

# CURRICULUM VITAE

## **Christian H. Fritsen**

Division of Earth and Ecosystem Sciences  
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### **EDUCATION:**

Ph.D., Biological Sciences, University of Southern California, Los Angeles, 1996.

B.S., Biological Sciences, Montana State University, Bozeman, 1989.

### **PROFESSIONAL POSITIONS:**

#### **2014-present Vice President of Academic and Faculty Affairs, Desert Research Institution.**

Serving the Desert Research Institute as its lead academic officer. The role entails working with DRI faculty and administration within the Nevada System of Higher Education and other institutions of higher education to sustain its common academic interests that primarily lie within graduate training programs. Additionally responsible for facilitating faculty professional development as well as shepherding institutional shared governance processes.

#### **2003-present Research Professor. Division of Earth & Ecosystem Sciences, Desert Research Institute**

Created the Systems Algal and Microbial Ecology Laboratory at DRI where I, my students and collaborators study reciprocal interactions between organisms, their physicochemical environments and how these interactions change in dynamic habitats. Studies have ranged from the thermodynamics of ice and how they affect life in and beneath Antarctic sea ice and the permanent ice covers on lakes on the Antarctic Continent to studies of watershed-scale hydrological processes and management practices effects on algal communities in streams and reservoirs in the Great-Basin. The work remains highly relevant to detecting and understanding changes to ecosystems in response to climate change - from a dynamic interacting systems perspective. Ongoing polar research and student training have focused on aspects of phenology and match/mis-match issues that arise when regional or climate changes occur and directly interface with life-history strategies. Recent work also has built upon the systems perspective to engage in the analysis and development of geothermal systems for algal-produced energy/biofuels. New research funding has totaled over \$3.1M over the past five years.

#### **1999-present Graduate Faculty in the Hydrology and the Environmental Sciences Graduate Programs at the University of Nevada Reno**

While research faculty at DRI, I also have been fortunate to serve in the graduate and undergraduate programs at the University of Nevada Reno. I have taught aquatic ecology and limnology courses when UNR did not have the faculty to do so (due to the passing of Dr. G. Vinyard). I also developed and taught other graduate and undergraduate special topics courses that were of interest to UNR students and Departments. These special topics courses have ranged from hydrological optics courses (there was and remains an interest in the clarity of Lake Tahoe) to Astrobiology (students in a range of departments have been interested in this course as Astrobiology became a maturing highly interdisciplinary program in the late 1990's and the early 2000s). I have had the pleasure to be the major advisor to 10+ graduate students in these programs and have served as a committee member to several others. I also have engaged and hosted over twenty undergraduate research assistants in project and exploratory research endeavors over the years and continue to do so. A rich research environment with a touch of guided inquiry-based training results in true research discovery and self-discovery for students and is one of the most rewarding endeavors.

**2011-2013 Interim Vice President of Academic Affairs, Desert Research Institution.**  
Serving the Desert Research Institute as its lead academic officer. The role entails working with DRI faculty and administration within the Nevada System of Higher Education and other institutions of higher education to sustain its common academic interests. These interests primarily lie within graduate training programs.

**2005-2014 Director Nevada Space Grant Consortium & Nevada NASA EPSCoR Program.**  
Facilitating and overseeing the transition and growth of a Fellowship and Scholarship program (from a \$150k per year ad-hoc program to a \$1.5M per year program that is coordinated through a state-wide consortium). The consortium develops academic programs for higher education research, curricula and workforce development as well as informal and precollege education activities that have value for all of Nevada's faculty, students and technology development industries. I also facilitate and continue to grow new research areas of strategic interest to NASA and Nevada by competing for and administering EPSCoR resources totaling \$4.7M. This position and work has involved the development of academic programs with students, faculty, higher education administrators and personnel from across the state (e.g. Community colleges, Universities, Research institutions), government organizations (US- Senate and House, NASA) and private industries. The topics and academic programs developed through these interactions have spanned a range of disciplines (e.g. Education, Science, Engineering, Business)- yet have all contributed to NASA and Nevada-oriented common goals.

- 2004-2005 Associate Director Nevada Space Grant Consortium//NASA EPSCoR**  
 Managed and administered the Space Grant fellowship and scholarship program for the Nevada consortia. Learned and implemented new NASA-derived processes for longitudinal tracking of students and derived education outcome-specific goals, targets and objectives for the NASA program. This position primarily entailed working with the program coordinator to ensure the programmatic and budgetary reporting requirements were met for the program.
- 1998-2003 Assistant Research Professor. Division of Earth & Ecosystem Sciences, Desert Research Institute,**  
 Started an algal ecology laboratory at DRI that initially focused on algal-cynobacterial research in the Dry Valleys of Antarctica with some additional work assessing algal biomass distributions in the local Truckee River. The local research helped support numerical models for water quality management and decision-making processes and negotiations. Initial funding for these research programs totaled \$1.0M.
- 1996-1998 Post-Doctoral Fellow. Department of Biological Sciences, Montana State University.**  
 Studied cyanobacteria inside lake ice in the Dry Valleys of Antarctica. This postdoctoral work led to timely publications regarding life in ice (*Science*, 280:2095-2098) that was relevant to the discussion of life on Mars and Europa and has helped reveal the diversity of life's existence in diverse habitats on earth and the potential for life's sustenance elsewhere in our Solar System.

**PROFESSIONAL SOCIETIES:**

- Algal Biomass Organization (ABO)
- American Association for the Advancement of Science (AAAS)
- American Geophysical Union (AGU)
- American Society of Microbiology (ASM)
- American Society of Limnology and Oceanography (ASLO)
- Ecological Society of America (ESA)
- North American Benthological Society (NABS)
- Phycological Society of America (PSA)
- The International Society of Microbial Ecologists (ISME)
- The International Society of Optical Engineers (SPIE), 1992-1994.

**PROFESSIONAL ACTIVITIES AND APPOINTMENTS:**

- Member of Advisory Board for the Raggio Research Center for STEM Education, 2013-present
- Chair, DRI's Institutional By-Laws Committee, 2010-2013
- Vice Chair National Space Grant Directors Executive Committee, 2009-2013
- National Space Grant Alliance Committee on 5 year planning, 2010-2013
- National Space Grant Council's Committee on NASA Internship Coordination, 2008
- Research and Field Team Leader, Thirteen Antarctic Expeditions 1991-present.

