

DAVID MICHAEL KARL
CURRICULUM VITAE

GOV. MSG. NO. 697

PERSONAL

Business: Department of Oceanography
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EDUCATION

State University College at Buffalo, New York; B.A. degree, , Magna cum laude
Major: Biology

Florida State University, Tallahassee, Florida; M.S. degree,
Major: Biological Oceanography

University of California, San Diego, Scripps Institution of Oceanography; Ph.D. degree,
Major: Oceanography

POSITIONS HELD

Assistant Professor of Oceanography, University of Hawaii, March 1978 - June 1981
Associate Professor of Oceanography, University of Hawaii, July 1981 - June 1987 (tenure granted July 1982)
Professor of Oceanography, SOEST, University of Hawaii, July 1987 - present
Chairman, Oceanic Biology Research Division, HIG, University of Hawaii, July 1986 - 1990
Chairman, Biological Oceanography Division, SOEST, University of Hawaii, July 1990 - September 1991
Member, Graduate Faculty: Oceanography (1978 - present), Marine Biology (1991 - 2015)
Member, Affiliate Faculty, Bermuda Biological Station for Research, 1995 - 2004
Chairman, Marine Biology Specialization, University of Hawaii, 2002 - 2006
Member and co-chair of Ecosystem Ecology Section, The Faculty of 1000, 2005 - present
Co-Director (with E. F. DeLong), Center for Microbial Oceanography: Research and Education (C-MORE),
August 2006 - present
Staff Member, Ecology Institute, Inter-Research Science Center, 2006-present
Co-Director, Simons Collaboration on Ocean Processes and Ecology (SCOPE), July 2014 - present

RESEARCH EXPERIENCE

Research Assistant: Florida State University, Department of Oceanography
September 1972 - June 1973

Research Assistant: Scripps Institution of Oceanography, Food Chain Research Group
September 1974 - March 1978

Participant, Experimental Microbial Ecology Course: Marine Biological Laboratory, Woods Hole, MA
June 1974 - August 1974

Participant, Scandinavian Summer School for Microbial Ecology, University of Aarhus, Denmark
August 1976

Research Biologist: U.S. Antarctic Program, McMurdo Base, Antarctica, Ross Ice Shelf Project
December 1976 - January 1977; November 1977 - December 1977

Research Oceanographer: U.S. Antarctic Program, Palmer Station Antarctica, R/V *Polar Duke*, RVIB *N. B. Palmer*, ARSV *L. M. Gould* (21 expeditions)

Participant in more than 70 major oceanographic cruises, including microbiological and biogeochemical investigations of: the Cariaco Trench (Basin); Tampa Bay, Florida; the Mid-Atlantic Ridge; NE Gulf of Mexico; Black Sea; Southern California Bight; Amazon River; Caribbean Sea; central California; eastern tropical North Pacific Ocean; subtropical North Pacific Ocean; Ross Sea, Weddell Sea, Bransfield Strait and Bellingshausen Sea, Antarctica; Hawaiian coastal waters

Research submersible observer on more than 30 dives: *ALVIN* (Galapagos Rift, 21°N and 11°N on the East Pacific Rise, Guaymas Basin, Loihi Seamount), *MAKALILI* (Puna Rift Zone, Hawaii and Oahu Hawaii coastal waters), *PISCES V* (Loihi Seamount, Hawaii)

HONORS AND AWARDS

B.A. degree, *Magna cum laude*, State University College at Buffalo, New York,
American-Scandinavian Foundation Fellowship, Awarded for study in Aarhus, Denmark, June 1976
Recipient, Eckart Dissertation Prize, University of California, Scripps Institution of Oceanography, 1979
H. Burr Steinbach Visiting Scholar, MIT-WHOI Joint Program, July 1982, 2002
Recipient, Presidential Young Investigator Award, White House and National Science Foundation, 1984-1989
Recipient, Board of Regents Excellence in Research Award (Junior Faculty), University of Hawaii, 1985
Recipient, Honolulu Chapter Achievement Rewards for College Scientists (ARCS) Organization "Scientist of the Year" Award, Honolulu, Hawaii, May 1986
Recipient, Ian Morris Distinguished Scholar Award, Horn Point Environmental Laboratory, University of Maryland, Cambridge, MD, November 1993
Recipient, Board of Regents Excellence in Research Award (Senior Faculty), University of Hawaii, 1994
Designated one of the University of Hawaii's "ninety fabulous faculty," 1997, on the occasion of their 90th anniversary
Recipient, G. Evelyn Hutchinson Medal, American Society for Limnology and Oceanography, 1998, for "leadership in the fields of methods development, microbial ecology, molecular ecology and biogeochemistry, for analysis of whole water ecosystems in the Pacific and Antarctic oceans, and for exemplary teaching, mentoring and citizenship"
Elected to Fellowship in the American Geophysical Union, Jan 1999, for "contributions and leadership in microbial ecology, molecular ecology and biochemistry, and for advancing our understanding of the relationship between the microbial community structure and biogeochemical cycles"
Recipient, A. G. Huntsman Medal, for excellence in marine science, Royal Society of Canada, 2001
Distinguished Lecturer, 9th Annual W.S. Jardevsky Lecture, "A sea of change: Decade-scale biogeochemical variability in the North Pacific subtropical gyre," Lamont-Doherty Earth Observatory, February 2002
Designated a "Highly Cited Researcher" by the Institute for Scientific Information (ISI/HighlyCited.com) in the category of Plant & Animal Science, March 2002
Recipient, American Geophysical Union Citation for Excellence in Refereeing, *Geophysical Research Letters*, Dec 2003
Recipient, Gordon and Betty Moore Foundation Investigator in Marine Microbiology, May 2004-2013; 2013-present

