. Karl (UH), R. Bidigare (UH), R. Lukas (UH). Project period: 08/2009-07/2013. Award to University of Hawaii: \$6,201,878.
 - “Microbial Oceanography: Summer training course”. Funding agency: Gordon and Betty Moore Foundation. PI: D. M. Karl; co-PI: **M.J. Church**. Project period: 05/2010-04/2013. Award to University of Hawaii: \$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. P.I.: **M.J. Church (UH)**. Project period: 10/2012-12/2013. Award to University of Hawaii: \$34,543.
 - “Optimization of algae lipid yields in mass culture by regulation of growth physiology and microbial ecology”; P.I.: **M.J. Church (UH)**. 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. P.I.: J. Zehr (UCSC), co-P.I.s: **M. Church (UH)**, J. Montoya (Ga. Tech). Project Period: 10/2004-07/2009. Award to UH: \$230,673.

MENTORSHIP AND TEACHING:

Postdoctoral Fellows:

University of Hawaii

- Dr. Jennifer Edmonds, 2007-2008; currently Assistant Professor at Nevada State College
- Dr. Daniela Böttjer, 2009-2014, currently Assistant Specialist at University of Hawaii
- Dr. Lionel Guidi, 2012, currently scientist at Villefranche-sur-mer Oceanological Observatory, France
- Dr. Benedetto Barone, 2012-2015, currently Research Scientist, University of Hawaii
- Dr. Christine Shulse, 2013-2014, currently scientist at Lawrence Berkeley Labs, California
- Dr. Stuart Goldberg, 2013-2015, currently scientist with NOAA, Honolulu

- Dr. Markus Lindh, 2015-2016, currently Manager of the Marine Environment Data and Information, Swedish Meteorological and Hydrological Institute, Sweden
- Dr. Donn Viviani, 2016-2017, currently instructor at Leeward Community College, Honolulu

University of Montana

- Dr. Emma Wear, 2017-present, University of Montana
- Dr. Trista Vick-Majors, 2017-2019, currently Assistant Professor at Michigan Tech
- Dr. Lauren Manck, 2020-present, University of Montana
- Dr. Logan Peoples, 2020-present, University of Montana

Graduate Students Supervised as Major Advisor:

University of Hawaii

- Alison 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.)-degree received May 2016.
- Yoshimi Rii, Department of Oceanography, University of Hawaii (Ph.D.)-degree received May 2016.
- Eint Kyi, Department of Oceanography, University of Hawaii (M.S.)-degree received April 2018.
- Paula Moehlenkamp, Department of Oceanography, University of Hawaii (M.S.) 2016.

University of Montana

- Kate Evans, Ecology and Evolution, University of Montana (Ph.D) – 2017-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 (B.S., 2016).
- Natalie Dorman, Department of Natural Resources and Environmental Management, University of Hawaii (B.S., May 2016). Currently a PhD Student at UCSB.
- Hannah Fay, University of Montana, Summer internship 2017
- Finley Andrew, University of Montana, Summer internship 2018
- Madeline Glad, University of Montana, Summer employee 2018
- Evan Bilbrey, Montana State University, Summer internship, 2019. Currently Research Associate at Flathead Lake Biological Station, University of Montana
- Abby Ross, Rensselaer Polytechnic Institute, Summer internship 2021

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
- 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, degree received November 2017.
- 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
- 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., 2015-2016.
- Emily Johnston, Botany Department, University of Hawaii, Ph.D., 2015-2016.
- Joy Lei Lei Shih, Department of Oceanography, University of Hawaii, Ph.D. degree received 06/2018

- Veronica Gibson, Botany Department, University of Hawaii, Ph.D., 2015-2017
- Ze Ren, Organismal Biology, Ecology, and Evolution, University of Montana, Ph.D. December 2019
- Nikea Ulrich, Ecology and Evolution, University of Montana, Ph.D. candidate
- Morgan Bowen, Systems Ecology, University of Montana. Withdrawn, Spring 2020
- Jake Prater, Systems Ecology, University of Montana, M.S. degree received Spring 2021
- Colton Kyro, Systems Ecology, University of Montana, M.S. degree received Fall 2021
- Qipei Shangguan, Department of Chemistry and Biochemistry, University of Montana, 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
- 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
- Joy Lei Lei 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
- Veronica Gibson, Botany Department, University of Hawaii
- Lindsey Benjamin, Department of Oceanography, University of Hawaii
- Carla Gimpel, Marine Biology Program, University of Hawaii
- Ze Ren, Organismal Biology, Ecology, and Evolution, University of Montana
- Nikea Ulrich, Ecology and Evolution, University of Montana, Ph.D. candidate
- Qipei Shangguan, Department of Chemistry and Biochemistry, University of Montana, Ph.D. candidate

TEACHING:

Instructional Activities

- Summer 2021, Sole instructor, BIOE 400, “Aquatic Microbial Ecology”, Flathead Lake Biological Station, University of Montana. Enrollment: 9
- Spring 2021, Sole Instructor, BIOM 415, “Microbial Ecology, Diversity, and Evolution”, University of Montana. Enrollment: 12
- Fall 2020, co-instructor, BIOE 370, General Ecology, University of Montana. Enrollment: 120.
- Spring 2020. Sole Instructor BIOM 415, “Microbial Ecology, Diversity, and Evolution”, University of Montana. Enrollment: 5