Member Algal Biomass Organization's (ABO) Peer review committee  
Invited Participant, NSF Antarctic Research Vessel Oversight Committee, 2008.  
NSHE Interim Director of the Nevada Space Grant Consortium, 2005.  
DRI's Faculty Coordinator, Nevada Space Grant Consortium, 2000-2004.  
Sponsor, NASA Space Grant Graduate Fellowship Program, 2001.  
Participant NASA-NAI Europa Focus Group, 2002- present  
Elected Member, Antarctic Research Vessel Oversight Committee, 2002-2005.  
Elected Secretary, Desert Research Institute, Faculty Senate Council, 2003-2005  
Elected Member, Desert Research Institute, Faculty Senate Council, 2002-2005.  
Chairperson, Standard and Special Sessions, ASLO, annual meetings, 2000,2001, 2003.  
External Reviewer, Davidson Institute's Program for Exceptional and Talented Students, 2001.  
Invited Participant, NSF Workshop, Developing specifications for the next polar class, Antarctic Research Icebreaker, 2002.  
Participant and Host, EPA Workshop: Bioassessment of Aquatic Ecosystems in the Arid West. October, 2002. Desert Research Institute, Reno Nevada.  
Associate Editor for Annals of Glaciology, Volume 33, 2000.  
Sponsor and Host Investigator, NSF program for Teachers Experiencing Antarctica, 1999.  
Invited Participant, NSF Workshop, Winter Research In Antarctica, September 1999. NSF Headquarters, Arlington, VA.  
Invited Participant, NSF Workshop, Environmental Monitoring and Impacts of Research on Antarctic Lakes, 1998. University of Illinois, Chicago.  
Participant, Summer Course and Workshop, Physics of Ice-Covered Seas, Savonlinna, Finland, 1994.  
Participant, 1<sup>st</sup> International, (U.S. and USSR), Drifting Ice Station in the Antarctic: Ice Station Weddell-1, 1991-1992.

#### **HONORS AND AWARDS:**

2006 National Academies of Science's, Kavli-U.S. Frontiers Fellow  
2001 Peter B. Wagner Memorial Medal for Outstanding Young Investigator of the Year, Desert Research Institute and Sue Wagner.  
1992 Best Student Paper Award. Office of Naval Research and International Society of Optical Engineers. Ocean Optics XI. San Diego, CA.  
1992 Antarctic Service Medal, Secretary of the Navy, Antarctica Field Exploration  
1992 Antarctic Service Medal, National Science Foundation, Antarctica Scientific Exploration.  
1988 President, Bozeman Rugby Football Club (Elected position)  
1985 Big Sky All Academic Track Team

#### **PUBLICATIONS:**

**Fritsen, C.H.**, E. Wirthlin, D. Momberg, and J.C. Memmott, In prep. Seasonal Ultraviolet Radiation and Photosynthetically Active Radiation Absorption Properties of Pack Ice Microbiota in the Southern Ocean.  
**Fritsen, C.H.**, S. Coale, J. Memmott, D.R. Neenan, A. Gibson and D.L. Garrison. In prep. Mesoscale distribution of sea ice microbial communities in the summer sea ice of the eastern Ross Sea. Mar. Ecol. Prog. Ser.  
Davis, C.J., and **C.H. Fritsen**, In revision. Winter Periphyton Blooms. *J. Freshwater Sciences*. (X): XXX-XXX.

- Bywaters, K.F., and **C.H. Fritsen**. In press. Biomass and neutral lipid production in geothermal microalgal consortia. *Frontiers in Energy Research: Bioenergy and Biofuels*.
- Rost, A. and **C.H. Fritsen**. 2014. Influence of a tributary stream on benthic communities in a *Didymosphenia geminata* impacted stream in the Sierra Nevada, USA. *Diatom Research*. 29(3): 249-257 doi: 10.1080/0269249X.2014.929029.
- Dugan, H.A., P.T. Doran, B. Wagner, F. Kenig, **C.H. Fritsen**, S. Arcone, E. Kuhn, N.E. Ostrom, J. Warnock, A.E. Murray. 2014. 27 m of lake ice on an Antarctic lake reveals past hydrologic variability. *The Cryosphere Discussions*. 8: 4127-4158.
- Kuhn, E., A. S. Ichimura, V. Peng, **C.H. Fritsen**, G. Trubl, P.T. Doran, and A. E. Murray. 2014. The ultra-small microbial assemblage of Lake Vida encapsulated brine, Antarctica. *Applied and Environmental Microbiology*. 80(12):3687-369 doi:10.1128/AEM.00276-14.
- Marion, G.M., A.E. Murray, B. Wagner, C.H. Fritsen, F. Kenig, P.T. Doran, 2013, Carbon Sequestration and Release from Antarctic Lakes: Lake Vida and West Lake Bonney (McMurdo Dry Valleys). *Aquatic Geochem*. 19.2 (2013): 135-145
- Murray, AM, F. Kenig, **C.H. Fritsen**, C.P. McKay, K.M. Cawley, R. Edwards, E. Kuhn, D.M. McKnight, N.E. Ostrom, V. Peng, A. Ponce, J.C. Priscu, V. Samarkin, A.T. Townsend, P. Wagh, S.A. Young, P.T. Yung, P.T. Doran. 2012. Life in the encapsulated -13°C brines of Lake Vida, Antarctica. *PNAS*. 109(50): 20626-20631.
- Davis, C.J., **C.H. Fritsen**, E.D. Wirthlin, J.C. Memmott, 2012. High rates of primary productivity in a semi-arid tailwater: Implications for self-regulated production. *River Research and Applications*. 28(10):1820-1829.
- Lowe, A.T., R.M. Ross, L.B. Quetin, M. Vernet, and **C.H. Fritsen**, 2012. Simulating larval Antarctic krill growth and condition factor during fall and winter in response to environmental variability. *Mar. Ecol. Prog. Ser.* 452:27-43, DOI:10.3354/meps09409
- Vernet, M., W.A. Kozlowski, L. Yarmay, A.T. Lowe, R.M. Ross, L.B. Quetin, and **C.H. Fritsen**, 2012. Dynamics of phytoplankton bloom demise during the austral fall in the western Antarctic Peninsula. *Mar. Ecol. Prog. Ser.* 452:45-61. DOI:10.3354/meps09704.
- Fritsen, C.H.**, J.C. Memmott, R.M. Ross, L.B. Quetin, M. Vernet and E.D. Wirthlin. 2011. The timing of sea ice formation and exposure to PAR during austral autumn and winter along the Western Antarctic Peninsula. *Polar Biol.* DOI 10.1007/s00300-010-0924-7
- Lee, B.S., K. McGwire, and **C.H. Fritsen**. 2011. Identification and Quantification of Aquatic Vegetation with Hyperspectral Remote Sensing in Western Nevada Rivers, USA. *Int. Journal of Remote Sensing*. DOI: 10.1080/01431161.2010.549850
- Rost, A., **C.H. Fritsen**, and C. Davis. 2011. Distribution of *Didymosphenia geminata* in streams in the Sierra Nevada, USA in relation to water chemistry and bedrock geology *Hydrobiologia*. 665(1): 157-167
- Fritsen, C.H.**, E. Wirthlin, D. Momberg, E. Murphy and S.F. Ackley. 2010. Bio-optical properties of Antarctic Sea ice during IPY drifting ice stations. *Deep Sea Research II* doi: 10.1016/j.dsr2.2010.10.028
- Carroll, R.W.H., Memmott, J., Warwick, J., **Fritsen, C.H.**, and J.C. Bonzongo. 2010. Seasonal Variation of Mercury Associated with Different Phytoplankton Size Fractions in Lahontan Reservoir, Nevada. *Water Air Soil Pollution*.
- Heyvaert, A. and 10 others 2009. Contemporary Limnology of Walker Lake, Nevada, p. 3-52. In S. Chandra and D. W. Sada [eds.], Assessing the importance of water acquisitions to health of the in-stream environment, aquatic ecology, and TDS loading to Walker Lake. Desert Research Institute, Las Vegas and Reno and University of Nevada, Reno.