Recipient, Henry Bryant Bigelow Medal in Oceanography, Woods Hole Oceanographic Institution, October 2004, for “contributions to microbial oceanography, especially the development and leadership of long-term, integrated studies of chemical, physical and biological variations in oceanic environments”

Recipient, *Distinguished Research Scientist of the Year* award, Hawaii Academy of Sciences, August 2005

Designated Chancellor’s Distinguished Lecturer, Louisiana State University, Baton Rouge, LA, September 2005

Designated David Packard Distinguished Lecturer and Recipient of the David Packard Medal in Oceanography, Monterey Bay Aquarium Research Institute, November 2005

Elected to the U.S. National Academy of Sciences, April 2006, citation reads “Karl is a microbial oceanographer whose research has focused on the ecology of microorganisms. By integrating observations and measurements at scales ranging from cellular to oceanic, Karl has led the development of a quantitative understanding of the marine carbon cycle and global biogeochemistry.”

Elected to Fellowship in the American Academy of Microbiology in recognition of “outstanding contributions to the science and profession of microbiology”, May 2006

Summer Research Fellow, Harris Manchester College, Oxford University, U.K., July 2009

Co-recipient of the National Academy of Sciences Cozzarelli Prize for best paper of 2009 in areas of Physical Science and Mathematics (Dore et al. 2009, *PNAS*)

Honorary Doctor of Science degree, University of Chicago, citation reads “Oceanographer and microbiologist, and a leader in deciphering the complexity of chemical and biological feedbacks in the oceans, whose brilliance and scholarship continue to revolutionize our understanding of marine biogeochemistry,” June 2010

Designated an inaugural Kyo-Ya International / UH Sea Grant Fellow in sustainable coastal tourism, Feb 2011

Recipient, Alexander Agassiz Medal, National Academy of Sciences, for “leadership in establishing multi-disciplinary ocean-observing systems, for detection of decadal regime shifts in pelagic ecosystems, and for paradigm-shifting insights on biogeochemical cycles in the ocean,” April 2013

Inaugural Recipient, Victor and Peggy Brandstrom Pavel Endowed Chair in Ocean and Earth Science and Technology, University of Hawaii, February 2014

Designated the 15th Annual Roger Revelle Commemorative Lecturer, “The Contemporary Challenge of the Sea: Science, Society and Sustainability,” Ocean Studies Board of the National Academies, Washington, D.C., March 2014

Elected to the American Academy of Arts and Sciences, April 2015

Recipient, DuPont Industrial Biosciences Award in Applied and Environmental Microbiology, American Society for Microbiology, June 2015

Recipient, Balzan Prize for Oceanography, November 2015, citation reads “For his fundamental contributions to the understanding of the role and immense importance of microorganisms in the ocean, and of how microorganisms and phytoplankton control the oceanic carbon, nitrogen and iron cycles, work that has yielded significant insights into global change”

Elected, Fellow National, The Explorers Club, March 2018

EDITORIAL BOARD APPOINTMENTS AND RELATED RESPONSIBILITIES

Applied and Environmental Microbiology (Jan 1980 - Dec 1982; reappointed for 2nd term Jan 1983 - Dec 1985; reappointed for 3rd term Jan 1985 - Dec 1988; reappointed for 4th term Jan 1989 - Dec 1994)

Bacteria in Nature: A treatise on the interactions of bacteria and their habitats (Feb 1981 – Dec 1985)

