

**Lee R. Kump**  
Professor of Geosciences  
Affiliate, Earth System Science Center  
The Pennsylvania State University  
University Park, Pennsylvania 16802

Education

A.B. Honors, University of Chicago, 1981, Geophysical Sciences  
Ph.D., University of South Florida, 1986, Marine Sciences

Professional Experience

2011- Head, Department of Geosciences  
2010- Editor for Earth and Environmental Sciences, *Nature Scientific Reports*  
2005-2011 Reviewing Editor, *Science*  
2004- Associate Director, Earth System Evolution Program, Canadian Institute for Advanced Research  
2003-2010 Editor, Virtual Journal of Geobiology  
1997- Professor of Geosciences, Penn State  
1996-2000 Co-Editor, *Geology*  
1994-2000 Associate Head, Department of Geosciences, Penn State  
1991-1997 Associate Professor of Geosciences, Penn State  
1986-1991 Assistant Professor of Geosciences, Penn State  
1981-1986 Research Assistant, University of South Florida  
1981-1983 Geologist, United States Geological Survey Fisher Island Station (summers)  
1979-1980 Research Assistant, University of Chicago

Honors and Awards

2012 Fellow of the Geochemical Society and the European Association of Geochemistry  
2009 Distinguished Alumnus, University of South Florida  
2007 Wilson Research Award, Penn State College of Earth and Mineral Sciences  
2005 Faculty Mentoring Award, Penn State College of Earth and Mineral Sciences  
2001 Fellow, Geological Society of London  
2000 Distinguished Service Award, Geological Society of America  
1997 Fellow, Geological Society of America  
1994 Deike Research Award, Penn State  
1991-1995 Marine Biological Association of the U.K., Geophysiology Modeling Fellowship  
1992 Provost's Award for Collaborative Instruction and Curricular Innovation  
1990 Bursary Fellowship, Marine Biological Association of the UK  
1986-1987 Faculty Research Award  
1985-1986 John B. Lake Fellowship in Marine Science  
1982-1983 Graduate Council Fellowship, University of South Florida  
1981 National Association of Geology Teachers Summer Field Training Program Award  
1981 Special Honors in Geophysical Sciences, University of Chicago

Membership in Professional Organizations

Canadian Institute for Advanced Research, Earth System Evolution Program, Fellow  
Geological Society of London, Fellow  
Geochemical Society  
American Geophysical Union  
Geological Society of America, Fellow  
American Chemical Society, Geochemistry Division  
American Academy of Underwater Sciences

## Publications

### Articles in Referred Journals

1. Kump, L.R. and Garrels, R.M., 1986. Modeling atmospheric O<sub>2</sub> in the global sedimentary redox cycle., American Journal of Science, 286:337-370.
2. Kirwan, A.D. and Kump L.R., 1987. Models of geochemical systems from mixture theory: diffusion. Geochimica et Cosmochimica Acta, 51:1219-1227.
3. Kump, L.R., 1988. Terrestrial feedback in atmospheric oxygen regulation by fire and phosphorus. Nature, 335:152-154.
4. Byrne, R.H., Kump, L.R. and Cantrell, K.J., 1988. The influence of temperature and pH on trace metal speciation in seawater. Marine Chemistry, 25:163-181.
5. Kump, L.R., 1989. Chemical stability of the atmosphere and ocean. Global and Planetary Change, 1:123-136.
6. Kump, L.R., 1989. Alternative modeling approaches to the geochemical cycles of carbon, sulfur and strontium isotopes. American Journal of Science, 289:390-410.
7. Kump, L.R. and Byrne, R.H., 1989. Palladium chemistry in seawater. Environmental Science and Technology, 23: 663-665.
8. Bluth, G.J.S. and Kump, L.R., 1991. Phanerozoic paleogeology: A new dimension to geochemical cycling models. American Journal of Science, 291:284-308.
9. Kump, L.R., 1991. Interpreting carbon-isotope excursions: Strangelove oceans. Geology, 19:299-302.
10. Kump, L.R., Kasting, J.F., and Robinson, J.M., 1991. Atmospheric oxygen variation through geologic time--introduction. Global and Planetary Change, 97:1-3.
11. Kump, L.R. and Holland, H.D., 1992. Iron in Precambrian rocks: Implications for the global oxygen budget of the ancient Earth. Geochimica et Cosmochimica Acta, 56:3217-3223.
12. Byrne, R.H. and Kump, L.R., 1993. Comment on "Speciation of aqueous palladium (II) chloride solutions using optical spectroscopies" by C.D. Tait, et al., Geochimica et Cosmochimica Acta, 57:1151-1156.
13. Kump, L.R., 1993. Oceans of change. Nature (News and Views Section), 361:592-593.
14. Kump, L.R., 1993. Bacteria forge a new link. Nature (News and Views Section), 362:790-791.
15. Bluth, G.J.S. and Kump, L.R., 1994. Lithologic and climatologic controls of river chemistry. Geochimica et Cosmochimica Acta, 58:2341-2359
16. Gibbs, M.T. and Kump, L.R., 1994. Global chemical erosion during the last glacial maximum and the present: Sensitivity to changes in lithology and hydrology. Paleoceanography, 9:529-543.
17. Lovelock, J.E. and Kump, L.R., 1994. Failure of climate regulation in a geophysiological model. Nature, 369:732-734.
18. Slingerland, R., Kump, L.R., Arthur, M., Fawcett, P., Sageman, B., and Barron, E., 1996. Estuarine circulation in the Turonian Western Interior Seaway of North America. Bulletin of the Geological Society of America, 108: 941-952
19. Mackenzie, F.T. and Kump, L.R., 1995. Reverse weathering, clay mineral formation, and ocean element cycles. Science (Perspectives), 270: 586-587.
20. Kump, L.R. and Mackenzie, F.T., 1996. Regulation of atmospheric O<sub>2</sub>: Feedback in the microbial feedbag. Science (Perspectives), 271: 459-460.
21. Richards, P. and Kump, L.R., 1997. Application of geographic information systems approach to watershed mass balance studies. Hydrological Processes, 11: 671-694.
22. Gibbs, M., Barron, E.J., and Kump, L.R., 1997. An atmospheric pCO<sub>2</sub> threshold for glaciation in the Late Ordovician. Geology, 25: 447-450.
23. Machusak, D. and Kump, L.R., 1997. Environmental controls on groundwater chemistry in an offshore island aquifer: Fiesta Key, Florida. Aquatic Geochemistry, 3: 129-167.
24. Kump, L.R., Arthur, M., Patzkowsky, M., Gibbs, M., Pinkus, D.S., and Sheehan, P., 1999. A weathering hypothesis for glaciation at high atmospheric pCO<sub>2</sub> in the Late Ordovician. Palaeoclimatology Palaeoecology Palaeogeography. 152: 173-187.