- Fritsen, C.H.,** J. C. Memmott, C. J. Davis, and E. Wirthlin. 2009. Walker Lake: hypolimnetic oxygen deficit assessment and associated limnological factors, p. 105-131. In S. Chandra and D. W. Sada [eds.], *Assessing the Importance of Water Acquisitions to Health of the In-stream Environment, Aquatic Ecology, and TDS loading to Walker Lake*. Desert Research Institute, Las Vegas and Reno and University of Nevada, Reno.
- Davis, C. J., J. C. Memmott, and **C.H. Fritsen**. 2009. Walker River Periphyton, p. 27-77. In D. W. Sada and S. Chandra [eds.], *Assessing the Importance of Water Acquisitions to Health of the In-stream Environment, Aquatic Ecology, and TDS loading to Walker Lake*. Desert Research Institute, Las Vegas and Reno and University of Nevada, Reno.
- Raymond, J.A., M. Janech, and **C.H. Fritsen**. 2009. Novel ice-binding proteins from a psychrophilic Antarctic alga (Chlamydomonadaceae). *J. Phycol.* 45(1).
- Doran, P.T., **C.H. Fritsen**, A.E. Murray, F. Kenig, C.P. McKay, and J. Kyne. 2008. Entry approach into pristine ice-sealed lakes – Lake Vida, East Antarctica, a model ecosystem. *Limnology and Oceanography Methods*. 6:542-547.
- Peternel, K., L. Saito and **C.H. Fritsen**. 2008. Evaluation of a modeling approach to assess nitrogen assimilative capacity due to river restoration. *J. of Water Resources Planning and Management*. 134(5) 474. doi: 10.1061/(ASCE)0733-9496(2008)134:5(474)
- Thomas, D.N. G.E. Fogg, P. Conovey, **C.H. Fritsen**, J.M. Gili, R. Gradinger, J. Laybour-Parry, K. Reid and D.W.H. Walton (Eds). 2008. *The Biology of the Polar Oceans*. Oxford University Press. New York. pp.394
- Fritsen, C.H.,** J. Memmott and F.J. Stewart 2008. Inter-annual sea ice dynamics and microalgal biomass in winter pack ice: Marguerite Bay, Antarctica. *Deep Sea Research II*. doi:10.1016/j.dsr2.2008.04.034
- Ackley, S.F., M. J. Lewis, **C.H. Fritsen** and H. Xie. 2008. Internal melting in Antarctic sea ice: Development of “gap” layers. *J. Geophys. Res. Lett.* 35(11)11503.
- Saito, L. M.R. Rosen, S. Chandra, **C.H. Fritsen**, J.A. Arufe and C. Redd. 2008. Using Semi-Permeable Membrane Devices and Stable Nitrogen Isotopes to Detect Anthropogenic Influences on the Truckee River, USA. *Environmental Engineering Science*. 25(4): 585-600. doi:10.1089/ees.2007.0090.
- Raymond, J.A., **C.H. Fritsen** and K. Shen 2007. An ice-binding protein from an Antarctic sea ice bacterium. *FEMS*. 61 (2) 214-221.
- Saito, L., C. Redd, S. Chandra, L. Atwell, **C.H. Fritsen**, and M.R. Rosen. 2007. Quantifying foodweb interactions with simultaneous linear equations: stable isotope models of the Truckee River, USA *J. North American Benthological Society*. 26(4) 642-662
- Quetin, L.B., R.M. Ross, **C.H. Fritsen** and M. Vernet. 2007. Ecological Responses of Antarctic Krill to Environmental Variability: Can We Predict the Future? *Antarctic Science*, 253-266.
- Mosier, A.C., A.E. Murray and C.H. Fritsen. 2007, Microbiota within the perennial ice cover of Lake Vida, Antarctica, *FEMS Microbial Ecology*.59:274-288.
- Kish, S.M., J. Bartlett, J.J. Warwick, A. McKay, and **C.H. Fritsen**, 2006. A long-term dynamic modeling approach to quantifying attached algal growth and associated impacts on dissolved oxygen in the lower Truckee River, Nevada," *Journal of Environmental Engineering*, ASCE, 132(10) pp. 1366-1375.
- Green, M.B., and **C. H. Fritsen**. 2006. Spatial variation of nutrient balance in the Truckee River, California-Nevada.. *J. American Water Resources Association* 42(3): 659-674.
- Latham, Z. **C.H. Fritsen** and J. Warwick. 2006. Dissolved Oxygen Dynamics in the Carson River. *Report to Nevada Department of Environmental Protection*.