Microbial Ecology (Jan 1990 - Dec 1992)

Deep-Sea Research, Guest Editor, "Research on Antarctic Coastal Ecosystem Rates" (Aug/Sept 1991)

"Microbiology of Deep-Sea Hydrothermal Vents," Editor, CRC Press, Inc. (Mar 1995)

Deep-Sea Research, Guest Editor (with A. Michaels), "Oceanic Time-Series" (Mar/Apr 1996)

Aquatic Microbial Ecology, Editorial Advisor (May 1995 - Dec 1996); Subject Editor (Jan 1997 – Dec 2003); Review Editor (Jan 2004-2006)

Ecosystems, Editorial Board (Jan 1999 - 2007)

Deep-Sea Research, Guest co-Editor (with D. Siegel and A. Michaels), "Interpretations of Open Ocean Biogeochemical Processes at the U.S. JGOFS Bermuda and Hawaii Time-series Stations" (Aug-Sept 2001)

Biogeosciences, Editorial Board (Jan 2004 – 2007)

Annual Review of Marine Science, Editorial Board member (2006-2013)

Proceedings of the National Academy of Sciences of the USA in section on Environmental Sciences and Ecology (2007 – present)

Encyclopedia of Biodiversity, Second Edition (2013), 7-volume set; S. A. Levin, Executive Editor, Editorial Board member (2011-2013)

Biogeochemistry, Second Edition (2013), Co-editor with W. H. Schlesinger, volume 10 of *Treatise on Geochemistry* (H. D. Holland and K. K. Turekian, Executive Editors)

National Research Council, Report Review Committee (Jul 2015 – Jun 2018)

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Society of Limnology and Oceanography
American Society for Microbiology (and Hawaii Branch)
American Geophysical Union
National Society for Sigma Xi (and Hawaii Branch)
The Oceanography Society
Hawaii Academy of Science

UNIVERSITY, STATE AND COMMUNITY SERVICE

Volunteer math tutor, Hawaii Correctional Facility (1978-1981)
Judge, State of Hawaii Science and Engineering Fair (1978-1992)
Member, Department of Oceanography Faculty Search Committee (1979-1986); Chairman (1985-1986)
Member, review panel for Office of Oceanographic Facilities and Support, National Science Foundation (1980)
Vice President, Hawaii Branch American Society for Microbiology (1981-1982)
Member, University of Hawaii Faculty Senate (1982-1983)
Guest Scientist, "Science Hawaii" radio interview program, October 23, 1983
Member, Department of Oceanography Personnel Committee (1980-1984; Chairman, 1982-1983)
Member, State of Hawaii Committee on Radiological Safety (1983-1984)
Chairman-elect, Division of Aquatic and Terrestrial Microbiology, American Society of Microbiology (1984-1985)
Chairman, Division of Aquatic and Terrestrial Microbiology, American Society for Microbiology (1985-1986)
Member, Annual Meeting Planning Committee, American Society for Microbiology (1985-1986)
Member, University of Hawaii Educational Policy and Planning Committee (1984-1985)
Member, Advisory Committee for Ocean Sciences, National Science Foundation (1984-1987)
Member, Marine Council, University of Hawaii (1984-1988) and acting alternate Chairman (1986)
Member, Marine Science Building Space Committee (1984-1988)
Member, Hawaii Institute of Geophysics Council (1984-1986)
Member, Personnel Committee, Hawaii Institute of Geophysics (1984-1986)
Member, Scientific Committee on Ocean Research (SCOR) working group 71, "Particulate Biogeochemical Processes" (1985-1989)
Chairman, Department Curriculum Committee, University of Hawaii (1985-1986)
Chairman, University of Hawaii search committee for position of Vice President for Academic Affairs (1986)
Member, review panel for Geosciences Directorate PYI program, National Science Foundation (1986)
Member, NSF Global Ocean Flux subcommittee on "Transformations in the Ocean Interior" (1986-1988)