25. Kump, L.R. and Arthur, M.A., 1999. Interpreting carbon-isotope excursions: Carbonates and organic matter. Chemical Geology 161: 181-198.
26. Gibbs, M.T., Bluth, G.S., Fawcett, P.J., and Kump, L.R., 1999. Chemical weathering over the last 250 Myr: Variations due to paleogeography, paleoclimate, and paleogeology. American Journal of Science 299: 611-651.
27. Corbett, D.R., Kump, L.R., Dillon, W., and Chanton, J., 2000. Fate of wastewater-borne nutrients under low discharge conditions in the subsurface of the Florida Keys, USA. Marine Chemistry 69: 99-115.
28. Kump, L.R., Brantley, S.L., and Arthur, M.A., 2000. Chemical weathering, atmospheric CO<sub>2</sub>, and climate. Annual Reviews of Earth and Planetary Sciences, 28: 611-667.
29. Hotinski, R.M., Kump, L.R., and Najjar, R.G., 2000. Opening Pandora's Box: The impact of open system modeling on interpretation of anoxia. Paleoceanography 15:267-279.
30. Suits, N.S., Arthur, M.A., and Kump, L.R., in revision. A numerical simulation of sulfur isotopic fractionation during sulfate reduction and sulfide oxidation in modern sediments. American Journal of Science.
31. Dillon, K.S., Corbett, D.R., Chanton, J.P., Burnett, W.C., and Kump, L.R., 2000. Bimodal transport of a wastewater plume injected into saline ground water of the Florida Keys. Ground Water 38(4): 624-634.
32. Hotinski, R.M., Bice, K.L., Kump, L.R., Najjar, R.G., Arthur, M.A., 2001. Ocean stagnation and end-Permian anoxia. Geology, 29: 7-10.
33. Kump, L.R., Kasting, J.F., and Barley, M.E., 2001. Rise of atmospheric oxygen and the "upside-down" Archean mantle. Geochem. Geophys. Geosyst., 2, Paper number 2000GC000114.
34. Kump, L.R., 2001. What drives climate? Nature (News and Views section) 408: 651-652.
35. Kump, L.R., 2001. Chill taken out of the tropics. Nature (London), vol.413, no.6855, pp.470-471, 04 Oct 2001.
36. Beerling, D.J., Lomax, B.H., Royer, D.L., Upchurch, G.R. Jr., and Kump, L.R., 2002. New constraints on atmospheric CO<sub>2</sub> changes following the terminal Cretaceous biotic crisis. Proc. Nat'l. Acad. Sci. **99**, 7844-7847.
37. Kump, L.R. 2002. Reducing uncertainty about carbon dioxide as a climate driver. Nature, v. 419, pp. 188-190.
38. Hotinski, R.M., Kump, L.R., and Bice, K.L., 2002. Comment on "Could the Late Permian deep ocean have been anoxic?" by R. Zhang et al. Paleoceanography 17: 1052, doi:10.1029/2001PA000680.
39. Dillon, K., Burnett, W., Kim, G., Chanton, J., Corbett, D.R., Elliott, K., and Kump, L., 2003 (in press). Groundwater flow and phosphate dynamics surrounding a high discharge wastewater disposal well in the Florida Keys. J. Hydrol.
40. Hotinski, R.M., Kump, L.R., and Arthur, M.A., 2004. A  $\delta^{13}\text{C}$  gradient from platform carbonates of the Pethei Group (Great Slave Lake Supergroup, N.W.T. Bull. Geol. Soc. Amer. 116: 539-554.
41. Griggs, E.M., Kump, L.R., and Bohlke, J.K., 2003. The fate of wastewater-derived nitrate in the subsurface of the Florida Keys: Key Colony Beach, Florida. Est. Coastal Shelf Sci. 58: 517-539.
42. Richards, P. and Kump, L.R., 2003. Soil pore-water distributions and the temperature feedback of weathering in the field. Geochim. Cosmochim. Acta. 67: 3803-3816.
43. Kurtz, A.C., Kump, L.R., Arthur, M.A., Zachos, J.C., and Paytan, A., 2003. Early Cenozoic decoupling of the global carbon and sulfur cycles. Paleoceanography 18(4), 1090, doi:10.1029/2003PA000908.
44. Anderson, S.P., Blum, J., Brantley, S.L., Chadwick, O., Chorover, J., Derry, L., Drever, J., Hering, J., Kirschner, J., Kump, L., Richter, D., and White, A., 2004. Proposed initiative would study Earth's weathering engine. EOS 85: 265-269.
45. Kump, L.R., Pavlov, A., and Arthur, M.A., 2005. Massive release of hydrogen sulfide to the surface ocean and atmosphere during intervals of oceanic anoxia. Geology 33: 397-400.
46. Herman, E.K. and Kump, L.R., 2005. Numerical models of microbial mats under Precambrian oceanic conditions: a modeling study. Geobiology 3: 77-92.