- Fritsen, C.H.** 2005. Floating Oceans: The Floating World of Pack Ice, Book Review: *Polar Record*. 41(4): 367-368.
- Davis, C.J. and **C.H. Fritsen**. 2005. Biological Condition Index Development for the Lower Truckee River: Periphyton Assemblage. *Report to Nevada Division of Environmental Protection*.
- Doran P.T., J.C. Priscu, W.B. Lyons, J.E. Walsh, A.G. Fountain, D.M. McKnight, D.L. Moorhead, R.A. Virginia, D.H. Wall, G.D. Clow, **C.H. Fritsen**, C.P. McKay, A.N. Parsons. 2005 Comment on "El Nino suppresses Antarctic warming" *Geophys. Res. Lett.* 32 (7):
- Garrison, D. L., A.H. Gibson, S.L. Coale, Y.B. Okolodkov, M.M. Gowing, **C.H. Fritsen**, and M. O. Jeffries. 2005. Sea Microbial Communities in the Ross Sea: Autumn and Summer Biota. *Mar. Ecol Prog. Ser.* 300:39-52
- McKay, C.P., D.T. Andersen, W.H. Pollard, J.L. Heldmann, P.T. Doran, **C.H. Fritsen** and J.C. Priscu. 2005. Polar lakes, streams and springs as analogs for the hydrologic cycle on Mars. In: *Water on Mars and Life*. Ed. T. Toklano. Springer-Verlag
- Priscu, J.P., E.E. Adams, H.W. Paerl, **C.H. Fritsen**, J.E. Dore, J. T. Lisle, C.F. Wolf, and J. Mikucki. 2005. Perennial Antarctic Lake Ice: A refuge for Cyanobacteria in an Extreme Environment. In: *Life in Ancient Ice*. J. Costello and S. Rogers. (eds.) Princeton University Press.
- Gowing, M.M., D.L. Garrison, A.H. Gibson, J.M. Krupp, M.O. Jeffries, and **C.H. Fritsen**. 2004. Abundance of Bacteria and Viruses in Ross Sea Summer Pack Ice. *Mar. Ecol Prog. Ser.* 279:3-12.
- Stewart, F.J. and **C.H. Fritsen**. 2004. Bacteria–algae relationships in Antarctic Sea ice. *Antarctic Science*. 16(2)143-156.
- Tranter, M., A. Fountain, **C.H. Fritsen**, B. Lyons, P. Statham and K. Welch, 2004. Algae generate extreme hydrochemical conditions within natural terrariums in Antarctic ice. *Hydrological Processes*, 18:379-387.
- Marion, G.M, **C.H. Fritsen**, H. Eicken and M.C. Payne, 2003. The search for life on Europa: Limiting environmental factors, potential habitats and earth analogs. *Astrobiology*, 3(4):785-811.
- Garrison, D. L., M. O. Jeffries, A.H. Gibson, S.L. Coale, D.R. Neenan, **C.H. Fritsen**, Y.B. Okolodkov and M.M. Gowing, 2003. Development of sea ice microbial communities during autumn ice formation. *Mar. Ecol. Prog. Ser.* 259:1-15.
- Doran, P.T. , **C.H. Fritsen**, E.A. Adams, C.P. McKay, J.C. Priscu, R. Virginia, and D. Wall, 2003. Formation and Character of an Ancient 19 m Ice Cover. *Proc. Nat. Acad. Sci.* Vol. 100: pp.26-31.
- Doran, P. T. , G. D. Clow, A. Fountain, **C. H. Fritsen**, W.B. Lyons, C. P. McKay, D. McKnight, D. Moorhead, A. Parsons, J. C. Priscu, R. Virginia, and D. Wall, 2002. Climate cooling and ecological impact in the McMurdo Dry Valleys, Antarctica. *Nature*. 415: 517-520.
- Fritsen, C.H.** Microbial Communities in Ice and Snow, 2002. In G. Bitton (ed.), *Wiley's Encyclopedia of Environmental Microbiology*.
- Memmott, J.C., M.R. Robinson, A.C. Mosier and **C.H. Fritsen**, 2002: Truckee River Biomass Monitoring Program: Data Encompassing Field Studies of July 2001 to August 2002. Report to cities of Reno/Sparks and Washoe County.
- Davis, C.J., A.C. Mosier, and **C.H. Fritsen**. 2002. Incline Creek Watershed Bioassessment, Fall 2001-Spring 2002. DRI Internal Report.

- Raymond, J.R. and **C.H. Fritsen**, 2001. Semi-purification and ice recrystallization inhibition activity of ice-active substances associated with Antarctic photosynthetic organisms. *Cryobiology*. 43:63-70.
- Fritsen, C.H.**, S.L. Coale, D.R. Neenan, A.H. Gibson and D.L. Garrison, 2001. Biomass, Production and Microhabitat Characteristics near the Freeboard of Ice Floes in the Ross Sea during the Austral Summer. *Annals of Glaciol.* 33: 280-286.
- Mueller, D.R., W.F. Vincent, W.H. Pollard and **C.H. Fritsen**, 2001. Glacial cryoconite ecosystems: A bipolar comparison of algal communities and habitats. In *Algae and extreme environments – ecology and physiology*. *Nova Hedwigia*. 123: 173-197.
- Raymond, J.R. and **C.H. Fritsen**, 2000. Ice-active substances in Antarctic freshwater and terrestrial photosynthetic assemblages. *Antarctic Science* 12(4):418-424.
- Fritsen, C.H.** and J.C. Priscu, 2000. Distribution of organic carbon and nitrogen in surface soils surrounding lakes in the McMurdo Dry Valleys, Antarctica. *Polar Biol.* 23:121-128.
- Priscu, J.C., C.F. Wolf, **C.H. Fritsen**, C. Takacs, J. Labourne-Parry and E.C. Roberts, 2000. Organic carbon transformations in the water column of a perennially ice-covered Antarctic lake. *Bioscience* 49(12):997-1008.
- Psenner, R., B. Sattler, A. Wille, **C.H. Fritsen**, J.C. Priscu, M. Felip, and J. Catalan, 1999. Lake Ice Microbial Communities, (LIMCOs), in Alpine and Antarctic Lakes. In R. Margesin and F. Schinner (eds.), *Cold-Adapted Organisms: Ecology, Physiology, Enzymology and Molecular Biology*, pp. 17-32.
- Fritsen, C.H.** and J.C. Priscu, 1999. Seasonal change in the optical properties of the permanent ice cover on Lake Bonney, Antarctica: Consequences for lake productivity and phytoplankton dynamics. *Limnol. Oceanogr.* 44(2):447-454.
- Fritsen, C.H.** and J.C. Priscu, 1998. Cyanobacterial assemblages in the permanent ice covers of the McMurdo Dry Valley lakes, Antarctica: Distribution, growth rate and temperature response of photosynthesis. *J. Phycol.* 34:587-597.
- Fritsen, C.H.**, E.E. Adams, C.M. McKay and J.C. Priscu, 1998. Permanent ice covers of the McMurdo Dry Valley Lakes, Antarctica: Liquid water content. In J.C. Priscu (ed.), *Ecosystem Processes in a Polar Desert: The McMurdo Dry Valleys, Antarctica*. Antarctic Research Series, *American Geophysical Union*, Vol. 72, pp. 269-280.
- Adams, E.E., J.C. Priscu, **C.H. Fritsen**, S.R. Smith and S.L. Brackman, 1998. Permanent ice covers of the McMurdo Dry Valley Lakes, Antarctica: bubble formation and metamorphism. In J.C. Priscu (ed.), *Ecosystem Processes in a Polar Desert: The McMurdo Dry Valleys, Antarctica*. Antarctic Research Series, *American Geophysical Union*, Vol. 72, pp. 255-268.
- Priscu, J.C., **C.H. Fritsen**, E.E. Adams, S.J. Giovannoni, H.W. Paerl, C.P. McKay, P.T. Doran and J.L. Pinckney, 1998. Perennial Antarctic lake ice: An oasis for life in a polar desert. *Science* 280:2095-2098.
- Fritsen, C.H.**, J.N. Kremer, S.F. Ackley, and C.W. Sullivan, 1998. Flood-freeze cycles and algal dynamics in Antarctic pack ice. In M.L. Lizotte and K.R. Arrigo (eds.), *Antarctic Sea Ice: Biological Processes*. Antarctic Research Series, American Geophysical Union. Vol. 73, pp. 1-21.
- Fritsen, C.H.** and C.W. Sullivan, 1997. Microbial distributions and dynamics in the Western Weddell Sea. In B. Battaglia, J. Valencia, and D.W.H. Walton (eds.), *Proceedings of the SCAR VI. Biology Symposium*.