- Summer 2019, Sole Instructor for BIOE 400 “Aquatic Microbial Ecology”, Flathead Lake Biological Station, University of Montana. Enrollment: 3
- Spring 2019, Sole Instructor for BIOM 415, “Microbial Ecology, Diversity, and Evolution”, University of Montana. Enrollment: 11
- Summer 2018, Sole Instructor for BIOB 491 “Aquatic Microbial Ecology”, Flathead Lake Biological Station, University of Montana. Enrollment: 8
- Spring 2018, Sole Instructor for BIOM 415 “Microbial Ecology, Diversity, and Evolution”, University of Montana. Enrollment: 17
- Summer 2017, Sole Instructor for BIOB 491 “Aquatic Microbial Ecology”, Flathead Lake Biological Station, University of Montana. Enrollment: 12
- Spring 2017, Lead Instructor for BIOM 415 “Microbial Ecology, Diversity, and Evolution”, University of Montana. Enrollment: 5
- Spring 2016, Lead Instructor for OCN 621 “Biological Oceanography”, University of Hawaii
- Fall 2015, Lead Instructor for OCN 626 “Marine Microplankton Ecology”, University of Hawaii
- Summer 2015, Lead Instructor and co-Director “Microbial Oceanography: Genomes to Biomes”, funded by the National Science Foundation and the Agouron Institute, University of Hawaii
- Spring 2015, Lead Instructor for OCN 621 “Biological Oceanography”, University of Hawaii
- Fall 2014, Lead Instructor for OCN 626 “Marine Microplankton Ecology”, University of Hawaii
- Summer 2014, Lead Instructor and co-Director “Microbial Oceanography: Genomes to Biomes”, funded by the National Science Foundation and the Agouron Institute, University of Hawaii
- Spring 2014, Lead Instructor for OCN 621 “Biological Oceanography”, University of Hawaii
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- Summer 2009, Lead Instructor and co-Director “Microbial Oceanography: Genomes to Biomes” course co-funded by the National Science Foundation and the Agouron Institute. University of Hawaii
- Spring 2009, Lead Instructor for OCN 621 “Biological Oceanography”, University of Hawaii
- Fall 2008, Lead Instructor and co-Director “Microbial Oceanography: Genomes to Biomes” course co-funded by the National Science Foundation and the Agouron Institute. University of Hawaii
- Summer 2008, Lead Instructor and co-Director “Microbial Oceanography: Genomes to Biomes” course co-funded by the National Science Foundation and the Agouron Institute. University of Hawaii
- Spring 2008, Sole Instructor OCN 750: “Topics in Biological Oceanography: Biogeochemical variability in the North Pacific Ocean”. University of Hawaii
- Fall 2007, OCN 780, University of Hawaii
- Fall 2007, Lead Instructor for OCN 626 “Marine Microplankton Ecology”, University of Hawaii
- Summer 2007, Lead Instructor and co-Director “Microbial Oceanography: Genomes to Biomes” course co-funded by the National Science Foundation and the Agouron Institute. University of Hawaii
- Fall 2006, Lead Instructor for OCN 626 “Marine Microplankton Ecology”, University of Hawaii
- Summer 2006, Lead Instructor and co-Director “Microbial Oceanography: Genomes to Biomes” course co-funded by the National Science Foundation and the Agouron Institute. University of Hawaii

FIELD EXPERIENCE (totaling >500 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	R/V <i>L.M. Gould</i> (Palmer Basin, Antarctica)
2001	R/V <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> , <u>Chief Scientist</u> , 10 days; Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2007	R/V <i>Kilo Moana</i> , <u>Chief Scientist</u> , 15 day research cruise: CMORE BULA (Suva, Fiji to Honolulu)
2007	R/V <i>Kilo Moana</i> , <u>Chief Scientist</u> , 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2008	R/V <i>Kilo Moana</i> , <u>Chief Scientist</u> , 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2009	R/V <i>Kilo Moana</i> , <u>Chief Scientist</u> , 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2010	R/V <i>Kilo Moana</i> , <u>Chief Scientist</u> , 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2010	R/V <i>Kilo Moana</i> , <u>Chief Scientist</u> , 10 day research cruise, Diazotrophy in a high CO ₂ world cruise (central North Pacific)
2011	R/V <i>Kilo Moana</i> , <u>Chief Scientist</u> , 11 day research cruise, Diazotrophy in a high CO ₂ world cruise (central North Pacific)
2012	R/V <i>Kilo Moana</i> , <u>Chief Scientist</u> , 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2013	R/V <i>Kilo Moana</i> , <u>Chief Scientist</u> , 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2014	R/V <i>Kilo Moana</i> , <u>Chief Scientist</u> , 7 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2015	R/V <i>Kilo Moana</i> , <u>Chief Scientist</u> , 10 day research cruise, Microbial Oceanography: Genomes to Biomes Cruise (central North Pacific)
2018	R/V <i>Kilo Moana</i> , 32 day research cruise, Clarion-Cliperton Fracture Zone; cruise funded by the Gordon and Betty Moore Foundation
2019	R/V <i>Kilo Moana</i> , <u>Chief Scientist</u> , 10 day research cruise, NSF EAGER Chief Scientist Training (central North Pacific)
2021	R/V <i>Kilo Moana</i> , <u>co-chief scientist</u> , 15 day research cruise funded by the Simons Foundation (central North Pacific)