47. Zachos, J.C. and Kump, L.R., 2005. Carbon cycle feedbacks and the initiation of Antarctic glaciation in the earliest Oligocene. *Global and Planetary Change* 47: 51-66.
48. Kump, L.R. and Seyfried, W.E., 2005. Hydrothermal Fe fluxes during the Precambrian: Effect of low oceanic sulfate concentrations and low hydrostatic pressure on the composition of black smokers. *Earth and Planetary Science Letters* 235: 654-662.
49. Kump, L.R., 2005. Ironing out the oxidation of the biosphere. *Science (Perspectives)* 307: 1058-1059.
50. Panchuk, K.M., Holmden, C., and Kump, L.R., 2005. Sensitivity of the epeiric sea carbon isotope record to local-scale carbon cycle processes: Tales from the Mohawkian Sea. *Palaeogeography Palaeoclimatology Palaeoecology* 228: 320-337.
51. Kump, L.R., 2005. Foreshadowing the glacial era. *Nature (News and Views)* 436: 333-334.
52. Melezhik, V.A., Fallick, A.E., Hanski, E.J., Kump, L.R., Lepland, A., Prave, A.R., and Strauss, H., 2005. Emergence of the aerobic biosphere during the Archean-Proterozoic transition: Challenges of future research. *GSA Today* 15: 4-11.
53. Bowen, G.J., Bralower, T.J., Dickens, G.R., Delaney, M., Kelly, D.C., Koch, P.L., Kump, L.R., Meng, J., Sloan, L.C., Thomas, E., Wing, S.L., and Zachos, J.C., 2006. Eocene hyperthermal event offers insight into greenhouse warming. *EOS* 87: 165, 169.
54. Kump, L.R., Pavlov, A., and Arthur, M.A., 2006. Reply to Berner and Ward comment on Kump et al., 2005. *Geology*, on line forum.
55. Riccardi, A.L., Arthur, M.A., Kump, L.R., and D'Hondt, S., 2006. Sulfur isotopic evidence for chemocline upwater excursions during the end-Permian. *Geochimica et Cosmochimica Acta* 70: 5740-5752.
56. Riccardi, A.L., Kump, L.R., Arthur, M.A., and D'Hondt, S., 2007. Carbon isotopic evidence for chemocline upward excursions during the end-Permian event. *Palaeogeography Palaeoclimatology Palaeoecology* 248: 73-81.
57. Payne, J.L., Lehrmann, D.J., Follett, D., Seibel, M., Kump, L.R., Riccardi, A., Altiner, D., Sano, H., Wei, J., 2007. Erosional truncation of uppermost Permian shallow-marine carbonates and implications for Permian-Triassic boundary events. *Bulletin of the Geological Society of America* 119: 771-784.
58. Payne, J.L. and Kump, L.R., 2007. Evidence for recurrent Early Triassic massive volcanism from quantitative interpretation of carbon isotope fluctuations. *Earth and Planetary Science Letters* 256: 264-277.
59. Kump, L.R. and Barley, M.E., 2007. Continental tectonics, increased subaerial volcanism and the rise of atmospheric oxygen. *Nature* 448: 1033-1036.
60. Panchuk, K.M., Ridgwell, A., and Kump, L.R., 2008. Sedimentary response to Paleocene-Eocene Thermal Maximum carbon release: A model-data comparison. *Geology* 36: 315-318.
61. Hilting, A. K., Kump, L.R., and Bralower, T. J., 2008. Variations in the oceanic vertical carbon isotope gradient and their implications for the Paleocene-Eocene biological pump. *Paleoceanography* 23(3) PA3222, doi:10.1029/2007PA001458.
62. Meyer, K. J. and Kump, L. R., 2008. Oceanic euxinia in Earth history: Causes and Consequences. *Annual Reviews of Earth and Planetary Sciences* 36:251-88.
63. Meyer, K.J., Kump, L.R., and Ridgwell, A., 2008. The biogeochemical controls on photic-zone euxinia during the end-Permian mass extinction. *Geology* 36: 747-750.
64. Kump, L.R., 2008. The rise of atmospheric oxygen. *Nature* v. 451: 277-278.
65. Kump, L.R. and Pollard, D., 2008. Brevia: Amplification of Cretaceous warmth by biological cloud feedbacks. *Science*, 320: 195.
66. Ohmoto, Hiroshi; Runnegar; Bruce; Kump, Lee R.; Fogel, Marilyn L.; Kamber, Balz; Anbar, Ariel D.; Knauth, Paul L.; Lowe, Donald R.; Sumner, Dawn Y.; Watanabe, Yumiko, 2008. Biosignatures in Ancient Rocks: A Summary of Discussions at a Field Workshop on Biosignatures in Ancient Rocks. *Astrobiology* 8: 883-907.
67. Kump, L.R., 2009. Tipping pointedly colder. *Science (Perspectives)* 323: 1175-1176.
68. Kump, L.R., Bralower, T.J., and Ridgwell, A., 2009. Ocean acidification in deep time. *Oceanography* 22: 94-107.

69. Luo, Genming , Lee R. Kump, Jinnan Tong , Yongbiao Wang , Michael A. Arthur , Yang Hao , Qinxian Wang , Junhua Huang , Hongfu Yin , Shucheng Xie, 2010. Isotopic evidence for an anomalously low oceanic sulphate concentration following end-Permian mass extinction. *Earth and Planetary Science Letters* 300: 101-111.
70. Jiang, S., Bralower, T.J., Patzkowsky, M.E., Kump, L.R., and Schueth, J.D., 2010. Geographic controls on nannoplankton extinction across the Cretaceous/Palaeogene boundary. *Nature Geoscience* doi:10.1038/ngeo775.
71. Zerkle, A., Kamyshny, A. Jr., Kump, L.R., Farquhar, J., Oduro, H., and Arthur, M., 2010. Sulfur cycling in a stratified euxinic lake with moderately high sulfate: Constraints from quadruple S isotopes. *Geochimica Cosmochimica Acta* 74: 4953–4970.
72. Kump, L.R., 2010. Earth's second wind. *Science (Perspective)* 330: 1490-1491.
73. Saltzman, M., Young, S., Kump, L., Gill, B., Lyons, T. and Runnegar, B., 2011. A pulse of atmospheric oxygen during the late Cambrian and implications for plankton and animal biodiversification. *Proc. Nat'l Acad. Sci.* 108: doi/10.1073/pnas.1011836108
74. Gill, B., Lyons, T., Young, S., Kump, L., Knoll, A., and Saltzman, M.R., 2011. Geochemical evidence for widespread euxinia in the Later Cambrian ocean. *Nature* 469: 80-83.
75. Young, S.A., Saltzman, M.R., Foland, K.A., Linder, J.S., and Kump, L.R., 2009. A major drop in seawater <sup>87</sup>Sr/<sup>86</sup>Sr during the Middle Ordovician (Darriwilian): Links to volcanism and climate. *Geology* 37: 951-954.
76. Luo, G., Yongbiao Wang, Hao Yang, Thomas J. Algeo, Lee R. Kump, Junhua Huang, Shucheng Xie, 2011. Stepwise and large-magnitude negative shift in  $\delta^{13}\text{C}_{\text{carb}}$  preceded the main marine mass extinction of the Permian–Triassic crisis interval. *Palaeogeography Palaeoclimatology Palaeoecology* 299: 70-82.
77. Luo, Genming, Yongbiao Wang, Thomas J. Algeo, Lee R. Kump, Xiao Bai, Hao Yang, Le Yao and Shucheng Xie, 2011. Enhanced nitrogen fixation in the immediate aftermath of the latest Permian marine mass extinction. *Geology* 39: 647-650.
78. Konhauser, K.O., Stefan V. Lalonde, Noah J. Planavsky, Ernesto Pecoits, Timothy W. Lyons, Stephen J. Mojzsis, Olivier J. Rouxel, Mark E. Barley Carlos Rosiere, Phillip W. Fralick, Lee R. Kump, and Andrey Bekker, 2011. Aerobic pyrite oxidation and acid-rock drainage during the Great Oxidation Event. *Nature* 478: 369-373.
79. Charles, A., Daniel J. Condon, Ian C. Harding, Heiko Pälike, John E. A. Marshall , Ying Cui, Lee Kump, Ian W. Croudacea, and the WUN pACE Group, 2011. Constraints on the numerical age of the Paleocene/Eocene boundary. *Geochem. Geoph. Geosys.* 12, Q0AA17, 19 PP., 2011 doi:10.1029/2010GC003426
80. Cui, Y., Kump, L.R., Ridgwell, A., Charles, A.J., Junium, C.K., Diefendorf, A.F., Freeman, K.H., Urban, N.M., and Harding, I.C., 2011. Slow release of fossil carbon during the Palaeocene-Eocene Thermal Maximum. *Nature Geosciences* 4: 481-485 DOI: 10.1038/NNGEO1179.
81. Meyer, K.M., Kump, L.R., Macalady, J., Schaperdoth, I., and Freeman, K., 2011. Carotenoid biomarkers as an imperfect reflection of the anoxygenic phototrophic community in meromictic Fayetteville Green Lake. *Geobiology* 9: 321-329.
82. Honisch, B., Ridgwell, A., Schmidt, D., Thomas, E., Gibbs, S., Sluijs, A., Zeebe, RE., Kump, L., Martindale, R., Greene, S., Kiessling, W., Ries, J., Zachos, J., Royer, D., Barker, S., Marchitto, T., Moyer, R., Pelejero, C., Ziveri, P., Foster, G., and Williams, B., 2012. The geological record of ocean acidification. *Science* 335: 1058-1063.
83. Schneider, L.J., Bralower, T.J., and Kump, L.R., 2011. Response of nannoplankton to early Eocene ocean destratification. *Palaeogeogr. Palaeoclim. Palaeoecol.* 253: 152-162.
84. Falkowski, P.G. and 17 others (including Kump), 2011. Ocean deoxygenation: Past, present, and Future. *EOS* 92: 409-410.
85. Kump, L.R., Junium, C., Arthur, M.A., Brasier, A., Fallick, A., Melezhik, V., Lepland, A., Crne, A., Luo, G., 2011. Isotopic evidence for massive oxidation of organic matter following the Great Oxidation Event. *Science* 334: 1694-1696.