Member, NSF Global Ocean Flux subcommittee on "North Atlantic Plan" (1987-1988)
 Member, committee on Developmental Approaches in Science and Health for Elementary Science Program, College of Education, University of Hawaii (1987-1992)
 Member, NSF Biological Oceanography review panel, Washington, D.C. (December 1987)
 Member, NSF RIDGE working group on "Seafloor Experimentation" (November 1987-1988)
 Member, Fujio Matsuda Scholars and Fellows Program Selection Committee (1988)
 Member, University of Hawaii Faculty Senate (May 1988-1990)
 Member, NSF Global Ocean Flux subcommittee on "Sediment Trap Technology and Sampling" Mississippi (November 1988)
 Chairman, Department of Oceanography Personnel Committee (1989-1990)
 Member, UH Tenure and Promotion Review Committee (1989-1990, 2001-2002, 2002-2003, 2003-2004)
 Member, Department of Oceanography Personnel Committee (1990-1991)
 Member, SOEST MSB Space Committee (1990-1991)
 Chairman, University of Hawaii evaluation committee for "Excellence in Research Awards" (December 1990)
 Member, US-JGOFS subcommittee on "Southern Ocean Process Studies" (1990-1992)
 Member, JGOFS task force on "Oceanic Time-Series Measurements" (1990-1992)
 Member, UNOLS Advisory Council (1990-1996)
 Member, SOEST Ship Advisory Committee (1990-present)
 Member, steering committee for a NSF-sponsored workshop "Analysis and Characterization of Marine Particles" (1990-1991)
 Member, NOAA Ocean-Atmosphere Carbon Flux Working Group (1990-1997)
 Member, University of Hawaii Program Review Team, Genetics and Molecular Biology Department (1991)
 Member, ad hoc Committee on Graduate Education in Life Sciences, University of Hawaii (1991)
 Member, UNOLS Council Nominating Committee (1991)
 Member, Journal of Geophysical Research (JGR) - Oceans Editor Search Committee (1991)
 Member, Hawaii Chapter Sigma Xi Executive Committee (1991-1992)
 Councilor, Sigma Xi Scientific Society, Hawaii Branch (1991-1992)
 Member, SOEST Research Council (1992-1993)
 Member, University of Hawaii Ethics Committee (1993-1995); Chairperson (1995-1998)
 Member, University of Hawaii Graduate Council (1993-1996)
 Member, American Society for Limnology and Oceanography Committee on Education and Human Resources (1993-1998)
 Member, SOEST Faculty Personnel Committee (1993)
 Member, University of Hawaii *ad hoc* Selection Committee for Award in Teaching Excellence (1994)
 Founder and charter member, University of Hawaii Registered Independent Organization (RIO) "U.H.-CARES" (Colleagues Against Research Earmarks) (1994)
 Member, Selection Committee for American Society for Limnology and Oceanography Lifetime Achievement Award (1994)
 Member, Submersible Research Panel, U.S.-Japan Cooperative Program in Natural Resources (1994-1997)
 Member, National Science Foundation - Office of Polar Programs / Antarctic Support Associates Antarctic Research Vessel Oversight Committee (1994-1996); Chairperson (1997-2000)
 Member, National Science Foundation - Office of Polar Programs Advisory Committee (1994- 1997)
 Member, Selection Committee for SOEST Young Investigators (1995, 1996, 1997)
 Member, University of Hawaii Committee to Assess Research in the Life Sciences (1995)
 Member, RIDGE Observatory Oversight Committee (1995-1997)
 Member, US-JGOFS "Executive-plus" Committee (1995-2000)
 Member, The Oceanography Society Membership Committee (1996-1999)
 Member, Ocean Sciences Section Executive Committee, American Geophysical Union (1996- 1998)
 Member, SOEST Research Council (1996-2000)
 Member, NSF Life in Extreme Environments (LExEn) Advisory Committee (1996-1999)
 Member, SOEST *Ad hoc* Research Vessel Replacement Committee (1996-1998)
 Member, Search Committee for Director of Hawaii Institute of Marine Biology (1996-1997)
 Participant, "Passport to Knowledge" Live from Antarctica-2 public television broadcast (Feb 1997)
 Member, University of Hawaii Manoa Perspectives Committee (1997)
 Member, NSF-LTER Land/Ocean Margin ecosystems panel (Dec 1997)
 Participant and Sponsor, NSF-Teachers Experiencing Antarctica (TEA) program (1997)