PROFESSIONAL ACTIVITIES AND COMMUNITY SERVICE

Invited Seminars and Talks

1. **Church, M.J.** Our Essential Sea: Plankton biology and Earth's climate. Global Leadership Initiative Seminar Series, University of Montana. October 2021.
2. **Church, M.J.** The Essential Sea: How the oceans influence you and you influence the oceans. Academic WorldQuest. Plenary Speaker. University of Montana. March 2020.
3. **Church, M.J.** Wear, E.K., Orcutt, B.N., Young, R. Taxonomic diversity of Bacteria and Archaea in the Clarion-Clipperton Zone of the North Pacific Ocean. Deep CCZ Biodiversity Synthesis Workshop. Friday Harbor, WA, October 2019

4. **Church, M.J.** Eddy-driven variability of nitrification in the subtropical North Pacific Ocean. Marine and Environmental Biology Seminar Series, University of Southern California. September 2019.
5. **Church, M.J.** The ecology and biogeochemistry of nitrogen-fixing microorganisms in the subtropical North Pacific. The Fourth Xiamen Symposium on Marine Environmental Sciences, Xiamen University, China. January 2019
6. **Church, M.J.** Fixing the sea: The ecology of marine nitrogen fixation. Organismal Biology, Ecology, and Evolution program, University of Montana. November 2018.
7. **Church, M.J.** Time, water, and change: Plankton biogeochemistry in low nutrient ecosystems. Department of Chemistry and Biochemistry, University of Montana. October 2018.
8. **Church, M.J.** 2018. Ecology of ocean nitrogen fixing microorganisms. Lineaus University, Kalmar, Sweden. January 2018.
9. **Church, M.J.** 2017. Water and microbes: The tiny engines that keep the world habitable. Invited speaker for Mission Mountain Audubon Society. Polson, MT. October 2017.
10. **Church, M.J.** 2017. Microbes and Water: Exploring Earth's invisible forests. Invited lecture for University of Montana Honors College. University of Montana, October 2017.
11. **Church, M.J.** 2017. Water and microbes: The tiny engines that keep the world habitable. Invited Speaker for Science on Tap. Flathead Lake Brewery. September 2017.
12. **Church, M.J.** 2017. The ecology and biogeochemistry of marine nitrogen fixing microorganisms. University of Montana, Systems Ecology Seminar series. May 2017.
13. **Church, M.J.** and S. Emerson. 2016. Time Series Measurements of the Ocean Carbon Cycle. Workshop on Sustained Observations for Carbon Cycle Science and Decision Support, UCAR Boulder, CO. April 2016.
14. **Church, M.J.** 2016. The Biology of the Biological Pump: Quantifying Export. NSF Biology of the Biological Pump Workshop. February 2016.
15. **Church, M.J.** Ocean Time series today and tomorrow. Bermuda Institute of Ocean Sciences, January 2016.
16. **Church, M.J.** 2015. Shipboard and autonomous observations at Station ALOHA: Insights into productivity, export, and nutrient supply in the oligotrophic ocean. Ocean Carbon Biogeochemistry Summer Workshop, Woods Hole Oceanographic Institution. July 2015.
17. **Church, M.J.** 2015. Living the questions: A fortunate path through microbial oceanography. Yentsch-Schindler award acceptance, ASLO Aquatic Sciences Meeting, Granada, Spain, February 2015.
18. **Church, M.J.** 2014. Time, water, and change: The ecology and biogeochemistry of nitrogen cycling in the sea. Invited seminar, Marine Science Institute, UC Santa Barbara. October 2014.
19. **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.

20. **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.
21. **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.
22. **Church, M.J., D. Böttjer, 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.
23. **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.
24. **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.
25. **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.
26. **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.
27. **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.
28. **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.
29. **Church, M.J.** 2008. Microbes and Climate: Stories from the Sea. Hanauma Bay Evening Lecture Series. Honolulu, HI.
30. **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.
31. **Church, M.J.** 2007. Mesoscale forcing of microbial activity and biogeochemistry in the North Pacific Ocean. School of Oceanography, University of Washington.
32. **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.
33. **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.

34. **Church, M.J.** 2006. Advances in understanding the time and space dynamics of marine microbes. Department of Oceanography, University of Hawaii, Honolulu, HI.
35. **Church, M.J.** 2006. Temporal and spatial dynamics of marine microbes. Monterey Bay Aquarium and Research Institute, Monterey, CA.
36. 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.
37. 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..
38. **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.
39. **Church, M.J.** 2005. Photoenhanced heterotrophic production in the North Pacific Ocean. ASLO Aquatic Sciences Meeting, Salt Lake City, Utah.
40. 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.
41. **Church, M.J.** 2004. Dynamics of bacterioplankton growth and production in the oligotrophic North Pacific Ocean. Ocean Sciences Department, University of California Santa Cruz.
42. **Church, M.J.** 2003. Bacterial production sees the light: Strategies for growth in oligotrophic ocean ecosystems. DIALOG V. Bermuda.

