

BRUCE J. PETERSON

Senior Scientist Emeritus
The Ecosystems Center
Marine Biological Laboratory
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Education

Ph.D., Cornell University, Ithaca, NY, 1971
B.S., Bates College, Lewiston, ME, 1967, Biology (with honors)

Professional Positions

June 1968 to April 1974. Cornell University, Ithaca, New York. Research Associate, June 1971 to April 1974. Nutrient limitation, phosphorus cycling and primary productivity in Cayuga Lake, New York. Research Assistant, June 1969 to September 1970. Cayuga Lake studies. Research Assistant, June 1968 to September 1968: Conduct sampling program as part of Bell Station Nuclear Power Plant impact studies.
May 1974 to November 1974 – Postdoctoral Research, Hubbard Brook Ecosystem Study. Study carbon, nitrogen and phosphorus cycling in plankton and benthos.
July 1975 to December 1975 – Postdoctoral Research, North Carolina State University, Raleigh, North Carolina. Develop nutrient cycling process models based on field measurements of nitrogen, phosphorus and carbon cycling in the Pamlico River Estuary of North Carolina.
January 1976 - Present: The Ecosystems Center, Marine Biological Laboratory, Woods Hole, Massachusetts. Senior Scientist, December 1987 to Present. Research on biological processes at the ecosystem level with emphasis on cycling of nitrogen, phosphorus, sulfur and carbon. Associate Scientist, January 1980 to December 1987; Assistant Scientist, January 1977 to January 1980; Postdoctoral Associate, January 1976 to January 1977

Honors and Awards

ASLO Martin Award in 2008 for the article: Eppley, R. and B. Peterson. 1979. Particulate organic matter flux and planktonic new production in the deep ocean. *Nature* 282:677-680.
Fellow, American Association for the Advancement of Science
Phi Beta Kappa, Bates College, 1967

Membership in National and International Organizations

American Society of Limnology and Oceanography
American Association for the Advancement of Science
Marine Biological Laboratory Corporation
Estuarine Research Federation
American Geophysical Union
North American Benthological Society

Service on National Committees

Editorial Board, *Limnology and Oceanography*, 1982-1985
Board Member at Large, *Limnology and Oceanography*, 1984-1987
Program Manager for ASLO Winter Meeting with AGU, 1986

Steering Committee - The CHAMP program of the NSF-ARCSS Freshwater Initiative 1996-2006.
 Executive Committee - The Toolik Lake Arctic Long Term Ecological Research Program 1980-2009.
 Steering Committee - The Lotic Intersite Nitrogen Experiment (LINX 2) study 2001-2009.
 Steering Committee - ARCSS program on change in the Arctic 1995-2001.

Service on MBL Committees

Member Stable Isotope Laboratory Steering Committee 1980-2010
 Member MBL Boating Club Executive Committee 1994-2010

Teaching Experience

January 2006 to 2009 - Course lecturer and graduate student advisor in Brown-MBL joint program.
 September, 1997 to Present - Course lecturing and laboratory teaching in the Semester in Environmental Science offered at the Marine Biological Laboratory.
 January 1976 to Present - Course lecturing and laboratory teaching during the January and Summer Ecology Courses offered at the Marine Biological Laboratory (1976 to 1981). Research program advisor to Year-in-Science, Interns-in-Science, Surdna fellowship students, REU students, postdoctoral researchers and graduate students.