- Ackley, S.F., **C.H. Fritsen**, V.I. Lytle and C.W. Sullivan, 1996. Freezing-driven upwelling in sea-ice biological systems. *Proceed. NIPR Symp. Polar Biol.* 9:45-59.
- Fritsen, C.H.**, 1996. Ecology of Antarctic Pack Ice Microbial Communities. Ph.D. Dissertation. University of Southern California.
- Priscu, J.C. and **C.H. Fritsen**, 1996. Antarctic lake ice microbial consortia: Origin, distribution and growth physiology. *Antarctic Journal of the United States* 30(5):218-220.
- Grue, A.M., **C.H. Fritsen** and J.C. Priscu, 1996. Nitrogen fixation within permanent ice covers on lakes in the McMurdo Day Valleys, Antarctica. *Antarctic Journal of the United States* 30(5):218-220.
- Fritsen, C.H.** and J.C. Priscu, 1996. Photosynthetic characteristics of cyanobacteria in permanent ice-covers on lakes in the McMurdo Dry Valleys, Antarctica. *Antarctic Journal of the United States* 30(5):216-218.
- Arrigo, K.R., G. Deickmann, D.H. Robinson, **C.H. Fritsen** and C.W. Sullivan, 1995. A high resolution study of the platelet ice ecosystem in McMurdo Sound, Antarctica: Biomass, nutrients, and production profiles within a dense microalgal bloom. *Mar. Ecol. Prog. Ser.* 127:255-268.
- Fritsen, C.H.**, V.I. Lytle, S.F. Ackley and C.W. Sullivan, 1994. Autumn Bloom of Antarctic pack-ice algae. *Science* 266:782-784.
- Fritsen, C.H.**, R. Itturiaga, and C.W. Sullivan, 1992. Influence of particulate matter on spectral irradiance fields and energy transfer in the Eastern Arctic Ocean. *Ocean Optics XI* 1750:527-541 (Best Student Paper Award).

## PRESENTATIONS:

### *Invited*

- 2009 Life in ice: Antarctic research and the search for life elsewhere. Annual National Space Grant Director's Meeting. Portland Oregon.
- 2005 Molecular information from dynamic ice covers: is the information consistent with the dynamics? ASLO Annual Meeting- Salt Lake City, Utah.
- 2001 Microbial Life in the Frozen Worlds of Antarctica, Jason Foundation Guest Lecturer, Las Vegas Nevada.
- 2001 Truckee River Biomass Monitoring: Nevada Department of Environmental Protection's bioassessment conference, Reno Nevada.
- 2000 Truckee River Biomass Monitoring. Nevada Water Association, Reno Nevada.
- 2000 Biomass, production and microhabitats near the freeboard of ice floes: Ross Sea-austral summer. International Glaciological Society, Fairbanks, Alaska.
- 1999 Liquid water in perennial ice microhabitats. AGU, San Francisco.
- 1999 Assessing Management Effectiveness at Tahoe, NWRA Annual Nevada water conference.
- 1998 Perennial Antarctic lake ice: An oases for life in a polar desert. International Society Microbial Ecologists, Halifax, Nova Scotia.
- 1997 Permanent ice covers on lakes in the Antarctic Dry Valleys: Dynamic geophysics make extreme microbial habitats. University of Innsbruck, Institute of Limnology, Innsbruck, Austria.
- 1997 Coupled physical-biological modeling of surface and bottom sea-ice communities. Gordon Research Conference on Sea Ice Ecology, Ventura, CA.
- 1994 Biological and physical dynamics within Antarctic pack ice microbial habitats. NASA

Jet Propulsion Laboratory, Ocean Sciences Division, Pasadena, CA.

***Contributed:***

- 2013 Ecology of a Winter Diatom Bloom in a Montane-Desert River , Polar and Alpine Microbiology Conference. Big Sky, Montana.
- 2013 Winter Periphyton Blooms: Providing a New Perspective on the Balance of Seasonal Processes. American Geophysical Union. Meeting of the Americas, Cancun, Mexico.
- 2013 On the Cold Side of Life: Explorations into the Dark Salty and Icy Interior of Lake Vida. American Society of Microbiology General Meeting, Denver, Colorado, May. (Co-Author).
- 2013 Microbiology of Antarctica's Lake Vida. National Academy Committee on Astrobiology and Planetary Sciences, Space Studies Board. Washington DC, March. (Co-Author)
- 2013 Microbial life in the 18 to 27 m ice core section recovered from Lake Vida, Antarctica. Polar and Alpine Microbiology Meeting, Big Sky, Montana, September. (Co-Author)
- 2012 Biogeochemistry and genetic potential related to denitrification of heterotrophic Bacteria isolated from Lake Vida brine. AGU Fall Meeting, San Francisco, CA, Dec 2012. (Co-Author).
- 2012 Microbial life in the iron-rich, anoxic cryobrine of Lake Vida, Antarctica. SCAR Open Science Conference, Portland OR. (Co-Author)
- 2011 Characterization of the abundant < 0.2 mm cell-like particles inhabiting Lake Vida brine, McMurdo Dry Valleys, Antarctica. AGU Fall Meeting, San Francisco, CA. (Co-Author)
- 2011 A 26 m ice cover on Lake Vida, Antarctica. AGU Fall meeting, San Francisco, CA, Dec 2011(Co-Author)
- 2010 The seasonal integration of photosynthetically active radiation on sea ice and the effects of inter-annual variability in the timing of sea ice formation on the Western Antarctic Peninsula Sea Ice Ecosystem. Scientific Committee on Antarctic Research- Biology Symposium- Buenos Aires (Co-Author).
- 2010 The timing of Sea ice formation and its effects on energy transfer into the winter sea ice ecosystems along the western Antarctic Peninsula. ASLO Sante Fe NM.
- 2010 Accrual rates and community metabolism during a winter diatom bloom in a Montane-Desert river. ASLO Sante Fe NM. (Co- Author).
- 2010 How productive can a river be? A case study of the South Fork Humbolt River, Nevada. ASLO Sante Fe NM. (Co- Author).
- 2010 Seasonal changes in UV radiation and UVR absorption by Antarctic pack ice microbiota International Glaciological Society. Tromso Norway.
- 2009 Physico-Chemical Properties and CO<sub>2</sub> fluxes at a frost-flower station in the Bellingshausen Sea, Antarctica (SIMBA). American Geophysical Union annual meeting San Francisco CA. (Co-author).
- 2009 Periphyton dynamics in the Walker River, California – Nevada. International Terminal Lake Symposia, Reno NV 2009. (Co-Author).
- 2009 Hypolimnetic oxygen deficit in Walker Lake Nevada. International Terminal Lake Symposia, Reno NV 2009. (Co-Author).
- 2009 The contemporary ecology and food web energetics of Walker Lake, Nevada. International Terminal Lake Symposia, Reno NV 2009. (Co-Author)