Selected non-peer reviewed published abstracts and presentations (2009-2018)

1. **Church, M.J.**, J. Ranieri, E.K. Wear, T. Tappenbeck, S.P. Devlin, J.J. Elser. Variability and dynamics of microbial abundance, diversity, and activity in Flathead Lake. Montana Lakes Conference. March 2019.
2. **Church, M.J.**, A. Nelson, J. Ranieri, N. Dornan, D. Viviani. 2018. Relationships between microbial production and sinking particle fluxes in the mesopelagic waters of the subtropical North Pacific. AGU/ASLO/TOS Ocean Sciences Meeting. Portland, OR. February 2018. Oral.
3. Hawco, N., S. John, **M. Church**, D. Repeta, B. Barone, A. Nelson, J. Ranieri, R.L. Kelly, L. Babcock-Adams, M. Acker. 2018. Evaluating iron limitation scenarios for the deep chlorophyll maximum. AGU/ASLO/TOS Ocean Sciences Meeting. Portland, OR. February 2018. Poster.
4. Letelier, R.M., D.M. Karl, K.M. Björkman, A.E. White, J.J. Wettstein, **M.J. Church**. 2018. Climate Driven Oscillations in the Proximate Elemental Control of Ecosystem Productivity Observed in the North Pacific Subtropical Gyre. AGU/ASLO/TOS Ocean Sciences Meeting. Portland, OR. February 2018. Oral.
5. Zakem, E. A. Al-Haj, **M. J Church**, G. van Dijken, S. Dutkiewicz S. Foster, R.W. Fulweiler. M.M. Mills, M. Follows. 2018. Ecological control of nitrite in the upper ocean. AGU/ASLO/TOS Ocean Sciences Meeting. Portland, OR. February 2018. Oral.

6. **Church, M.J.**, Björkman, K.M., Karl, D.M., Rii, Y.M., Viviani, D.A. 2017. Emerging views on picoplankton dynamics at Station ALOHA. February, 2017. Association of the Sciences of Limnology and Oceanography Annual Meeting. Honolulu, HI. Oral.
7. Shilova, I. N.; Mills, M. M.; Robidart, J. C.; Turk-Kubo, K. A.; Björkman, K. M.; Kolber, Z. S.; Rapp, I.; van Dijken, G. L.; **Church, M.J.**; Achterberg, E. P.; Arrigo, K. R.; Zehr, J. P. 2017. Diversity matters: The nutrient status and response to nitrogen and iron availability vary among phytoplankton sub-populations in the North Pacific. February, 2017. Association of the Sciences of Limnology and Oceanography Annual Meeting. Honolulu, HI. Oral.
8. Gradoville, M. R.; Crump, B. C.; Letelier, R. M.; **Church, M.J.**; White, A. E. 2017. The diversity and functional potential of microbial communities associated with the colonial N₂ fixing cyanobacterium *Trichodesmium*. February, 2017. Association of the Sciences of Limnology and Oceanography Annual Meeting. Honolulu, HI. Oral.
9. Eichner, M.; Klawonn, I.; Wilson, S. T.; Littmann, S.; Whitehouse, M.; **Church, M.J.**; Kuypers, M. M.; Karl, D. M.; Ploug, H. 2017. Distinct microenvironments and high single-cell variability in *Trichodesmium* colonies collected at Station ALOHA. February, 2017. Association of the Sciences of Limnology and Oceanography Annual Meeting. Honolulu, HI. Oral.
10. Lindh, M. V.; **Church, M.J.** 2017. There and back again - Unraveling mechanisms of microbial biogeography in the North Pacific Subtropical Gyre to and from Station ALOHA. February, 2016. Association of the Sciences of Limnology and Oceanography Annual Meeting. Honolulu, HI. Poster.
11. Rii, Y. M.; Lindh, M. V.; **Church, M.J.** 2017. Diversity and dynamics of eukaryotic picoplankton in the North Pacific Subtropical Gyre. February, 2017. Association of the Sciences of Limnology and Oceanography Annual Meeting. Honolulu, HI. Oral.
12. Van Dijken, G., D. Whitt, M. Mills, I. Shilova, J. Robidart, K. Bjorkman, **M. Church**, J. Zehr, K. Arrigo. 2016. Observations of a summertime phytoplankton bloom in the northeastern subtropical Pacific. AGU/ASLO/TOS Ocean Sciences Meeting. New Orleans, LA. February 2016. Poster.
13. Viviani, D., **M. Church**. 2016. The effects of light, primary production, and temperature on bacterial production at Station ALOHA. AGU/ASLO/TOS Ocean Sciences Meeting. New Orleans, LA. February 2016. Poster.
14. Bottjer, D., J. Dore, D. Karl, R. Letelier, C. Mahaffey, S. Wilson, J. Zehr, **M. Church**. 2016. Temporal Variability in Nitrogen Fixation and Particulate Nitrogen Export at Station ALOHA. AGU/ASLO/TOS Ocean Sciences Meeting. New Orleans, LA. February 2016. Poster.
15. Zehr, J., M. Mills, I. Shilova, K. Turk-Kubo, J. Robidart, G. van Dijken, K. Bjorkman, D. Whitt, B. Wai, **M.J. Church**, *et al.* 2016. Dimensions of biodiversity of oceanic nitrogen cycling: nutrient co-limitation, nitrogen substrate preferences and more. AGU/ASLO/TOS Ocean Sciences Meeting. New Orleans, LA. February 2016. Oral.
16. Mills, M., I. Shilova, J. Robidart, K. Bjorkman, G. van Dijken, K. Turk-Kubo, Z. Kolber, E. Achterberg, **M. Church**, J. Zehr, K. Arrigo. 2016. Differential Effects of Nitrate (NO₃-), Ammonium (NH₄+) and Urea on Phytoplankton Communities in the