Funding, current and past 10 years

NSF – “The Arctic Great Rivers Observatory”, Principal Investigator, 01/01/2012-12/31/2016, \$191,658
 NSF – “A Regional Earth System Model of the Northeast Corridor: Analyzing 21st Century Climate and Environment, Co-Principal Investigator, 02/01/2011-4/30/2014, \$824,940
 NSF (ARRA) – “Collaborative Research: Shifting Seasonality of Arctic River Hydrology Alters Key Biotic Linkages among Aquatic Systems”, Principal Investigator, 07/01/2009-06/30/2013, \$1,317,687
 NSF – “ETBC: Feedbacks between Nutrient Enrichment and Intertidal Substrates: Erosion, Stabilization, and Landscape Evolution”, Principal Investigator, 09/01/2009-8/31/2013, \$469,074
 NSF – “The PIE-LTER: Interactions between External Drivers, Humans and Ecosystems in Shaping Ecological Process in a Mosaic of Coastal Landscapes and Estuarine Seascapes”, Co-Principal Investigator, 10/1/2012-9/30/2016, \$3,919,996
 NSF – “Collaborative Research: Interacting Controls on Ecosystem Function: Nutrient State and Omnivory in Salt Marsh Ecosystems (TIDE)”, Co-Principal Investigator, 10/2008-9/2012, \$1,159,500
 EPA – “Nonlinear and Threshold Responses to Environmental Stresses in Land-river Networks at Regional to Continental scales”, Co-Principal Investigator, 9/2007-8/2011, \$899,191
 NSF – “IPY: Improving the Public’s Understanding of Polar Research through Hands-On Fellowships for Science Journalists in the Arctic and Antarctic”, Co-Principal Investigator, 3/2008-2/2011, \$365,289
 NSF – “Collaborative Research: IPY: Arctic Great Rivers Observatory”, Principal Investigator, 7/2008-6/2011, \$653,314
 NASA – “Further Tests on a Modeling Framework to Detect and Analyze Changes in Land-to-Coastal Fluxes”, Principal Investigator, 7/2008-1/2011, \$38,833
 NSF – “Plum Island Ecosystems LTER”, Co-Principal Investigator, 8/2004-7/2011, \$5,738,544
 NSF – “Collaborative Research: Understanding the Scaling of N Cycle Controls throughout a River Network”, Principal Investigator, 10/2006-9/2010, \$392,122
 NSF – “Collaborative Research: Synthesis of Arctic System Carbon Cycle Research through Model-Data Fusion Studies Using Atmospheric Inversion and Process-Based Approaches”, Co-Principal Investigator, 8/2005-7/2009, \$270,538
 CESU – “Aquatic Biodiversity, Community Composition and Ecosystem Processes in Gates of the Arctic Park and Preserve and the Noatak National Preserve”, Principal Investigator, 5/2006-12/2009, \$67,486

- NASA – “Further Tests on a Modeling Framework to Detect and Analyze Changes in Land-to-Coastal Fluxes”, Principal Investigator, 4/2007-5/2008, \$14,280
- NSF – “Synthesis and Scaling of Hydrologic and Biogeochemical Data on the North Slope and Coastal Zones of Alaska: A Basis for Studying Climate Change”, Principal Investigator, 1/2005-12/2008, \$191,254