86. Horodyskyj, L.B., White, T.S., and Kump, L.R., 2012. Substantial biologically mediated phosphorus depletion from the surface of a Middle Cambrian paleosol. *Geology* 40: 503-506.
87. Haluszczak, L.O., Rose, A., and Kump, L.R., 2013. Geochemical evaluation of flowback and production waters from Marcellus gas wells in Pennsylvania. *Applied Geochemistry* 28: 55-61.
88. Cui, Y. and Kump, L.R., in press. Global warming and the Permian-Triassic extinction event: proxy and modeling perspectives. *Earth-Science Reviews*.
89. Loope, G., Kump, L.R., and Arthur, M.A., 2013. Shallow-water redox conditions from Permian-Triassic boundary microbialites. *Chemical Geology* 351: 195-208.
90. Kump, L.R., 2013. Sulfur isotopes and the stepwise oxygenation of the biosphere. *Elements* 8: 410-411.
91. Weiczorek, R., Fantle, M.S., Kump, L.R., and Ravizza, G., 2013. Osmium isotopic evidence for volcanic activity prior to and enhanced terrestrial weathering during the Paleocene Eocene Thermal Maximum. *Geochimica et Cosmochimica Acta* 119: 391-410.
92. Olson, S.L., Kump, L.R., and Kasting, J.F., 2013. Quantifying the areal extent and dissolved oxygen concentrations of Archean oxygen oases. *Chemical Geology* 362: 35-43.
93. Cui, Y., Kump, L.R., and Ridgwell, A., in press. Initial assessment on the carbon emission rate and climatic consequences during the Permian-Triassic mass extinction. *Palaeogeography, Palaeoclimatology, Palaeoecology*.
94. Schneider, L.J., Bralower, T.J., Kump, L.R., and Patzkowsky, M.E., 2013. Calcareous nannoplankton ecology and community change across the Paleocene-Eocene Thermal Maximum. *Paleobiology* 39: 628-647.
95. Luo, G., Lee R. Kump, Junhua Huang, Chao Li, Yuansheng Du, Qinglai Feng, Xiaoyin Shi, Xiao Bai, Shucheng Xie, in press. Stratified shallow ocean prevailed from late Paleoproterozoic to middle Mesoproterozoic: Evidence from organic carbon isotopic composition. *Earth and Planetary Science Letters*.
96. Charles, A.J., Harding, I.C., Dale, A., Dale, B., Marshall, J.E.A., Kump, L., in review. Seawater salinity changes during the Paleocene-Eocene thermal maximum in the Arctic: evidence from dinoflagellate cyst assemblages, Spitsbergen. *Palaeogeography, Palaeoclimatology, Palaeoecology*.
97. Pollard, D., Kump, L.R., Zachos, J.C., 2013. Interactions between carbon dioxide, climate, weathering and the Antarctic ice sheet in the earliest Oligocene. *Global and Planetary Change* 111: 258-267.
98. Song, H., Tong, J., Algeo, T.J., Song, H., Qiu, H., Zhu, Y., Tian, L., Bates, S., Lyons, T.W., Luo, G., Kump, L.R., 2014. Early Triassic seawater sulfate drawdown. *Geochim. Cosmochim. Acta* 128: 95-113. doi: <http://dx.doi.org/10.1016/j.gca.2013.12.009>.

#### Books, Book Chapters, and non-refereed Publications

1. Kump, L.R. and Hine, A.C., 1986. Ooids as sea-level indicators. In: van de Plassche, O. (ed.), Sea Level Research, Geobooks, Norwich, England. (Principal Author)
2. White, T.S., Morrison, J.L., and Kump, L.R., 1990. Formation of iron sulfides in modern salt marsh sediments (Wallops Island, Virginia). Chapter 11 in: Orr, W.L. and White, C.M. (eds.) Geochemistry of Sulfur in Fossil Fuels, ACS Symposium: Series 429, pp. 204-217.
3. Kump, L.R., 1990. Neogene geochemical cycles; Implication concerning phosphogenesis. In: Burnett, W. and Riggs, S.R. (eds.), Phosphate Deposits of the World, Vol. 3, Cambridge University Press, England, pp. 273-282.
4. Kump, L.R. and Volk, T., 1991. Gaia's garden and BLAG's greenhouse: global biogeochemical climate regulation. In: Schneider, S.H. and Boston, P.J.0 (eds.), Scientists on Gaia, MIT Press, p. 191-199.
5. Kump, L.R., 1991. Biogeochemical cycle of oxygen. In: Nierenberg, W.A. (ed.) Encyclopedia of Earth System Science, Vol. 3 (M-Re), Academic Press, NY.