- 2008 The interaction between phytoplankton ice, ice algae and krill (PIIAK): Modeling the winter ice algal biomass in relation to sea ice and phytoplankton dynamics. (ASLO annual meeting, February 2008).
- 2008 Modeling phytoplankton Biomass (Chlorophyll a) During Fall and Winter of 2001 and 2002 at 64o and 68o S in Coastal Waters West of the Antarctic peninsula. (ASLO general meeting Orlando FL, February 2008). (Co-Author).
- 2007 Environmental controls and potential food web impacts of *Didymosphenia geminata*, a comparative ecosystem study. International Association of Theoretical and Applied Limnology (Societas Internationalis Limnologiae, SIL), August 2007, Montreal (Co-Author).
- 2007 Low temperature brine beneath the twenty meter ice cover of Lake Vida: Access, geochemistry and cells. ASLO annual Meeting, Santa Fe, NM. February 2007.
- 2007 Microbial life in cold brines collected from permanently ice-covered Lake Vida, Antarctica. ASLO annual Meeting, Santa Fe, NM. February 2007 (Co-author).
- 2006 Ice-sealed Lake Vida, McMurdo Dry Valleys: Lessons concerning entry and cleanliness procedures. International Sub Antarctic Lake Exploration Meeting. (Co-author).
- 2006 Life Detection and Characterization of Subsurface Brine in the McMurdo Dry Valleys. Europa Focus Group Workshop 5, NASA-Ames, CA. February 2006
- 2006 Ultrasonic/sonic Gopher for subsurface ice and brine sampling: analysis and fabrication challenges, and testing results. Smart Structures Symp. in San Diego (Co-author).
- 2005 Astrobiology of Antarctic ice Covered Lakes, AGU, San Francisco (Co-author).
- 2005 Predicting diel dissolved oxygen dynamics in the Carson River Nevada, Fall AGU, San Francisco (Co-Author).
- 2005 Winter Sea Ice Biota and Environmental Change Along the Western Antarctic Peninsula. Gordon Research Conference, March, Ventura California.
- 2005 Nutrient Balance in the Truckee River. Integrating Policy and Science along the Truckee River", 2005 Truckee River Symposium, Reno, NV.
- 2005 Spatial and Temporal Periphyton Distributions and Ecological Indices in an Anthropogenic-Influenced Montane-Desert Great Basin Stream. North American Benthological Societies Joint Assembly Conference, New Orleans, LA. (Co – Author).
- 2005 Periphyton-based Multi-metric Indices: Lower Truckee River, NV. Presentation. Nevada Water Resources Association, "Integrating Policy and Science along the Truckee River", 2005 Truckee River Symposium, Reno, NV (Co – Author).
- 2004 Microbial diversity and spatial variability in the perennial ice cover of Lake Vida, McMurdo Dry Valleys, Antarctica. 10<sup>th</sup> International Symposium on Microbial Ecology ISME 10 - Microbial Planet: Sub-surface to Space. Cancun, Mexico (Co-author).
- 2004 Assessment of microbial populations in the 19-meter ice cover of Lake Vida, Antarctica. Poster Presentation. American Society of Microbiology General Meeting. New Orleans, Louisiana.
- 2004 Building Expertise and Infrastructure for Astrobiology Research in Nevada. Astrobiology Science Conference. NASA Ames Research Center, Moffett Field, California. 2004  
The process and Development of a periphyton-based index of biological integrity for the Truckee River. 2<sup>nd</sup> Annual Lower Truckee River Aquatic Bioassessment Symposium. NDOW, Reno NV, March.

- 2004 Microbial assemblages in the 19-meter ice cover of Lake Vida, Antarctica as a potential analogue to icy environments beyond Earth. Astrobiology Science Conference. NASA Ames Research Center, Moffett Field, California. (Co-author)
- 2004 Sea Ice Biota and Environmental Change Along the Western Antarctic Peninsula. AGU-Ocean Sciences, Portland, Oregon, January.
- 2004 Temporal and Spatial Variability in Growth Rates of Larval Antarctic Krill in Winter: A Possible Mechanism. AGU-Ocean Sciences, Portland, Oregon, January, (Co-Author).
- 2004 Bacterial Distribution and Production within Lake Ice and Glacial Ice Along the Fringe of the Antarctic Ice Cap. Proceedings of the 3<sup>rd</sup> International Conference on Mars Polar Science and Exploration. Alberta, Canada.
- 2004 Mesoscale Distributions, Seasonal Development and Inter-Annual Variability in Antarctic Pack Ice Microbial Communities: Is there an emerging paradigm for when where and why? SCAR-International open science meeting. Bremerhaven, Germany, July.
- 2004 Macronutrients and Biota in Summer Sea Ice of the Ross Sea. AGU, San Francisco, California, December.
- 2003 Azolla-Anabaena symbiosis as a non-point nitrogen source to the Truckee River, Nevada, June. American Water Resources Association. New York, New York. (Co-Author).
- 2003 Prokaryotic Richness in Antarctic sea ice: Inter-habitat Variability, Abstract Book, ASLO Aquatic Sciences Meeting, February, Salt Lake City, Utah (Co-Author).
- 2003 Inter-Annual Variation in Winter Sea Ice Biota: Response to Inter-Annual Variability in Sea Ice Formation Along the Western Antarctic Peninsula, Abstract Book, ASLO Aquatic Sciences Meeting, February, Salt Lake City, Utah
- 2003 Abundance and strategy of viruses within benthic cyanobacterial mat McMurdo Dry Valley Lakes, Antarctica. Abstract Book, ASLO Aquatic Sciences Meeting, February, Salt Lake City, Utah (Co-Author).
- 2003 Azolla-Anabaena symbiosis as a non-point nitrogen source to the Truckee River, Nevada. Nevada Water Resources Association. February, Sparks, Nevada. (Co-Author).
- 2002 Nutrient limitation of periphyton growth in the Truckee River. American Society of Limnologists and Oceanographers (ASLO), June, Victoria, Canada. (Co-author).
- 2002 Spatial Patterns of Periphyton Growth and Groundwater Flow, Lower Truckee River Basin, Nevada. American Society of Limnologists and Oceanographers (ASLO), June, Victoria, Canada. (Co-author).
- 2002 Microbial Processes and their Coupling to Ice Dynamics in Perennial Ice Covers on Earth: Insights for European Environments. Nasa's Astrobiology Institute Bi-Annual Conference. NASA-Ames Research Center, CA.
- 2002 Physical biological interactions influencing distributions and dynamics of sea ice biota in the winter ice of the western Antarctic Peninsula, ASLO/AGU Ocean Sciences Meeting. Honolulu, HI.
- 2002 Sea ice and water column microbial biomass and activity during the fall-winter transition west of the antarctic peninsula, ASLO/AGU Ocean Sciences Meeting. Honolulu, HI. (Co-Author).
- 2002 Nutrient limitation of periphyton growth in the Truckee River. Nevada Water Resources Association's Annual Meeting, Las Vegas, NV (Co-Author). \*\* Graduate Student Award, to M. Green.
- 2001 Seasonal changes in "antifreeze" expression in Mt. Charleston Mosses, UNLV, Graduate Student Symposium, (Co-Author).