- NPS – “Aquatic Biodiversity, Community Composition and Ecosystem Processes in Gates of the Arctic Park and Preserve and the Noatak National Preserve”, Principal Investigator, 5/2005-12/2008, \$191,254
- NSF – “Trophic Cascades and Interacting Control Processes in a Detritus-based Aquatic Ecosystem”, Co-Principal Investigator, 10/2002-9/2008, \$2,711,971
- NASA – “Understanding the Changing Carbon, Nitrogen, and Water Cycles in the Earth System”, Co-Principal Investigator, 4/2004-4/2008, \$315,250
- NSF – “Aquatic Ecosystem Responses to Changes in the Environment of an Arctic Drainage Basin”, Co-Principal Investigator, 7/2000-6/2007, \$500,000
- NSF – “IRCEB: Nitrate Uptake and Retention in Streams: Mechanisms and Effects of Human Disturbances from Stream Reaches to Landscapes”, Principal Investigator, 9/2001-7/2007, \$486,999
- NSF – “Biogeochemical Tracers in Arctic Rivers: Linking the Pan-Arctic Watershed to the Arctic Ocean”, Principal Investigator, 10/2002-9/2007, \$2,103,137
- NSF – “LTER: Plum Island Sound Comparative Ecosystem Study (PISCES): Effects of Changing Land Cover, Climate and Sea Level on Estuarine Trophic Dynamics”, Co-Principal Investigator, 7/1998-7/2005, \$4,859,262
- NSF – “The Arctic LTER Project: The Future Characteristics of Arctic Communities, Ecosystems, and Landscapes”, Co-Principal Investigator, 12/1998-11/2005, \$4,498,703
- NASA – “Predicting Changes in Regional and Global Biogeochemical Cycles”, Co-Principal Investigator, 1/2001-12/2004, \$540,908
- NASA – “Modeling the Biogeochemical System of the Terrestrial Amazon: Issues for Sustainability”, Co-Principal Investigator, 7/1998-12/2003, \$418,364
- NSF – “Water and Constituent Fluxes across the Eurasian Arctic: Evolving Land-Ocean Connections over the Past 20,000 Years” Principal Investigator, 4/1999-3/2003, \$1,048,619
- NOAA – “A Diagnostic Framework for Characterizing the Status of the Gulf of Maine Watershed and its Contribution of Freshwater and Constituents to the Coastal Zone”, Principal Investigator, 8/1999-7/2002, \$7,000
- NSF – “Ecosystem Controls on the Biogeochemical Processing of Watershed-Derived Nitrogen in Tidal Rivers”, Principal Investigator, 9/1999-8/2002, \$823,000
- NSF- “Key Connections in Arctic Aquatic Ecosystems”, Co-Principal Investigator, 5/1997-4/2002, \$2,977,554
- NASA – “A Satellite-based System for Monitoring Biogeochemical Fluxes between the Continental Land Mass and Coastal Oceans: A Focus on River Plumes”, Principal Investigator, 1/2001-12/2002, \$15,000
- NOAA – “A Diagnostic Framework for Characterizing the Status of the Gulf of Maine”, Principal Investigator, 7/1997-7/2001, \$7,000
- NASA – “The Role of Land-Cover Change in the High Latitude Ecosystems: Implications for the Global Carbon Cycle”, Principal Investigator, 8/1997-8/2001, \$74,995