6. Kump, L.R., 1992. Coupling of the carbon and sulfur biogeochemical cycles over Phanerozoic time. In: Wollast, R. (ed.), Interactions of C, N, P and S Biogeochemical Cycles, NATO ASI Series, Springer-Verlag, Berlin, pp. 475-490.
7. Kasting, J.F., Holland, H.D., and Kump, L.R., 1992. Atmospheric evolution: the rise of oxygen. Chapter 4.6 in Schopf, J.W. and Klein, C. (eds.), The Proterozoic Biosphere: A Multidisciplinary Study. Cambridge University Press, England, pp. 159-165.
8. Kump, L.R., and Alley, R.B., 1994. Global chemical weathering on glacial time scales. In: Usselman, T.M. and Hay, W.W. (eds.), Material Fluxes on the Surface of the Earth, National Research Council, Washington, DC, pp. 46-60.
9. Kump, L.R. and Lovelock, J.E., 1995. The geophysiology of climate. In: Henderson-Sellers, A. (ed.), Future Climates of the World, V. 16, World Survey of Climatology, Elsevier Science BV, Amsterdam, Chapter 14p. 537-553.
10. Kump, L.R., Gibbs, M., Arthur, M., Patzkowsky, M., and Sheehan, P., 1995. Hirnantian glaciation and the carbon cycle. In: Ordovician Odyssey: Short Papers for the Seventh International Symposium on the Ordovician System, Society of Sedimentary Geology, p. 299-302.
11. Kump, L.R. and Arthur, M.A., 1997. Global chemical erosion during the Cenozoic: Weatherability balances the budget. In: W. Ruddiman (ed.), Tectonics Uplift and Climate Change, Plenum Publishing Co., pp. 399-426.
12. Kump, L.R., Kasting, J.F., and Crane, R.H., 1999. The Earth System. Prentice Hall, New Jersey, 350 pp.
13. Kump, L.R. and Slingerland, R.L., 1999. Circulation and stratification of the Early Turonian Western Interior Seaway: Sensitivity to a variety of forcings. In: Barrera, E. and Johnson, C. (eds.), The Evolution of Cretaceous Ocean/Climate Systems, Special Paper of the Geological Society of America 332: 181-190.
14. Gibbs, Mark T; Bice, Karen L; Barron, Eric J; Kump, Lee R, 2000. Glaciation in the early Paleozoic "greenhouse"; the roles of paleogeography and atmospheric CO<sub>2</sub>. In: Huber, B.T., MacLeod, K.G., and Wing, S.L., eds., Warm Climates in Earth History, Cambridge Univ. Press, U.K., 386-422.
15. Kump, L.R., Kasting, J.F., and Crane, R.G., 2004. The Earth System, 2/e. New Jersey: Prentice Hall, 419 pp.
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- Kump, L.R., 2011. The great oxidation event. Geobiology Gordon Research Conference, Ventura, CA, Jan. 2011.
- Kump, L.R., 2011. Why geologists aren't meteorologists. Keynote Speaker, Northeast/Southeast GSA Regional Meeting, March, 2011.
- Olson, S.L., Kump, L.R., and Kasting, J.F., 2012. Quantifying the areal extent and dissolved oxygen concentrations of Archean oxygen oases. Astrobiology Science Conference, Atlanta, Georgia, April, 2012.
- Hunter, S., Kump, L.R., Macalady, J., Freeman, K.H., and Fulton, J.M., 2012. Spatio-temporal variability in the chemocline community at Fayetteville Green Lake. Astrobiology Science Conference, Atlanta, Georgia, April, 2012.
- Kump, L.R., 2012. Super-high oxygen levels during the Great Oxidation Event. Keynote, Goldschmidt Conference, Montreal.
- Kump, L.R., 2012. Killed by geochemistry: mass extinction in toxic oceans. Plenary, Goldschmidt Conference, Montreal.
- Kump, L.R., 2012. Super-high oxygen levels in the Paleoproterozoic. Earth System Evolution Program, Canadian Institute for Advanced Research, February, 2012, Hawaii.
- Kump, L.R., 2012. When it's hot, it's not (oxygenated). Earth System Evolution Program, Canadian Institute for Advanced Research, September, 2012, Boston.
- Collins, n., Bebout, G., Cook-Kollars, J., and Kump, L., 2013. Record of subduction zone carbon cycling in HP/UHP rocks, W. Alps. Abstracts, Goldschmidt Conference, Florence.
- Kump, L.R., 2013. The ocean's biological pump in deep time. Abstracts, Goldschmidt Conference, Florence.
- Kump, L.R., 2013. Heinrich Holland's Big Event: The Great Oxidation. Abstracts, Goldschmidt Conference, Florence.
- Fantle, M., Wiczorek, R., Kump, L., and Ravizza, G., 2013. Geochemical evidence for volcanic activity prior to and enhanced terrestreal weathering during the Paleocene Eocene Thermal Maximum. Abstracts, Goldschmidt Conference, Florence.

- McClure, B., Havig, J., Sowers, T., Hamilton, T., McCormick, M., and Kump, L., 2013. Dynamics of the methane profile through the water column of meromictic Fayetteville Green Lake, N.Y. Fall Meeting, American Geophysical Union, San Francisco.
- Bebout, G., Collins, N., Cook-Kollars, J., Angiboust, S., Agard, P., Scambelluri, M., John, T., and Kump, L.R., 2013. Subduction-zone metamorphic pathway for deep carbon cycling: Evidence from the Italian Alps and the Tianshan. Fall Meeting, American Geophysical Union, San Francisco.
- Cui, Y., Kump, L. and Ridgwell, A., 2013. Could ocean acidification have caused the end-Permian mass extinction? An Earth system model evaluation. Fall Meeting, American Geophysical Union, San Francisco.
- Bachan, A. and Kump, L., 2013. Modeling the consequences of Proterozoic oxygenation. Fall Meeting, American Geophysical Union, San Francisco.
- Rybacki, K., and Kump, L., 2013. Deciphering the origin of the ca. 2.06 Ga anomalously oxidized volcanics of Fennoscandia, Arctic Russia. Fall Meeting, American Geophysical Union, San Francisco.
- Kump, L.R., 2013. Oceanic anoxic events: remarkable in their occurrence or their absence? Fall Meeting, American Geophysical Union, San Francisco.

*Organization of and Participation in Seminars and Workshops*

- Robert M. Garrels Colloquium on Geochemical Cycles in the Hydrosphere and Atmosphere, November, 1987, Geochemical Society, Co-Convener and speaker.
- Earth Sciences Seminar, Prentice-Hall, June, 1989, Englewood Cliffs, N.J., invited participant.
- Global Change Course Educational Initiative, June, 1989, National Center for Atmospheric Research, invited participant.
- National Research Council, Panel on Surficial Geofluxes, July, 1989, Washington, D.C., panel member.
- USA Today - NASA Visions of Exploration, December, 1990, NASA-Lewis Research Center, invited participant.
- International Association of Geochemistry and Cosmochemistry, Working Group on Geochemistry of Weathering, Diagenesis and Sedimentary Processes, 2nd International Symposium, July, 1990, Aix-en-Provence, France, Secretary-General, elect
- Atmospheric Oxygen Variation Through Geologic Time, July, 1990, PSU Earth System Science Center, Conference Organizer (with Kasting and Robinson).
- NATO Advanced Research Workshop on Interactions of C, N, P, and S Biogeochemical Cycles, March, 1991, Melrieux, Belgium, invited speaker, rapporteur
- Clay Mineral Diagenesis in Sedimentary Basins, May, 1992, Goldschmidt Conference, Reston, Virginia, Co-Convener.
- Global Carbon Cycle and Climate Change, August, 1992, International Geological Congress, Kyoto, Japan, Co-Convener.
- Geochemistry of the Earth Surface, August, 1993, Penn State, International Association of Geochemistry and Cosmochemistry, Secretary-General and Chair of the Symposium
- NSF Workshop on Environmental Geochemistry and Biogeochemistry, May, 1994, Airlie, Virginia, rapporteur.
- NSF RIDGE/NOAA Workshop on Global Impact on Submarine Hydrothermal Processes, September, 1994, Boulder, Colorado, Invited Participant
- Marine Trace Metal Biogeochemistry and the Sedimentary Record, October, 1994, Geological Society of America Annual Meeting, Co-Convener
- Global Change Curriculum Workshop, Lehigh University, invited participant, May, 1995.
- Geochemical Cycles, SEPM Congress on Sedimentology, 1995, Session Chair
- Workshop on Geochemical Earth Reference Model, 1996, Lyon, Co-Convener.