- North Pacific Subtropical Gyre. AGU/ASLO/TOS Ocean Sciences Meeting. New Orleans, LA. February 2016. Oral.
17. Rii, Y., R. Bidigare, **M. Church**. 2016. Responses of photosynthetic assemblage structure and physiology to variations in nitrogen substrates. AGU/ASLO/TOS Ocean Sciences Meeting. New Orleans, LA. February 2016. Poster.
 18. Barone, B., R. Bidigare, G. Carter, **M. Church**, R. Foreman, D. Karl. 2016. Inorganic Nutrient Diffusion at the Base of the Nutricline and its Association with the Deep Chlorophyll *a* Maximum Layer. AGU/ASLO/TOS Ocean Sciences Meeting. New Orleans, LA. February 2016. Oral.
 19. Shulse, C.N., B. Mailliot, T.N. Nielsen, E.F. DeLong, C.S. Smith, **M.J. Church**. Microbial diversity and metabolic potential of a polymetallic nodule field. 14th Deep Sea Biology Symposium. September, 2015, Aveiro, Portugal. Oral.
 20. Smith C.R., D.J. Amon, J. Drazen, **M. Church**, E. Vetter, A.G. Glover, T.G. Dalhgren, A.J. Gooday, P. Martinez, A. Sweetman, A. Ziegler. Nodule Mining and Ocean Stewardship in the CCZ: The Design of the ABYSSLINE Project and Initial Biodiversity Results. 14th Deep Sea Biology Symposium. September, 2015, Aveiro, Portugal. Oral.
 21. Björkman, K., **M Church**, D Karl. 2015. Spatial and Temporal Variability in the Concentration and Turnover of the Inorganic Phosphate and Adenosine-5'-triphosphate pools in the North Pacific Subtropical Gyre. EGU General Assembly Conference Abstracts, Vienna, Austria. Oral.
 22. D.M. Karl, T. Clemente, E. Grabowski, S.T. Wilson, R. Letelier, **M.J. Church**. 2014. Variability in particle export at Station ALOHA. Ocean Sciences Meeting, February 2014. Honolulu, HI. Oral.
 23. Wai, B.R.K.*, D.M. Karl, E.F. DeLong, **M.J. Church**. 2014. Time-series assessment of ammonia oxidizing *Archaea* at Station ALOHA. Ocean Sciences Meeting, February 2014. Honolulu, HI. Poster.
 24. Rii, Y.M.*, S. Duhamel, R.R. Bidigare, D.M. Karl, D. Repeta, **M.J. Church**. 2014. CONTRIBUTION OF PHOTOSYNTHETIC PICOEUKARYOTES TO PRIMARY PRODUCTION AND PARTICLE FLUX IN BIOGEOCHEMICALLY DISTINCT REGIONS OF THE EASTERN SOUTH PACIFIC OCEAN. Ocean Sciences Meeting, February 2014. Honolulu, HI. Poster.
 25. Barone, B., **M.J. Church**, D.M. Karl, R.M. Letelier, A. White. 2014. SIZE STRUCTURE AND PARTICLE MAXIMA IN DIFFERENT LAYERS OF THE WATER COLUMN OF A SUBTROPICAL GYRE: INFLUENCES OF ALGAL ECOLOGY AND DENSITY STRATIFICATION. Ocean Sciences Meeting, February 2014. Honolulu, HI. Oral.
 26. Björkman, K. M.; Doggett, J. K.; **Church, M. J.**; Karl, D. M. 2014. DIFFERENTIAL RESPONSE TO LIGHT INTENSITY IN 14C-BICARBONATE VERSUS 3H-LEUCINE INCORPORATION BY PROCHLOROCOCCUS AT STATION ALOHA. Ocean Sciences Meeting, February 2014. Honolulu, HI. Poster.
 27. Böttjer, D.; Viviani, D.*; Karl, D. M.; Letelier, R. M.; **Church, M. J.** 2014. NO EVIDENCE FOR ENHANCED CARBON OR DINITROGEN FIXATION UNDER ELEVATED SEAWATER PCO₂ IN THE NORTH PACIFIC SUBTROPICAL GYRE. Ocean Sciences Meeting, February 2014. Honolulu, HI. Poster.