- 2001 Nutrient budgets of microbial communities in perennial ice covers on Antarctic Lakes. ASLO Annual Meeting, Albuquerque, NM.
- 2001 Bacterial algal relationships in the sea ice of the Ross Sea. ASLO Annual Meeting, Albuquerque, NM, (Co-Author).\*\*Graduate Student Award to F. Stewart.
- 2001 Microbial processes and coupling to ice dynamics in perennial ice covers on Earth: Astrobiological insights for European Environments? NASA-Astrobiology: Europa Focus Group. Moffett Field, CA.
- 2000 Glacial cryo-ecosystems: A bipolar comparison of algal communities and habitats. International Conference on Extreme Environments, Copenhagen (Co-Author).
- 2000 Early stages of ice community development observed in a transect across the Ross Sea. ASLO Annual Meeting, Santa Fe, NM (Co-Author).
- 1999 Light focusing in association with small-scale structures in freshwater and saline ice covers. ASLO Annual Meeting, Santa Fe, NM.
- 1997 Photophysiology of cyanobacteria in permanent ice covers on Antarctic lakes. ASLO Annual Meeting, Santa Fe, NM.
- 1996 Growth rates and nutrient budgets of microbial populations within permanent ice covers on Antarctic lakes. American Society of Microbiology, Annual Meeting, New Orleans, LA.
- 1996 Liquid water contents of permanent ice covers on lakes in the Antarctic Dry Valleys. AGU Fall Meeting, San Francisco, CA.
- 1994 Microbial blooms in Antarctic pack ice. Scientific Committee for Antarctic Research XI Biology Symposium, Venice, Italy.
- 1994 Autumnal bloom of sea-ice microalgae linked to convective processes. AGU-ASLO Ocean Sciences Meeting, San Diego, CA.
- 1993 Physical-biological interactions in sea ice at Ice Station Weddell #1. Ice Station Weddell Workshop, Helsinki, Finland.
- 1992 Particle's influence on radiative transfer in Arctic and Antarctic sea ice. AGU Fall Meeting, San Francisco, CA.
- 1992 Influence of particulate matter on spectral irradiance fields and energy transfer in the Eastern Arctic Ocean, International Society of Optical Engineers (SPIE), Ocean Optics XI, San Diego, CA.
- 1987 Consequences of substratum modification for cell attachment and motion. Industry University Cooperative Research Center for Biosurfaces, Bi-Annual Meeting, SUNY at Buffalo, NY.

**MAJOR ADVISOR TO GRADUATE STUDENTS**

- 2009- present Kathy Bywaters, Environmental Sciences, UNR
- 2003- 2012 Clinton Davis, Natural and Environmental Resource Sciences, UNR
- 2009- 2011 Eric Wirthlin, Environmental Sciences, UNR
- 2005-2010 Andy Rost, Hydrology Graduate Program, UNR
- 2003-2005 Zach Latham, Hydrology Graduate Program, UNR
- 2002-2005 Annika Mosier, Environmental Resource Sciences, UNR
- 2001-2003 Megan Robinson, Hydrology Graduate Program, UNR
- 2000-2003 Sarah Marshall, Environmental Sciences and Health Graduate Program, UNR
- 2000-2002 Frank Stewart, Environmental Sciences and Health Graduate Program, UNR
- 2000-2002 Mark Green, Hydrology Graduate Program, UNR

1999-2001 Julie Allen, Environmental Sciences and Health Graduate Program, UNR

**COMMITTEE MEMBER FOR GRADUATE STUDENTS**

2010-present Emma Kuhn, Cell and Molecular Biology Graduate Program, UNR  
2010- present Zach Johnson, Hydrology Graduate Program, UNR  
2010-2013 Gareth Trubl, Environmental Sciences, UNR  
2009- 2010 Dave Smith, Hydrology Graduate Program, UNR  
2004-2005 Christa Redd, Natural Resources and Environmental Sciences, UNR  
2004-2005 Karin Peternel, Natural Resources and Environmental Sciences, UNR  
2000-2003 Sarah Peterson, Hydrology Graduate Program, UNR

**HOST TO UNDERGRADUATE RESEARCHERS/INTERNS**

2013 Bailey Wong, UNR, Biology Program  
2011 Erica Romero, UNR. Biology Program  
2011 Teresa Schwedlen, UNR. Biology Program  
2011 Erin Romeno UNR Biology Program  
2007 Eric Wirthlin, UNR Summer Intern. NSF-EPSCoR.  
2006 Amy Collins, UNR Summer Intern.  
2005 Ben Taylor, UNR Chemical Engineering Undergraduate Researcher  
2005 Lee Bolling UNR- Hydrology Undergraduate Researcher  
2005 Warren Dang, UNR Engineering Undergraduate Researcher  
2004 Heather Thompson, UNR Biology Undergraduate Researcher  
2003 Clinton Davis, Summer Intern. NSF-EPSCoR Experimental Watershed Program  
2002 Paula Adkins, NSF-Polar Programs Research Experiences for Undergraduates.  
2002 Megan Bles, UNR Biology Undergraduate Researcher  
2002 Lindsay Cunningham, UNR Biology Undergraduate Researcher  
2001 Tina Hargrove, Truckee Meadows Community College, Environmental Intern.  
2000 Ernest Koch, NASA-EPSCOR Astrobiology Summer Intern  
2000 Justin Heath, NASA-EPSCOR Astrobiology Summer Intern  
1999 Frank Stewart, NSF-Research Experiences for Undergraduates  
1999 Mathew Wong, NSF-DOE Young Scholar Undergraduate Research Program,  
1997 Amanda Grue, NSF-Research Experiences for Undergraduates  
1996 Amanda Grue, American Cancer Society Scholar  
1995 Karl Didier, NSF-Research Experiences for Undergraduates  
1995 Sue Thompson, NSF- Research Experiences for Undergraduates  
1993 Glenn Comiso, NSF-Research Experiences for Undergraduates  
1992 Robert Swayzer and Brett Costillo, NSF Young Scholars Program