Canadian Institute for Advanced Research, Earth System Evolution Program, 1996, Bochum, Germany,  
Invited Workshop Participant

Canadian Institute for Advanced Research, Earth System Evolution Program, 1996, Toronto, Canada.  
Member.

Canadian Institute for Advanced Research, Earth System Evolution Program, 1997, Ottawa, Canada.  
Member.

Canadian Institute for Advanced Research, Earth System Evolution Program, 1998, Santa Cruz (co-  
organizer).

Preparing Graduate Students for Teaching, National Association of Geology Teachers Workshop,  
October 1999. (Participant)

Canadian Institute for Advanced Research, Earth System Evolution Program, 2000, Calgary.  
ODP Opportunities in Geochemistry for Post-2003 Drilling, Tyngsboro, MA, Oct. 2000.  
Participated in workshop, U.S. Army Corps of Engineers “Florida Keys Carrying Capacity Study,” Key  
Largo Florida, Jan. 2001.

Gave plenary address to conference on Sustained and Sustainable Development, European Union Treaty  
for Atomic Energy, Madrid Spain, Dec. 2002

DOSECC drilling workshop, Washington, DC, Oct. 2005

Lecturer for 1 week, Agouon Geobiology Summer School, July 2005

Invited Lecture, Agouon meeting on Oxygen, Santa Fe, NM, April, 2006

Invited Lecturer, 2006 RIDGE Theoretical Institute, Mammoth Lakes, CA

Canadian Institute for Advanced Research, Earth System Evolution Program, 2006, Chicago

Agouon Institute Drilling Workshop, Pasadena, CA, Nov. 2006

EPRI Global Climate Change Conference, Washington, DC May, 2009

Ocean Leadership Ocean Acidification meeting, Miami January 2009

Geobiology Summer Course, Catalina Island, July, 2012

Evolution of Carbon Cycle Dynamics, Santa Cruz, CA, December, 2012 (keynote speaker)

Understanding Global Change, UC Berkeley, January, 2013 (science advisor to project)

### Speaking Engagements

Department of Oceanography, Old Dominion University, Invited Speaker, January, 1988.

Department of Geography, Penn State, Invited Speaker, April, 1988.

New York Academy of Sciences, Geological Sciences Section, Invited Speaker, January, 1989.

Lehigh University, Department of Geological Sciences, Invited Speaker, October, 1990.

University of Michigan, Department of Geological Sciences, Turner Distinguished Lecturer,  
October, 1991

Marine Biological Association, United Kingdom (Plymouth, England), Visiting Lecturer, July, 1992

New York University, Department of Applied Sciences, invited lecture, June, 1993

University of Wyoming, Department of Geology and Geophysics, Wolf Foundation  
Distinguished Lecture Series, October, 1993

Rutgers University, Institute of Marine and Coastal Sciences, April, 1994

Marine Biological Association, United Kingdom (Plymouth, England), Visiting Lecturer, 1994

Northwestern University, Department of Geological Sciences, October, 1994

University of Hawaii, Dept. of Geology and Geophysics, lecturer, 1995.

Old Dominion University, Distinguished Visitors Seminar Program, College of Science, 1996.

Yale University, Dept. of Geology and Geophysics, Global Change Lecture Series, 1996.

University of Chicago, Dept. of Geophysical Sciences, 1997.

University of Illinois Champaign-Urbana, Dept. of Geological Sciences, 1997.

University of Wisconsin, Madison, Dept. of Geology and Geophysics, Lewis G. Weeks Lecture, 1997.

Dartmouth University, Dept. of Earth Sciences, 1998.

Syracuse University, Dept. of Geology, 1998.

University of Vermont, Dept. of Earth Sciences, 1998.

Lehigh University, Dept. of Earth and Environmental Sciences, 1999



Cornell University, Dept. of Geology, 1999  
Bucknell University, Dept. of Geology, 1999  
University of Iowa, Dept. of Geology, 1999  
Woods Hole Oceanographic Institution, Marine Geology and Geophysics, 2000  
Dalhousie University, 2000  
University of Rochester, 2002  
Boston University, 2002  
Texas A&M, 2003  
USC, 2003  
Washington University, 2003  
SUNY-Binghamton, 2004  
University of Hawaii, 2004  
Rice University, 2005  
Norwegian Geologic Survey, Goldschmidt Lecturer, 2005  
Harvard University, 2006  
Visiting Scholar, James Madison University, March, 2006  
Yale University, Dept. of Geology and Geophysics, October, 2006  
Conference on the Gaia Hypothesis, Northern Virginia Park System, George Mason University, October, 2006  
Caltech, Dept. of Geological and Planetary Sciences, December, 2006  
University of Nebraska T. Mylan Stout Lecturer, March 28, 2008.  
Massachusetts Institute of Technology, Department of Earth, Atmospheric and Planetary Sciences, Invited Lecturer, October 15-16, 2008.  
University of Cincinnati, Department of Geology, Invited Lecturer, November 14, 2008.  
New Rochelle High School, New York, New Rochelle Fund for Educational Excellence, November 17, 2008.  
Rutgers University Department of Earth and Planetary Sciences, October, 2009.  
College of Marine Sciences, University of South Florida, November, 2009.  
Yale University, Dept. of Geology and Geophysics, February, 2010.  
Williams College, Dept. of Geology, November, 2010, Invited.  
SUNY Stony Brook, Dept. of Geosciences, March 2010.  
PAGES Workshop, Paleocean Acidification, August, 2010. Invited.  
Canadian Institute for Advanced Research, Annual Meeting, Boston, Sept. 2010, Invited.  
NASA Astrobiology Institute, Ocean Deoxygenation workshop, March-April 2010, Invited.  
Co-Organized and co-led a field workshop on Anoxygenic Phototrophic Ecosystems: Modern and Ancient, held in Fayetteville, New York, October, 2010. Sponsored by the NASA Astrobiology Institute, the Agouron Institute, and the Canadian Institute for Advanced Research.  
Plenary Speaker, 15<sup>th</sup> Annual Community Climate System Model Workshop, Breckenridge, CO, June, 2010 (Invited).  
International Conference on Geobiology 2010, Wuhan China, June 2010, Invited.  
Ocean Acidification Workshop (WUN), 2011, Friday Harbor Lab, Washington (Aug/Sept, 2011).  
Canadian Institute for Advanced Research, annual workshop, Montreal, Canada, Sept. 2011.  
Harvard University, Dept. of Earth and Planetary Sciences, March, 2012.  
Hobart William Smith College, Dept. of Geoscience, October, 2012.

University of Toronto, Distinguished Lecturer for the Centre for Global Change Science, January, 2013.