28. **Church, M. J.**; HOT Team. 2014. THE HAWAII OCEAN TIME-SERIES (HOT) PROGRAM TURNS 25: HIGHLIGHTS OF A QUARTER CENTURY OF SUSTAINED OBSERVATIONS IN THE SEA. Ocean Sciences Meeting, February 2014. Honolulu, HI. Poster.
29. Segura-Noguera, M.; Curless, S. E.; **Church, M. J.**; Karl, D. M. 2014. AMMONIUM DISTRIBUTION AT STATION ALOHA IN THE NORTH PACIFIC SUBTROPICAL GYRE. Ocean Sciences Meeting, February 2014. Honolulu, HI. Poster.
30. Bryant, J. B.; Eppley, J. M.; Karl, D. M.; **Church, M. J.**; DeLong, E. F. 2014. WIND AND SEASON DRIVE MICROBIAL COMMUNITY DIVERSITY IN THE NORTH PACIFIC SUBTROPICAL GYRE AT STATION ALOHA. Ocean Sciences Meeting, February 2014. Honolulu, HI. Oral.
31. Letelier, R. M.; White, A. E.; **Church, M. J.**; Karl, D. M.; Bidigare, R. R. 2014. LOCAL TO BASIN SCALE MODULATION OF PRIMARY PRODUCTIVITY IN THE NORTH PACIFIC SUBTROPICAL GYRE: LESSONS LEARNED FROM THE HAWAII OCEAN TIME-SERIES PROGRAM. Ocean Sciences Meeting, February 2014. Honolulu, HI. Poster.
32. Sadler, D. W.; Dore, J. E.; **Church, M. J.**; Fujieki, L. A.; Karl, D. M. 2014. ASSESSING THE INTERNAL CONSISTENCY OF CO₂ MEASUREMENTS AT STATION ALOHA. Ocean Sciences Meeting, February 2014. Honolulu, HI. Poster.
33. Viviani, D. A.*; **Church, M. J.** 2014. DISSOLVED ORGANIC MATTER PRODUCTION AND MICROBIAL GROWTH AT STATION ALOHA. Ocean Sciences Meeting, February 2014. Honolulu, HI. Poster.
34. Thomas, S. E.*; **Church, M. J.** 2014. DIVERSITY AND ACTIVITY OF CHEMOAUTOTROPHIC BACTERIA IN THE APHOTIC WATERS OF THE SUBTROPICAL NORTH PACIFIC OCEAN. Ocean Sciences Meeting, February 2014. Honolulu, HI. Poster.
35. Gradoville, M. R.; White, A. E.; Böttjer, D.; **Church, M. J.**; Letelier, R. M. 2014. DIVERSITY TRUMPS ACIDIFICATION: NO CO₂ ENHANCEMENT OF N₂ FIXATION BY THE TRICHODESMIUM COMMUNITY AT STATION ALOHA. Ocean Sciences Meeting, February 2014. Honolulu, HI. Oral.
36. Grant, S. R.; Rappe, M.; **Church, M.** 2014. GROWTH STUDY OF THE SAR11 COASTAL ISOLATE HIMB114 IN BATCH AND CONTINUOUS CULTURE. Ocean Sciences Meeting, February 2014. Honolulu, HI. Oral.
37. Rii, Y. M.*; Bidigare, R. R.; Bowers, R. M.; **Church, M. J.**; Omori, E. H.; Rappé, M. S. 2014. PHYTOPLANKTON DIVERSITY IN EUTROPHIC TO HYPEROLIGOTROPHIC REGIONS IN THE EASTERN SOUTH PACIFIC OCEAN. Joint Aquatic Sciences Meeting, May 2014. Portland, OR. Oral.
38. Heal, K. R.*; Smith, S. R.; **Church, M. J.** 2013. PHOTOSYNTHETIC PARAMETERS OVER HOURLY AND DAILY TIMESCALES SHED LIGHT ON POPULATION STABILITY AT STATION ALOHA. Aquatic Sciences Meeting, February 2013. New Orleans, LA. Poster.
39. Smith, S. R.*; Heal, K. R.; **Church, M. J.** 2013. HIGH RESOLUTION SAMPLING REVEALS LIGHT-DRIVEN FLUCTUATIONS IN MICROBIAL POPULATION SIZE AND ACTIVITIES AT STATION ALOHA. Aquatic Sciences Meeting, February 2013. New Orleans, LA. Poster.

40. Robidart, J. C.; **Church, M. J.**; Ryan, J. P.; Wilson, S. T.; Ascani, F.; Marin III, R.; Richards, K.; Karl, D. M.; Scholin, C. A.; Zehr, J. P. 2013. APPLICATION OF HIGH RESOLUTION AUTONOMOUS TIME SERIES TO DETECT PATTERNS OF NITROGEN FIXING CYANOBACTERIA IN THE NORTH PACIFIC OCEAN. Aquatic Sciences Meeting, February 2013. New Orleans, LA. Poster.
41. Kavanaugh, M. T.; Hales, B. R.; Letelier, R. M.; Doney, S.; Davis, C. O.; Spitz, Y. H.; White, A. E.; **Church, M. J.**; Saraceno, M. 2013. DYNAMIC SEASCAPES: AN OBJECTIVE AND HIERARCHICAL FRAMEWORK FOR UNDERSTANDING PELAGIC SPATIOTEMPORAL VARIABILITY. Aquatic Sciences Meeting, February 2013. New Orleans, LA. Oral.
42. Viviani, D. A.*; **Church, M. J.**; Böttjer, D. 2013. VARIABILITY IN DISSOLVED PRIMARY PRODUCTION AND MICROBIAL GROWTH IN THE NORTH PACIFIC SUBTROPICAL GYRE. Aquatic Sciences Meeting, February 2013. New Orleans, LA. Poster.
43. Dore, J. E.; Lukas, R.; **Church, M. J.**; Sadler, D. W.; Karl, D. M. 2012. CONSISTENT TRENDS AND PATTERNS OF INTERANNUAL VARIABILITY IN SURFACE OCEAN CO₂ AT CONTRASTING SITES WINDWARD AND LEEWARD OF THE HAWAIIAN ISLANDS. Ocean Sciences Meeting, February 2012, Salt Lake City, UT. Poster.
44. Pasulka, A. P.; Landry, M. R.; Taniguchi, D. A.; Taylor, A. G.; **Church, M. J.** 2012. TEMPORAL DYNAMICS OF PHYTOPLANKTON AND HETEROTROPHIC PROTISTS AT STATION ALOHA. Ocean Sciences Meeting, February 2012, Salt Lake City, UT. Poster.
45. White, A. E.; Whitmire, A. L.; Letelier, R. M.; Kavanaugh, M. T.; **Church, M. J.** 2012. TIME-SERIES ANALYSES OF PRIMARY PRODUCTIVITY AS A FUNCTION OF ABSORPTION, PIGMENT BASED PHYTOPLANKTON DIVERSITY AND PARTICLE SIZE DISTRIBUTIONS. Ocean Sciences Meeting, February 2012, Salt Lake City, UT. Poster.
46. Kavanaugh, M. T.; Hales, B.; Saraceno, M.; Spitz, Y. H.; White, A. E.; **Church, M. J.**; Letelier, R. M. 2012. SATELLITE-DERIVED DYNAMIC SEASCAPES: SPATIOTEMPORAL CONTEXT FOR OCEANOGRAPHIC OBSERVATIONS OF NORTH PACIFIC ECOSYSTEMS. Ocean Sciences Meeting, February 2012, Salt Lake City, UT. Poster.
47. Gradoville, M. R.; White, A. E.; Zirbel, M. J.; Böttjer, D.; **Church, M. J.**; Letelier, R. M. 2012. METABOLIC RESPONSE OF TRICHODESMIUM AND CROCOSPHAERA TO PCO₂ PERTURBATIONS ON MULTIPLE TIME SCALES. Ocean Sciences Meeting, February 2012, Salt Lake City, UT. Oral.
48. Brzezinski, M.A., J.W. Krause, B. Li, **M.J. Church**. 2011. Interannual variability and drivers of the silicon cycle at the Hawaii Ocean Time-series Station ALOHA. *ASLO Aquatic Sciences Meeting*, San Juan, Puerto Rico, February 2011. Oral.
49. Johnson, K.S., S.C. Riser, D. Swift, L.J. Coletti, H.W. Jannasch, J.N. Plant, C.M. Sakamoto, M.W. Lomas, **M.J. Church**. 2011. HOT and BATS: In situ comparison using profiling floats with chemical sensors. *ASLO Aquatic Sciences Meeting*, San Juan, Puerto Rico, February 2011. Oral.