Pending

- NSF – “Collaborative Research: Metapopulation Genetics, Adaptation, and Persistence of Fish in the Changing Arctic Landscape”, Principal Investigator, 01/01/2014-12/31/2016, \$788,480
- NSF – “Collaborating Research: CONNECT, Cascading Effects of Nutrient Enrichment on Saltmarsh Habitats, Food Webs, and Nekton Export to the Coastal Ocean, Principal Investigator, 02/01/2013-01/31/2016, \$881,494.
- NSF – “Collaborative Research: Arctic Oases – How Does the Delayed Release of Winter Discharge from Auefis Affect the Ecosystem Structure and Function of rivers?, Principal Investigator, 09/01/2013-08/31/2017, \$1,323,757.

Publications and Theses (Publications in Science, Nature, and PNAS in bold).**a. Original Research in Peer-Reviewed Journals**

1. Hershey, A. E., Northington, R. M., Finlay, J. C., Peterson, B. J. 2017. Stable Isotopes in Stream Food Webs. Pp 21-36 in: *Methods in Stream Ecology, Volume 2, Ecosystem Function*. Third Edition, Lamberti G. A., and Hauer, R. (Editors), Academic Press, London. 2017, 357 pp.
2. McClelland, J. W., Holmes, R. M., Peterson, B. J., Raymond, P. A., Striegl, R. G., Zhulidov, A. V., Griffin, C. G. 2016. Particulate organic carbon and nitrogen export from major Arctic rivers. *Global Biogeochemical Cycles*, 30(5), 629-643. doi: 10.1002/2015GB005311
3. Bowden, W. B., Peterson, B. J., Deegan, L. A., Hury, A. D., Benstead, J. P., Golden, H., Kendrick, M., Parker, S. M., Schuett, E., Vallino, J. J., and Hobbie, J. E. 2014. Ecology of Streams of the Toolik Region. Chapter 7 in *Alaska's Changing Arctic: Ecological Consequences for Tundra Streams and Lakes*. Editors J. Hobbie and G. Kling. Oxford University Press. 2014, 331pp.
4. Kicklighter, D. W., D. J. Hayes, J. W. McClelland, B. J. Peterson, A. D. McGuire and J. M. Melillo 2013. Insights and issues with simulating terrestrial DOC loading of arctic river networks. *Ecological Applications* 23(8), 1817-1836, doi: 10.1890/11-1050.1.
5. Amon, R. M. W., A. J. Rinehart, S. Duan, P. Louchouart, A. Prokushkin, G. Guggenberger, D. Bauch, C. Stedmon, P. A. Raymond, R. M. Holmes, J. W. McClelland, **B. J. Peterson**, S. A. Walker, and A. V. Zhulidov. 2012. Dissolved organic matter sources in large arctic rivers. *Geochimica Cosmochimica Acta* 94:217-237.
6. **Deegan, L. A., D. S. Johnson, R. S. Warren, B. J. Peterson, S. Fagherazzi, and J. Fleeger. 2012. Trouble on the edge: Coastal eutrophication as a driver of salt marsh loss. Nature, doi: 10.1038/nature11533.**
7. Holmes, R. M., J. W. McClelland, **B. J. Peterson**, S. E. Tank, E. Bulygina, T. I. Eglinton, V. V. Gordeev, T. Y. Gurtovaya, P. A. Raymond, D. J. Repeta, R. Staples, R. G. Striegl, A. V. Zhulidov, and S. A. Zimov. 2012. Seasonal and annual fluxes of nutrients and organic matter from large rivers to the Arctic Ocean and surrounding seas. *Estuaries and Coasts* 35:369-382, doi: 10.1007/s12237-011-9386-6.
8. Johnson, L. T., J. L. Tank, R. O. Hall, Jr., P. J. Mulholland, S. K. Hamilton, H. M. Valett, J. R. Webster, C. P. Arango, J. J. Beaulieu, M. J. Bernot, A. J. Burgin, W. H. McDowell, J. L. Meyer, B. R. Niederlehner, **B. J. Peterson**, J. D. Potter, and S. M. Thomas. 2012. In-stream dissolved organic nitrogen production in headwater streams. *Limnology and Oceanography*, in press.
9. Kicklighter, D. W., D. J. Hayes, J. W. McClelland, **B. J. Peterson**, A. D. McGuire, and J. M. Melillo. 2012. Insights and issues with simulating terrestrial DOC loading of arctic river networks. *Ecological Applications*, in press.
10. Mann, P. J., R. G. M. Spencer, P. J. Hernes, G. R. Aiken, S. E. Tank, E. Bulygina, K. D. Butler, D. Butman, R. Y. Dyda, J. W. McClelland, **B. J. Peterson**, P. A. Raymond, J. Six, A. V. Zhulidov, and R. M. Holmes. 2012. Arctic riverine composition and flux of dissolved organic matter and lignin phenols. *Global Biogeochemical Cycles*, in review.
11. Tank, S. E., M. Manizza, R. M. Holmes, J. W. McClelland, and **B. J. Peterson**. 2012. The processing and impact of dissolved riverine nitrogen in the Arctic Ocean. *Estuaries and Coasts* 35:401-415, doi:10.1007/s12237-011-9417-3.
12. Tank, S. E., P. A. Raymond, **B. J. Peterson**, R. M. Holmes, J. W. McClelland, and R. G. Striegl. 2012. A land-to-ocean perspective on the magnitude, source and implication of DIC flux from major