Professional Activities

Worldwide Universities Network, Climate and Oceanography Exemplar, PSU Representative  
V.M. Goldschmidt Award Committee, Geochemical Society (2001-2002); Chair, 2003  
Penrose Medal Committee, Geological Society of America (2001-2003)  
Associate Editor, *Geochimica et Cosmochimica Acta* (2000-2006)  
Editor, Virtual Journal of Geobiology (2002-present)  
Associate Editor, *Geobiology* (2007-present)  
Co-Editor, *Geology* (1996-2000)  
Nominator, *The Heinz Award* (1995-2000)  
Publications Committee, *Geological Society of America* (1996-2000)  
Penrose Medal Committee, *Geological Society of America* (2001-2004)  
Executive Committee, International Association of Geochemistry and Cosmochemistry, Working Group on Geochemistry of Weathering and Diagenesis of Sediments,  
Search Committee, Dean's Position, College of Marine Science, University of South Florida (2006)  
National Research Council, Committee on the Importance of Deep-Time Geologic Records for Understanding Climate Change Impacts (2007-2009)

Manuscripts Reviewed for:

American Journal of Science	Geology
Meteoritics	Journal of Sedimentary Petrology
Nature	Science
Geochimica et Cosmochimica Acta	Global and Planetary Change
Journal of Geology	Chemical Geology
Paleoceanography	Terra Nova

Proposals Reviewed for:

National Science Foundation  
American Chemical Society (Petroleum Research Fund)  
Joint Oceanographic Institutions  
NERC (UK)  
NSERC (Canada)

Departmental Reviews

Eckerd College, Program in Marine Sciences, 2000  
University of Kansas, Dept. of Geology (AAAS Review), 2000  
Northwestern University, Dept. of Geological Sciences, 2001  
University of South Carolina, EPSCOR review, 2001  
University of North Carolina, Dept. of Geological Sciences, 2006  
University of Toronto, Dept. of Earth Sciences, 2013

Grants and Contracts

1983-1984	American Association of Petroleum Geologists, Grant-in-Aid, \$700, A Study of the Geology of West Florida
1986-1987	Pennsylvania State University, Faculty Research Award, \$3,000, A Study of the Iron Stable Isotopes
1987-1989	Petroleum Research Fund, \$18,000, A Study of the Iron Stable Isotopes
1988-1990	National Science Foundation, \$140,000, Coupled Models of Geochemical Cycles and Climate (with E. Barron)

1988-1989	Texaco, \$15,000, Isotopic Modeling of Carbon and Sulfur Cycles
1989-1992	National Science Foundation, \$145,900, Minority Recruitment Outreach Demonstration Project (J.J. Cahir, Principal Investigator)
1989-1990	National Science Foundation, \$23,611, Global Change Course Development (NCAR)
1990-1991	National Science Foundation, \$13,406, Natural Variability in Iron Stable Isotopes
1990-1992	Gas Research Institute, \$130,000, Clay Conversion in the Formation of Pressure Chambers in Sedimentary Basins
1990-1992	National Science Foundation, \$97,000, Phanerozoic Chemical Weathering and Paleoclimate (with E. Barron)
1991-1992	PAC of Clays, \$2,500, Faculty Research Award
1992	Gas Research Institute, \$360,213, Clay Conversion in the Formation of Pressure Chambers in Sedimentary Basins
1992-1994	National Science Foundation, \$250,000, Global Change in Cretaceous Seaways (one of four co-PIs)
1992-1995	National Science Foundation, \$218,695, Kinetics of Smectite-Illite Transformation
1992-1996	Shell Research Limited (Marine Biological Association of the UK), \$40,000, Geophysiology Modeling
1993-1995	National Science Foundation, \$112,768, Atmospheric CO <sub>2</sub> and Glaciation
1994-1997	Penn State University, \$45,000, Nutrient Behavior in Saline Groundwater of the Florida Keys
1994-present	NASA, \$1,830,000, Global Water Cycle: Extension Across the Earth Sciences (E.J. Barron, Principal Investigator)
1995-1997	Environmental Protection Agency, \$100,000, Fate of Wastewater Nutrients in the Florida Keys.
1996-1997	NASA, \$9480, Investigation of isotopic evidence for an active planktonic biota in the Paleoproterozoic (seed grant)
1997-1999	EPA, \$100,000, Behavior of Wastewater Nutrients in Groundwater of the Florida Keys.
1998-2000	NSF, \$97,203, Quantitative Assessment of Ocean Stagnation Hypotheses.
2002-2006	NASA, ~\$4.5M, Penn State Astrobiology Research Center (co-PI; H. Ohmoto, Principal Investigator)
2002-2005	NSF, \$158,047, Upgrading Computing Hardware to Support Geoscience Initiatives, (one of 11 co-PIs)
2002-2007	NSF, \$260,936, The Consequences of Greenhouse Warming on Biocomplexity and Biogeochemical Cycles across the Paleocene-Eocene Boundary (Penn State share; J. Zachos, UC Santa Cruz PI, 6 other co-PIs)
2002-2006	NSF, \$250,000, Extremes of Ocean Biogeochemistry: Focus on the Permian-Triassic Boundary (Kump, PI; M. Arthur, co-PI)
2003 waste-	Florida Dept. of Environmental Protection, \$90,000, Assessment of the impact of water injection on nearshore waters of the Florida Keys
2005-2007 Saltzman, Ohio	Understanding carbon isotope excursions in the Paleozoic (co-PI with M. State) NSF, \$61,946 (PSU part)
2006-2010 Case	<i>Collaborative Research; The Dynamics Of Carbon Release And Sequestration: Studies Of Two Early Eocene Hyperthermals.</i> NSF-Carbon and Water Cycle, (T. Bralower, Co-I), \$605,145.

2008-2012 Coincidence \$410,732,	Collaborative Research: The Siberian Traps and the end-Permian Extinction: and Causality, one of several co-PIs, NSF Continental Dynamics, Kump part funded.
2007-2008 NASA,	FAR-DEEP: Fennoscandian Arctic Russia Drilling Early Earth Project, NSF and Kump PI on US part, \$76,250 to each agency, funded.
2007-2009 Boundary	Numerical Modeling of the Greenhouse-Icehouse Transition: Eocene-Oligocene (D. Pollard, co-PI), NSF Geobiology and Environmental Geochemistry, \$250,266, funded.
2008-2010	<i>Collaborative Research: Environmental and Biogeochemical Reorganization During the Rise of Atmospheric Oxygen</i> (NASA/NSF; Kump, PI; PSU part \$100,000) funded.
2009-2013	<i>Signature of Life from Earth and Beyond</i> (Kump one of several co-PIs, NASA Astrobiology Institute, Kump part \$349,342) funded.
2013	Evaluating atmospheric oxygen levels during the Great Oxidation Event. NASA Astrobiology Director's Discretionary Fund, \$19,997.
2009-2013	<i>Collaborative Research: Environmental and Biogeochemical Reorganization During the Rise of Atmospheric Oxygen</i> (NSF and NASA, Kump part \$102,000).