Member, University of Hawaii Committee on the Future of the UH Marine Center (1997-1999)
 Member, University of Hawaii Western Association of Schools and College Task Force (1997)
 Chairman, Department of Oceanography Personnel Committee (1998-1999)
 Member, Institute for Astronomy Director Search Committee (1999-2000)
 Co-chair (with Robin Bell), NSF-sponsored workshop on Lake Vostok, Antarctica (Nov 1998)
 Co-chair (with Anthony Michaels), SCOPE Committee on Nitrogen Fixation in the World's Oceans (1998-2000)
 Member, NSF Ocean Sciences Synthesis Committee (1998-2000)
 Member, JGOFS Equatorial Pacific Synthesis and Modeling Group (1998-2000)
 Member, American Society of Limnology and Oceanography Public Policy Committee (1998-2003; Chair 1998-2000)
 Member, AGU ad hoc Committee on Recognizing and Encouraging the Contributions of the Biological Sciences to the Study of the Earth [this committee, chaired by D. McKnight, led to the establishment of the new *Biogeosciences* section within AGU in 2000] (1998-2000)
 Member, University of Hawaii's Distinguished Lecture Series Selection Committee (1999-2007)
 Member, ad hoc Ocean Carbon Working Group of Ocean Carbon Transformations, Exchanges and Transport (OCTET) program (1999-2002)
 Member, The Oceanography Society Council (January 2000–December 2002)
 Member, Department of Geology and Geophysics Geobiology Faculty Search Committee (March 2000)
 Member, Partnership for Observation of the Global Ocean (POGO) oceanographic time-series working group, R. Weller / U. Send, co-chairs (2001-present)
 Member, AGU Fellows Selection Committee (2001-2004)
 Member, National Research Council of the National Academies – Polar Research Board (2002-2005)
 Member, Carbon Cycle Science Plan ocean implementation group, S. Doney, Chair (2002-2005)
 Member, NSF-sponsored committee on Scientific Cabled Observatories for Time Series (SCOTS), T. Dickey / S. Glenn, co-chairs (2002-2006)
 Judge, Hawaii Regional Ocean Sciences Bowl – National Ocean Sciences Bowl (22 February 2003)
 Member, Organizing Committee for JGOFS Open Science Conference, Washington, D.C. (May 2003)
 Co-chair (with G. M. Purdy), NSF-sponsored RECONN workshop on regional cabled observatories in the sea (http://www.geo-prose.com/cabled_wksp/) (2003)
 Member, Committee on a Science Plan for the North Pacific Research Board, National Research Council of the National Academies (2003-2005)
 Judge, Hawaii Academy of Science sponsored Pacific Symposium for Science and Sustainability, University of Hawaii (February 2004)
 Member, Organizing Committee for ASLO/TOS Ocean Research Conference, Honolulu, HI (2004)
 Member, MIT-WHOI Joint Program External Review Committee, Boston / Woods Hole, MA (June 2004)
 Invited participant, International Polar Year 2007-2008 implementation workshop, National Academy of Sciences, Washington, D.C. (July 2004)
 Member, Monterey Bay Aquarium Research Institute (MBARI) External Review Visiting Committee (January 2005)
 Chair, Open Ocean and Coastal Systems Working Group, Alfred P. Sloan Foundation-sponsored International Census of Marine Microbes (ICoMM), 2005-2010
 Member, SOEST Dean's Executive Committee (2006-present)
 Member, President's Commission on Ocean, Coastal and Earth System Futures, Oregon State University (March 2007)
 Member, President Search Advisory Committee, UH system (2008-2009)
 Chair, NSF "Blue Ribbon" committee on the Ocean Observatory Initiative (OOI) program, Arlington, VA (2009)
 Member, selection committee for the Robert L. and Bettie P. Cody Award in Ocean Sciences, Scripps Institution of Oceanography, 2009-2012
 Judge, Hawaii Academy of Sciences Pacific Symposium for Science and Sustainability, Honolulu, HI (December 2010)
 Co-chair and coordinating lead author (CLA), Chapter 6 working group II of the Intergovernmental Panel on Climate Change (IPCC) 5th assessment (January 2011-September 2017)
 Co-organizer, participant and speaker, University of Hawaii Foundation-sponsored "An Evening of Exploration," UH Marine Center and R/V *Kilo Moana* (September 2011)
 Member, *Ad hoc* NSF-GEO committee on ocean drilling, Arlington, VA (November-December 2011)

Judge, Hawaii Academy of Sciences Pacific Symposium for Science and Sustainability, Honolulu, HI (December 2011)
Member, University of Hawaii at Manoa Tenure and Promotion Review Committee (2011-2012)
Member, Chancellor Search Advisory Committee, University of Hawaii at Manoa (December 2011-March 2012)
Member, Fellows selection committee, The Oceanography Society (January 2012)
Review Editor, National Research Council report "Future science opportunities in Antarctica and the Southern Ocean," (March 2012)
Member, selection committee, Gilbert Morgan Smith Medal for excellence in research on marine or freshwater algae, National Academy of Sciences (2012-present)
Committee Member, University of Hawaii at Manoa's "cluster hire" in sustainability (2012)
Member, Ewing Medal selection committee, American Geophysical Union (2013-present)
Member, Gulf of Mexico Research Program Committee, National Academy of Sciences (2013-2014)
Member, External Review Committee, Monterey Bay Aquarium Research Institute (February 2020)