- arctic rivers to the Arctic Ocean. *Global Biogeochemical Cycles* 26, GB4018, doi:10.1029/2011GB004192.
13. Tank, S. E., P. A. Raymond, R. G. Striegl, J. W. McClelland, R. M. Holmes, G. J. Fiske, and **B. J. Peterson**. 2012. A land-to-ocean perspective on the magnitude, source and implication of DIC flux from major arctic rivers to the Arctic Ocean. *Global Biogeochemical Cycles* 26, GB4018, doi:10.1029/2011GB004192.
 14. Yi, Y., J. J. Gibson, L. W. Cooper, J.-F. Hélie, S. J. Birks, J. W. McClelland, R. M. Holmes, and **B. J. Peterson**. 2012. Isotopic signals (^{18}O , ^2H , ^3H) of six major rivers draining the Pan-Arctic watershed. *Global Biogeochemical Cycles* 26, GB1027, doi:10.1029/2011GB004159.
 15. **Beaulieu, J. J., J. L. Tank, S. K. Hamilton, A. M. Helton, G. C. Poole, W.M. Wollheim, R.O. Hall Jr., P.J. Mulholland, B. J. Peterson, L. R. Ashkenas, L. W. Cooper, C. N. Dahm, W. K. Dodds, S. Findlay, S.V. Gregory, N. B. Grimm, S. L. Johnson, W. H. McDowell, J. L. Meyer, H. M. Valett, C. P. Arango, M. J. Bernot, A. J. Burgin, C. Crenshaw, L. Johnson, B. R. Niederlehner, J. M. O'Brien, J. D. Potter, R.W. Sheibley, D. J. Sobota, and S. M. Thomas. 2010. Nitrous oxide emission from denitrification in streams and river systems. *Proceedings of the National Academy of Sciences (PNAS)* 108(1):214-219, doi: 10.1073/pnas.1011464108.**
 16. Bernot, M. J., D. J. Sobota, R.O.Hall, Jr., P. J. Mulholland, W. K. Dodds, J. R. Webster, **B. J. Peterson** and 25 others. 2010. Inter-regional comparison of land-use effects on stream metabolism. *Fresh Water Biology* 55 (9):1874-1890(17).
 17. Briggs, M. A., M. N. Gooseff, **B. J. Peterson**, K. Morkeski, W. M. Wollheim, and C. S. Hopkinson. 2010. Surface and hyporheic transient storage dynamics throughout a coastal stream network. *Water Resources Research* 46, W06516, doi:10.1029/2009WR008222.
 18. Helton, A. M., G. C. Poole, J. L. Meyer, W. M. Wollheim, **B. J. Peterson**, P. J. Mulholland, J. A. Stanford, C. Arango and 14 others. 2010. Thinking outside the channel: modeling nitrogen cycling in networked river ecosystems. *Frontiers in Ecology and the Environment*, doi: 10.1890/080211.
 19. McGuire, A. D., D. J. Hayes, D. W. Kicklighter, M. Manizza, Q. Zhuang, M. Chen, J. Follows, K. R. Gurney, J. W. McClelland, J. M. Melillo, **B. J. Peterson**, and R. G. Prinn. 2010. An analysis of the carbon balance of the arctic basin from 1997-2006. *Tellus*, doi: 10.1111/j.1600-0889.2010.00497.x.
 20. Potter, J. D., W. H. McDowell, J. L. Merriam, **B. J. Peterson**, and S. M. Thomas 2010. Denitrification and total nitrate uptake in streams of a tropical landscape. *Ecological Applications* 20:2104-2115.
 21. Stewart, R. J., W. M. Wollheim, M. N. Gooseff, M. A. Briggs, J. M. Jacobs, **B. J. Peterson**, and C. S. Hopkinson. 2010. Separation of river network – scale nitrogen removal among main channel and two transient storage compartments. *Water Resources Research* 47, W00j0, doi: 10.1029/2010WR009896.
 22. Townsend-Small, A., J. McClelland, R. M. Holmes, and **B. J. Peterson**. 2010. Seasonal and hydrologic drivers of dissolved organic matter and nutrients in the upper Kuparuk River, Alaskan Arctic. *Biogeochemistry*, doi: 10.1007/s10533-010-9451-4.
 23. **Crump, B. C., B. J. Peterson, P. A. Raymond, R. M. W. Amon, A. Rinehart, J. W. McClelland, and R. M. Holmes. 2009. Circumpolar synchrony in big river bacterioplankton. *Proceedings of the National Academy of Sciences (PNAS)* 106 (50): 21208-21212. 10.1073/pnas.0906149106.**
 24. Drake, D. C. **B. J. Peterson**, K. A. Galván, L. A. Deegan, J. W. Fleeger, C. Hopkinson, J. M. Johnson, K. Koop-Jakobsen, L. E. Lemay, E. E. Miller, C. Picard, and R. Scott Warren. 2009. Salt marsh ecosystem biogeochemical responses to nutrient enrichment: A paired ^{15}N tracer study. *Ecology* 90(9): 2535-2546.