**COURSES DEVELOPED AND TAUGHT:**

**Geobiology (UNR and UNLV):** Graduate research course that couples in service teachers with graduate students in Nevada Geo-biological research.

- Aquatic Ecology (UNR- BIO 420/620):** Undergraduate and Graduate course on the interactions of the fundamental physical, chemical and biological processes as they pertain to inland aquatic ecosystems.
- Advanced Limnology (UNR- ERS- 701C):** An advanced graduate course promoting project development and implementation in present-day applied and basic Limnological problems. Requires hands-on activities in field methods, modeling, data analysis, proposal development and reporting.
- Trophic Dynamics (UNR- ERS-701D):** A graduate special topics course examining trophic interactions within ecosystems. The course reviews the classical literature (Lindemann, Paine etc.) and emerging concepts in ecology (e.g. ecological stoichiometry) in both aquatic and terrestrial systems.
- Hydrologic Optics (UNR- ERS-701E)** A special topics seminar examining radiative transfer in natural waters (oceans, lakes, and ice) focusing on fundamental absorption and scattering properties of natural waters and their application to water quality testing, ecosystem studies and remote sensing.
- Current Issues in Microbial Ecology (UNR-ERS 793C):** Graduate seminar course that examines current issues in microbial ecology. Topics include: microbial phylogeny, geomicrobiology, biotechnology and evolving methods.
- Astrobiology (WNCC):** Team taught course on the revitalized interdisciplinary science (e.g. space science, geology, chemistry, and biology) regarding the search for life within our Universe.
- Astrobiology (UNR and UNLV)** a new cross-listed undergraduate and graduate course being offered at both UNR and UNLV in the Departments of Geology (UNR) and Biology (UNLV). The course will utilize Nevada's Access Grid Node to promote advances in distributed learning and team teaching of the highly interdisciplinary topic.

## **MAJOR RESEARCH AWARDS**

- NASA-EPSCoR: 2010-present: Building Expertise and collaborative infrastructure for NASA Research in Nevada. ~\$750k Annually. Principle Investigator.
- NASA-Space Grant: 2008-2012, presently at ~\$1.0 M Annually, Principle Investigator
- DOE- 2009-present: \$892,032. Algal-biomass for energy production in Nevada: Principle Investigator.
- NASA- 2009-present: \$54,587. Improving Current Assessments and Future Predictions of Carbon Fluxes in the Southern Ocean as Mediated by the Dynamical Response of Ice-Ocean-Ecosystem Interactions to Climate Change. Co-Investigator.
- NSF-Office of Polar Programs: 2009-2012: \$597,541. Collaborative Research: Geochemistry and Microbiology of the Extreme Aquatic Environment in Lake Vida, East Antarctica. Co-Investigator.
- NSF Office of Polar Programs: 2005-2009: Southern Ocean GLOBEC Synthesis and Modeling: Collaborative research: Timing is everything: the interaction between phytoplankton, ice, ice algae krill (PIIAK). \$324,893. Principle Investigator
- NDEP- 2009-2010: South Fork Reservoir eutrophication and Humboldt River algal blooms. \$119,112. Principle Investigator.
- EPA- 2006- 2010: Nevada Rivers: Distribution and Dynamics of Periphyton in Nevada. \$119,112. Principle Investigator.
- EPA- 2009: Nevada Rivers: Humboldt river algal blooms. \$57,450. Principle Investigator.
- EPA- 2006-2009: Nevada Rivers: Temperature effects on Periphyton growth in Nevada Rivers. \$98,161. Principle Investigator
- DOI-USGC 2007-2008: Walker Basin- River Periphyton and Walker Lake Hypolimnetic Oxygen deficit research. \$245,993. Principle Investigator.
- NSF –MRI: 2004-2007. Instrumentation for the Enhancement of DRI's Microbial Ecology Education and Research (MEERS) Program. \$578,937. Principle Investigator.
- NASA-EPSCoR: 2004-2006: Building Expertise and collaborative infrastructure for successful astrobiology research, teaching and education in Nevada. \$306,028. Principle Investigator
- NASA- ASTEP: 2003-2006: Subsurface ice and brine sampling: life detection and characterization in the McMurdo Dry Valleys Using an Ultrasonic Gopher. \$253,720. Co-Investigator.
- NDEP- 2003-2005: Carson River Oxygen Project: \$221,368. Principle Investigator
- NSF-EPSCoR: 2001-2002. Incline Creek Experimental Watershed. Bio-assessment Baseline. \$20,000. Subcontractor/Investigator.
- NASA-EPSCoR: 2001-2004: Building Expertise and collaborative infrastructure for successful astrobiology research, teaching and education in Nevada. \$603,324. Principle Investigator.
- USGS Nevada Water Research Program: 2001-2002. Ecosystem Metabolism in the Lower Truckee River. \$75,321. Principle Investigator.
- NSF Office of Polar Programs. Southern Ocean GLOBEC: 2000-2003. Production by Sea Ice Microbial Communities and role in overwintering of juvenile krill. Principle Investigator. \$302,664.
- NASA-Exobiology: 2000-2003. Persistence and infectivity of cyanophage in polar environments. Implications for planetary protection. \$57,849. Co-Investigator.
- NSF- office of Polar Programs- subcontract through University of California, Santa Cruz- 1999. Sea Ice Algal Survey in the Ross Sea. Subcontractor. \$18,216.



Cities of Reno and Sparks and Washoe County: 2001. Truckee River Biomass Monitoring.  
\$302,907. Principle Investigator. Previously funded through Carollo Engineers, \$208,773  
NSF Life in Extreme Environments: 1998- 2001. Microbial Life within the Extreme  
Environment Posed by Permanent Antarctic Lake Ice. \$260,009. Principle Investigator.

**References:****Chris Maples, Ph.D.**

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