50. Lomas, M.W. and **M.J. Church**. 2010. BATS and HOT: Comparative analyses of similar yet different ecosystems. *ASLO Aquatic Sciences Meeting*, San Juan, Puerto Rico, February 2011. Oral.
51. Böttjer, D., **M.J. Church**, R.M. Letelier, D. Sadler, D. Viviani, K.S. Watkins-Brandt. 2011. Diazotroph activity and community structure in a high CO₂ world. *ASLO Aquatic Sciences Meeting*, February 2011. Poster.
52. Gradoville, R.M., K.S. Watkins-Brandt, A.E. White, **M.J. Church**, R.M. Letelier. 2011. Comparison of N₂ fixation response by *Trichodesmium* to pCO₂ perturbations using gas bubbling and acid/base approaches. *ASLO Aquatic Sciences Meeting*, San Juan, Puerto Rico, February 2011. Oral.
53. Lomas, M.W. and **M.J. Church**. 2010. BATS and HOT: Comparative analyses of similar yet different ecosystems. *Integrating biogeochemistry and ecosystems in a changing ocean- Regional comparisons, IMBER (Integrated Marine Biogeochemistry and Ecosystems Research) workshop*, Crete, Greece. Oral.
54. Dore, J.E., **M.J. Church**, C. Mahaffey, R.M. Letelier, D.M. Karl. 2010. Reconciling N₂ fixation rate estimates in the subtropical North Pacific Ocean. *AGU/ASLO Ocean Sciences Meeting*, Portland, OR. Poster.
55. Santiago-Mandujano, F., R. Lukas, S. DeCarlo, P. Lethaby, J. Snyder, E. Firing, R. Bidigare, **M. Church**, J.D. Dore, D.M. Karl, M. Landry, and R. Letelier. 2010. Physical Trends at Station ALOHA in the North Pacific Subtropical Gyre. *AGU/ASLO Ocean Sciences Meeting*, Portland, OR. Poster.
56. Björkman, K.M., **M.J. Church**, K. Doggett, D.M. Karl. 2010. The effect of light on phosphorus and amino acid uptake in specific microbial populations in the North Pacific subtropical gyre using cell-sorting flow cytometry. *AGU/ASLO Ocean Sciences Meeting*, Portland, OR. Oral.
57. Li, B., M. Brzezinski, D.M. Karl, **M.J. Church**. 2010. Investigations into the temporal and spatial dynamics of diatoms in the North Pacific Subtropical Gyre (NPSG). *AGU/ASLO Ocean Sciences Meeting*, Portland, OR. Poster.
58. **Church, M.J.**, R. Bidigare, J. E. Dore, M.R. Landry, R.M. Letelier, R. Lukas, D.M. Karl. 2010. The annual flow of carbon through an open ocean plankton food web: Reflections on 20 years of measurements at Station ALOHA. *AGU/ASLO Ocean Sciences Meeting*, Portland, OR. Poster.
59. Rappé, M S; Hayakawa, D H; Eiler, A; Karl, D M; **Church, M J**; 2009. DRIVERS OF BACTERIOPLANKTON COMPOSITION IN THE NORTH PACIFIC SUBTROPICAL GYRE. ASLO Aquatic Sciences Meeting, Nice, France. January 2009. Poster.
60. **Church, M.J.** 2009. Investigating the responses of ocean diazotrophs to variations in seawater pCO₂ in the North Pacific Subtropical Gyre. *Rising CO₂, Ocean Acidification, and Their Impacts on Marine Microbes*. University of Hawaii, Honolulu, Hawaii. Oral.