25. Hall, R. O., Jr., J. L. Tank, D. J. Sobota, P. J. Mulholland, J. M. O'Brien, W. K. Dodds, J. R. Webster, H. M. Valett, G. C. Poole, **B. J. Peterson**, J. L. Meyer, W. H. McDowell, S. L. Johnson, S. K. Hamilton, N. B. Grimm, S. V. Gregory, C. N. Dahm, L. W. Cooper, L.R. Ashkenas, S. M. Thomas, R. W. Sheibley, J. D. Potter, B. R. Niederlehner, L. Johnson, A. M. Helton, C. Crenshaw, A. J. Burgin, M. J. Bernot, J. J. Beaulieu, and C. Arango. 2009. Nitrate removal in stream ecosystems measured by ¹⁵N addition experiments: total uptake. *Limnology and Oceanography* 54: 653-665.
26. Manizza, M., M. J. Follows, S. Dutckiewicz, D. Menemenlis, J. W. McClelland, C. N. Hill, and **B. J. Peterson**. 2009. Modeling the potential impact of the riverine dissolved organic carbon on the carbon cycle of the Arctic Ocean. *Global Biogeochemical Cycles* 23, doi 10.1029/2008gb003396.
27. Manizza, M., M. J. Follows, S. Dutkiewicz, J. W. McClelland, D. Menemenlis, C. N. Hill, A. Townsend-Small, and **B. J. Peterson**. 2009. Modeling transport and fate of riverine dissolved organic carbon in the Arctic Ocean. *Global Biogeochemical Cycles* 23, GB4006, doi:10.1029/2008GB003396.
28. Mulholland, P. J, R. O. Hall, Jr., D. J. Sobota, W. K. Dodds, S. Findlay, N. B. Grimm, S. K. Hamilton, W. H. McDowell, J. M. O'Brien, J. L. Tank, L. R. Ashkenas, L. W. Cooper, C. N. Dahm, S. V. Gregory, S. L. Johnson, J. L. Meyer, **B. J. Peterson**, G. C. Poole, H. M. Valett, J. R. Webster, C. Arango, J. J. Beaulieu, M. J. Bernot, A. J. Burgin, C. Crenshaw, A. M. Helton, L. Johnson, B. R. Niederlehner, J. D. Potter, R. W. Sheibley, and S. M. Thomas. 2009. Nitrate removal in stream ecosystems measured by ¹⁵N addition experiments: denitrification. *Limnology and Oceanography* 54: 666-680.
29. Bowden, W. B. , M. Gooseff, A. Balsler, L. Rogan, A. Green, **B. J. Peterson**, and J. Bradford. 2008. Sediment and nutrient delivery from thermokarst features in the foothills of the North Slope, Alaska: Potential impacts on headwater stream ecosystems. *Journal of Geophysical Research* 113, G02026, doi: 10.1029/2007JG000470.
30. Cooper, L. W., J. W. McClelland, R. M. Holmes, P. A. Raymond, J. J. Gibson, C. K. Guay, and **B. Peterson**. 2008. Flow-weighted values of runoff tracers (delta 18O, DOC, Ba, Alkalinity) from the six largest Arctic rivers. *Geophysical Research Letters* 35, L18606, doi: 10.1029/2008GL035007.
31. Drake, D. C., L. A. Deegan, L. A. Harris, E. E. Miller, **B. J. Peterson**, and R. S. Warren. 2008. Plant N dynamics in fertilized and natural New England saltmarshes: A paired del¹⁵N tracer study. *Marine Ecology Progress Series* 354:35-46.
32. Fry, B., M. Cieri, J. Hughes, C. Tobias, L. A. Deegan, and **B. Peterson**. 2008. Stable isotope monitoring of benthic-pelagic coupling with salt marsh fish. *Marine Ecology Progress Series* 369:193-204.
33. Holmes, R. M, J. W. McClelland, P. A. Raymond, B. B. Frazer, **B. J. Peterson**, and M. Stieglitz. 2008. Labiality of DOC transported by Alaskan rivers to the arctic ocean. *Geophysical Research Letters* 35(3): Art. No. L03402. 10.1029/2007GL032837.
34. McClelland, J. W., R. M. Holmes, **B. J. Peterson**, R. Amon, T. Brabets, L. Cooper, J. Gibson, V. V. Gordeev, C. Guay, D. Milburn, T. Staples, P. A. Raymond, I. Shiklomanov, R. Striegl, A. Zhulidov, T. Gurtovaya, and S. Zimov. 2008. Development of a pan-arctic database for river chemistry. *EOS* 89:217-218.
35. **Mulholland, P. J. A. M. Helton, G. C. Poole, R. O. Hall, Jr., S. K. Hamilton, B. J. Peterson, J. L. Tank, L. R. Ashkenas, L. W. Cooper, C. N. Dahm, W. K. Dodds, S. Findlay, S. V. Gregory, N. B. Grimm, S. L. Johnson, W. H. McDowell, J. L. Meyer, H. M. Valett, J. R. Webster, C. Arango, J. J. Beaulieu, M. J. Bernot, A. J. Burgin, C. Crenshaw, L. Johnson, J. Merriam, B. R. Niederlehner, J. M. O'Brien, J. D. Potter, R.W. Sheibley, D. J. Sobota, and S. M. Thomas. 2008. Stream denitrification across biomes and its response to anthropogenic nitrate loading. *Nature* 452:202-205.**
36. Wan, Z., J. J. Vallino, and **B. J. Peterson**. 2008. Study of the inter-annual food web dynamics in the Kuparuk River with a first order approximation inverse model. *Ecological Modeling* 211:97-112.
37. Wollheim, W. M., C. J. Vorosmartry, A. F. Bouwman, P. Green, J. Harrison, E. Linder, **B. J. Peterson**, S. P. Seitzinger, and J. P. M. Syvitski. 2008. Global N removal by freshwater aquatic systems using