#### Course Instruction

Sedimentary Geochemistry, Geosciences 523  
 Field Methods in Sedimentary Geochemistry, Geosciences 597B  
 Gaia - The Earth System, Earth 2  
 Chemical Evolution of Atmosphere and Ocean, Earth 402  
 Marine Biogeochemistry, Geosciences 497D  
 Modeling the Carbon Cycle, Geosciences 497A  
 Advanced Earth System Science Seminar, Geosciences 597C  
 Physical and Chemical Sedimentology, Geosciences 497A  
 Mathematical Modeling in the Geosciences, Geosciences 561  
 The Cause of Coral Reef Demise, Earth 497 (CAUSE Ô97)  
 Evolution of the Biosphere, Geosc 502  
 Ocean Biogeochemical Dynamics, Geosc 597  
 Astrobiology Seminar, Geosc 597  
 Himalayan Uplift: Tectonic and Climate Implications, Geosc 597  
 Freshman Seminar, EMS 100S  
 Introductory Geochemistry, Geosc 202  
 Astrobiology Field Course, ABIOL 570

#### Membership on Graduate Degree Candidates' Committees

##### Doctoral Candidates in Progress

Ying Cui	Major Advisor
Kyle Rybacki	Major Advisor
Rebecca McCauley	Member
Brendan Puls	Member
Clayton Magill	Member
Jonathon Schueth	Member
Karen Whelley	Member
Jamie Brainerd	Member

Colin Carney	Member
Heather Graham	Co-Advisor with Freeman
Elizabeth Denis	Co-Advisor with Freeman

Doctoral Candidates, Program Completed

Jennifer Williams	Member
Lev Horodyskyj	Major Advisor
Leah Schneider	Co-Advisor (with Bralower)
Katja Meyer	Co-Advisor (with Freeman)
Karla Panchuk	Major Advisor
Matt Bachmann	Major Advisor (BRIE Advisor: Regan, CEE)
Anthony Riccardi	Co-Advisor (with Arthur)
Robert Hotinski	Major Advisor
Mark Gibbs	Major Advisor
Gregg Bluth	Major Advisor
Paul Richards	Co-Advisor
George Kacandes	Co-Advisor (never completed)
Moshe Rhodes	Member
Joel Moore	Member
Vyllinniskii Cameron	Member
Daniel Hummer	Member
Heidi Albrecht	Member
Aaron Diefendorf	Member
Chris Junium	Member
Jamey Fulton	Member
Libby Hausrath	Member
Pushker Kharecha	Member
Erin McMullin	Member (Biol)
Nikolai Pedentchouk	Member
Aubrey Zerkle	Member
Heather Buss	Member
Alex Pavlov	Member
Kosei Yamaguchi	Member
Jennifer Lewicki	Member
Alexander Pavlov	Member
Byong-Hun Jeon	Member (CEE)
Shuhei Ono	Member
Persa Batra	Member
Atsu Ennyu	Member
Matt Hurtgen	Member
Benjamin Turner	Member
Timothy White	Member
Mark Pagani	Member
Yingjie Guo	Member
Karen Bice	Member
Richard Pancost	Member
Neil Suits	Member
Greg Tucker	Member
Tetsuya Kato	Member
Wolfgang Albrecht	Member
Susan Altman	Member

Peter Fawcett	Member
Daniel Greeman	Member
Michael Guebert	Member
Rigel Lustwerk	Member
Wofgang Polster	Member
Armando Ramirez	Member
Martin Schoonen	Member
Chie Soong	Member
Peter Schultz	Member
Ruth Robinson	Member

Masters Degree Candidates, Program In Progress

Stephanie Olson	Major Advisor
Jinyuan Wang	Member

Masters Degree Candidates, Program Completed

Garrison Loope	Major Advisor
Stamatina Hunter	Major Advisor
Anna Hilting	Co-Advisor (with Bralower)
Ellen Herman	Co-Advisor (with White)
Kay Elliott	Major Advisor
Mike Moreland	Major Advisor
Erin Griggs	Major Advisor
Lea Monaghan	Major Advisor
Don Machusak	Major Advisor
Virginia Seymour	Major Advisor
Melinda Foland	Member
Katie Brennan	Member
Louise Miltich	Member
Mary Howard	Member
Jennifer Aring	Member
Sharon Givens	Member
Stacey Hoeltje	Member (Agriculture)
Erin Matlack	Member
Jaime Whitlock	Member
Jane Lock	Member
Simmy Yau	Member
Myrna Martinez	Member
Jennifer DeLurio	Member
Egide Nizeyemana	Member
Wanda Kapsner	Member
Rebecca Mellinger	Member
Melissa Nugent	Member

Undergraduate Theses Supervised

B.S.	Gloria Ferrandez	1992
B.S.	William Otten	1992
B.S.	Gregory Steele	1993
B.S.	Richard Seltenreich	1993

B.S.	Stanley Jasinski	1994	
B.S.	Joshua Tusai	1994	
B.S.	Jennifer McCollum	1994	
B.S.	Christopher Proulx	1994	
B.S.	Jodie Hobman	1994	
B.S.	Martin Knox	1995	
B.S.	Mark Chadwick	1996	
B.S.	Micah Weltmer	1996	
B.S.	Karoline Mehalchick	1998	
B.S.	Sue Avau	1998	
B.S.	Eileen Scott	1998	
B.S.	Leah Moore	1998	
B.S.	Tara Graham	2000	
B.S.	Justin Lottig	2B.S. Katie Ryan	2004

### University Committee Work

National Science Foundation Youth Participation Program, College of Earth and Mineral Science ad hoc Committee, 1987.

General Education Course Proposals, College of Earth and Mineral Sciences, ad hoc committee, 1987.

Geosciences Departmental Reorganization Committee, 1987-1988.

Strategic Planning Committee, Geosciences Department, 1988-89

Undergraduate Recruiting Task Force, College of Earth and Mineral Sciences, Geosciences Representative, 1988-.

Graduate Program Committee, Geosciences Department, 1989-1991

Seminar Committee, Geosciences Department 1989-present

Admissions Committee, Geosciences Department, 1990-91, Chair, 1991-94

Safety Committee, College of Earth and Mineral Sciences, 1990-93

Marine Sciences Minor Committee, 1989-present, Chair, 1991-94

Science Scholars 1991, Judge, April, 1991

Earth Systems Minor Committee, 1991-

Strategic Planning Committee, Geosciences Department, 1991-1993

Interdisciplinary Council, Office of Undergraduate Education, 1992-

Promotion and Tenure Committee, Geosciences Department, 1992-1995

Advisor to the Marine Science Society, 1993-1994

Associate Head of Graduate Programs and Research, Department of Geosciences, 1994-

EMS Strategic Planning Committee, 1995-1997

EMS Faculty Advisory Committee, 1996-1997

Geosciences Surficial Processes Faculty Search Committee, 1996

Geosciences Environmental Geochemistry Faculty Search Committee, 1997

Geosciences Astrobiology Faculty Search Committee, 1999

EMS Ad Hoc Nominating Committee, Distinguished Professor Award, 1999

Geosciences Undergraduate Program Committee, 2000-2004

Geosciences Geomorphology Search Committee (Chair), 2001

Geosciences Promotion and Tenure Committee (Chair), 2000-2002

Geosciences Astrobiology Search Committee, 2003-2004