International and National Community Activities and Workshops (2011-2020):

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| 2020-present | Chair , LTER Decadal Review Committee, US National Science Foundation |
| 2020-2021 | Member , Awards Committee, Association for Sciences of Limnology and Oceanography |

2020	Member , Scientific Committee for planning 2020 ASLO-SFS Joint Meeting in Madison, WI.
2019	Panel Member , NSF LTER Site Review, November 2019
2018	Ph.D. Opponent , Dr. Carina Bunse, Lineaus University, Kalmar, Sweden, January 2018
2018	Guest Editor , <i>Limnology and Oceanography</i> , Special Issue on Aquatic Time Series
2018	Guest Editor , <i>Frontiers in Microbiology</i> , Special Issue on Microbial Ecology of the subtropical North Pacific Ocean
2017-present	Member , Ocean Carbon Biogeochemistry Program Ocean Time Series Committee
2016-2018	Chair , Steering Committee, Ocean Carbon Biogeochemistry Program
2016	Steering committee member , NSF funded workshop on “The biology of the biological carbon pump”. February 2016. New Orleans, LA.
2015	Session co-Chair “Evolving Views on Physical, Ecological, and Biogeochemical Underpinnings of Plankton Blooms”, Ocean Carbon Biogeochemistry summer workshop, Woods Hole, MA. July 2015.
2014	Session co-Chair , Ocean Sciences Meeting, Honolulu, HI., February 2014
2013	Invited panelist , First Technical Experts Workshop for the Global Ocean Observing System (GOOS) Biogeochemistry Panel, Intergovernmental Oceanographic Commission and UNESCO. Townsville, Australia. November 2013.
2013-2015	Vice Chair and Steering Committee Member , Ocean Carbon Biogeochemistry Program
2012	Invited participant , Global Intercomparability in a Changing Ocean: An International Time-Series Methods Workshop sponsored by the IOCCP and OCB. Bermuda. November 2012.
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-present	Associate Editor , <i>Frontiers in Aquatic Microbiology</i>

School and Departmental Committee Service:

2021	Member, Ecology and Evolution Graduate Student Evaluation Committee, University of Montana
2021	Member, Ecology and Evolution, Mentoring Committee, University of Montana
2020	Chair, Ecology and Evolution Graduate Student Evaluation Committee, University of Montana
2019	Member, Ecology and Evolution Graduate Student Evaluation Committee, University of Montana
2019	Member, DBS Review Committee for Dr. Linda Phillips Knoblock Fellowship, University of Montana, Spring 2020
2019	Member, Ecology and Evolution Review Committee for Jack Schmautz & David Nicholas Scholarships, University of Montana

2018	Member, Search Committee, Post-doctoral Fellow, Davidson's Honor College, <u>University of Montana</u>
2018-present	Chair, <i>ad hoc</i> Facilities and Personnel Committee, Flathead Lake Biological Station, University of Montana
2018	Member, DBS Review Committee for Graduate Fellowship: Dr. Linda Phillips Knoblock Fellowship, <u>University of Montana</u>
2018	Member, OBEE Review Committee for Graduate Fellowships: Jack E. Schmautz Scholarship and David Nicholas Memorial Fund, <u>University of Montana</u>
2017-2019	Member, <u>University of Montana</u> Academic Committee on Water
2016	Member, Search Committee for faculty position in Stream Ecology, Flathead Lake Biological Station, <u>University of Montana</u>
2015-2016	Chair, Departmental Teaching Evaluation Committee, <u>University of Hawaii</u>
2014	Member, Departmental Teaching Evaluation Committee, <u>University of Hawaii</u>
2013	Member, SOEST Young Investigator Search Committee, <u>University of Hawaii</u> Member, Departmental Personnel Committee, <u>University of Hawaii</u> Member, <i>ad hoc</i> Departmental committee on graduate core course curriculum, <u>University of Hawaii</u>
2012	Chair, Departmental Personnel Committee, <u>University of Hawaii</u>
2012	Interim Biological Oceanography Division Head, <u>University of Hawaii</u>
2012	Chair, Search Committee for Department of Oceanography Sustainability Faculty Cluster Hire, <u>University of Hawaii</u>
2012	Committee member, Faculty search for Plankton Ecologist in the Department of Oceanography, <u>University of Hawaii</u>
2010-2016	SOEST Research Council, <u>University of Hawaii</u>
2010-2016	SOEST Ship Users Committee, <u>University of Hawaii</u>
2012-2015	COSEE Island Earth, Science Advisory Committee, <u>University of Hawaii</u>
2009-2012	Department of Oceanography Graduate Student Recruitment Committee, <u>University of Hawaii</u>

Editorial Service:

- Associate Editor (2017), *Frontiers in Microbiology* Special Issue on “Microbial ecology in the North Pacific subtropical gyre”
- Associate Editor (2017), *Limnology and Oceanography* Special Issue on “Long-term perspectives in aquatic research”
- Associate Editor, *Frontiers in 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, Journal Geophysical Research-Oceans, Limnology and Oceanography, Microbial Ecology, Nature, Nature Microbiology, Proceedings of the National Academy of Sciences, Science, Global Biogeochemical Cycles, Global Change Biology

Agency Panel Service:

National Science Foundation, National Aeronautics and Space Administration

Agency Proposal Reviewer:

National Science Foundation, National Oceanic and Atmospheric Administration, National Aeronautics and Space Administration, National Environment Research Council, Schmidt Ocean Institute