- a spatially distributed, within-basin approach. *Global Biogeochemical Cycles* 22(2): GB2026, doi:10.1029/2007GB002963
38. Wollheim, W. M., **B. J. Peterson**, S. M. Thomas, C. H. Hopkinson, and C. J. Vorosmarty. 2008. Dynamics of N removal over annual time periods in a suburban river network. *Journal of Geophysical Research* 113:G03038, doi:10.1029/2007JG000660.
 39. Benstead, J., A. Green, L. A. Deegan, **B. J. Peterson**, K. Slavik, B. Bowden, A. Hershey. 2007. Recovery of three Arctic stream reaches from experimental nutrient enrichment. *Freshwater Biology* 52:1077- 1089, doi:10.1111/j.1365-2427.2007.01723.
 40. Deegan, L. A., J. L. Bowen, D. Drake, J. W. Fleeger, C. T. Friedrichs, K. A. Galvan, J. E. Hobbie, C. Hopkinson, J. M. Johnson, D. S. Johnson, L. E. Lemay, E. Miller, **B. J. Peterson**, C. Picard, S. Sheldon, J. Vallino, and R. S. Warren. 2007. Susceptibility of salt marshes to nutrient enrichment and predator removal. *Ecological Applications* 17 (5) S42-S63.
 41. McClelland, J. W, M. Stieglitz, F. Pan, R. M. Holmes, and **B. J. Peterson**. 2007. Recent changes in nitrate and dissolved organic carbon export from the upper Kuparuk River, North Slope, Alaska. *Journal of Geophysical Research* 112, G04S60, doi:10.1029/2006JG 000371.
 42. Raymond, P. A., J. W. McClelland, R. M. Holmes, A. Zhulidov, K. Mull, **B. J. Peterson**, R.G. Striegl, G. R. Aiken, and T. Y. Gurtovaya. 2007. Flux and age of dissolved organic carbon exported to the Arctic Ocean: A carbon isotopic of the five largest Arctic Rivers. *Global Biogeochemical Cycles* 21(4): Gb4011, doi:10.1029/2007GB002783.
 43. White, D. , L. Hinzman, L. Alessa, J. Cassano, M. Chambers, K. Falkner, J. Francis, B. Gutowski, M. Holland, M. Holmes, H. Huntington, D. Kane, A. Kliskey, C. Lee, J. McClelland, **B. Peterson**, F. Staneo, M. Steele, R. Woodgate, D. Yang, K. Yoshikawa, T. Zhang. 2007. The Arctic Freshwater System: Changes and Impacts. *Journal of Geophysical Research* 112, G04S54, doi:10.1029/2006JG000353.
 44. Machas, R., R. Santos, and **B. Peterson**. 2006. Elemental and stable isotope composition of *Zostera noltii* (Horneman) leaves during the early phases of decay in a temperate mesotidal lagoon. *Estuarine Coastal and Shelf Science* 66:21-29.
 45. McClelland, J., S. J. Dery, **B. J. Peterson**, R. M. Holmes, and E. F. Wood. 2006. A pan-arctic evaluation of changes in river discharge during the latter half of the 20th Century. *Geophysical Research Letters* 33, L06715, doi:10.1029/2006GL025753.
 - 46. Peterson, B. J., J. McClelland, M. Holmes, R. Curry, J. Walsh and K. Aagaard. 2006. Trajectory shifts in the Arctic and Subarctic freshwater cycle. *Science* 313: 1061-1066.**
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