

Director, Swiss Federal Institute for Forest, Snow, and Landscape Research (WSL)  
*Eidgenössische Forschungsanstalt für Wald, Schnee, und Landschaft (WSL)*  
Zürcherstrasse 111, CH-8903 Birmensdorf, Switzerland, phone +41 (0)44 739 26 55  
e-mail [james.kirchner@wsl.ch](mailto:james.kirchner@wsl.ch)

And:

Professor, Department of Earth and Planetary Science  
University of California, Berkeley, CA 94720-4767  
e-mail [kirchner@berkeley.edu](mailto:kirchner@berkeley.edu) web site <http://www.seismo.berkeley.edu/~kirchner>

### **Current Research/Teaching Areas**

Catchment hydrology and biogeochemistry  
Geomorphology and Earth surface processes  
Evolutionary ecology  
Analysis of environmental data

### **Education**

Ph.D. (energy and resources) 1990, University of California, Berkeley  
M.S. (systems analysis) 1982, Dartmouth College, Thayer School of Engineering  
B.A. (physics) and B.A. (philosophy) 1980, Dartmouth College

### **Positions Held**

Swiss Federal Institute for Forest, Snow, and Landscape Research, Director, 2007-present  
University of California. Professor of Earth and Planetary Science, 2002-present  
Goldman Distinguished Professor for the Physical Sciences, 2003-present  
Director, Central Sierra Field Research Stations, 1997-present  
Associate Professor, 1997-2002; Assistant Professor, 1991-1997  
California Institute of Technology. Research Fellow, 1990-1991  
The World Bank. Researcher, East African Agricultural Policy 1983-1986

### **Honors**

Fellow, American Geophysical Union, 2008-present  
Miller Professor, Miller Institute for Basic Research, UC Berkeley, 2002-2003  
National Science Foundation Young Investigator Award, 1993-1998  
California Institute of Technology, Bantrell Postdoctoral Fellowship, 1990-1991

### **Students Trained**

Darryl E. Granger (Ph.D. 1996), Joshua J. Roering (Ph.D. 2000), Clifford S. Riebe (Ph.D. 2000),  
Elisabeth R. Micheli (Ph.D. 2000), Dyan Whyte (M.S. 2000), Elowyn Yager (Ph.D. 2006), Taylor  
Perron (Ph.D. 2006), Sarah Godsey (Ph.D. 2009), Kenneth Ferrier (Ph.D. 2009).

### **Recent grants**

2007-2012 Critical Zone Observatory: Snowline processes in the southern Sierra Nevada, National  
Science Foundation, \$4,250,000 (co-PI with 7 others)  
2007-2009 Climatic and erosional effects on chemical weathering rates, measured using steep climatic  
gradients in mountainous terrain, National Science Foundation, \$131,000

- 2006-2009 Keck hydro-watch center at U.C. Berkeley, W.M. Keck Foundation, \$1,600,000 (co-PI with 5 others)
- 2004-2006 Measuring long-term, mineral-specific weathering rates in diverse climatic settings, National Science Foundation, \$97,000
- 2002-2006 Investigating timescales of hydrologic transport in catchments, using natural tracer time series, theoretical models, and laboratory-scale simulations, National Science Foundation, \$300,000
- 2002-2003 Development of characteristic landscape scale in ridge-and-valley topography, quantified using cosmogenic radionuclides, Institute of Geophysics and Planetary Physics, \$24,000
- 2001-2003 Quantifying how climate affects long-term rates of weathering, erosion, and soil development, National Science Foundation, \$275,000
- 2000-2003 Contaminant loading of watersheds from snowmelt: An integrated study using stable isotopes and rare earth elements, National Science Foundation, \$191,000 (co-PI)

#### Submitted manuscripts (\*=current or former student)

96. Teuling, A.J., I. Lehner, **J.W. Kirchner**, and S.I. Seneviratne, Catchments as simple dynamical systems: experience from a Swiss pre-alpine catchment, *Water Resources Research*, in review.
95. Yager, E.M.\*, W.E. Dietrich, **J.W. Kirchner**, and B.W. McARDell, Sediment transport in steep, rough streams Part II: Predictions of sediment transport, *Journal of Geophysical Research -- Earth Surface*, in review.
94. Yager, E.M.\*, W.E. Dietrich, **J.W. Kirchner**, and B.W. McARDell, Sediment transport in steep, rough streams Part I: Patch dynamics and stability, *Journal of Geophysical Research -- Earth Surface*, in review.
93. **Kirchner, J.W.**, D. Tetzlaff, and C. Soulsby, Comparing chloride and water isotopes as hydrological tracers in two Scottish catchments, *Hydrological Processes*, in review.
92. Godsey, S.E.\*, W. Aas, T. Clair, I. Dennis, H. de Wit, I. Fernandez, S. Kahl, I. Malcolm, C. Neal, M. Neal, S. Nelson, S. Norton, M. Palucis\*, D. Tetzlaff, B.L. Skjelkvaale, C. Soulsby, and **J.W. Kirchner**, Generality of fractal 1/f scaling in catchment tracer time series, and its implications for catchment travel time distributions, *Hydrological Processes*, in review.
91. Ferrier, K.L.\*, **J.W. Kirchner**, C.S. Riebe, and R.C. Finkel, Mineral-specific chemical weathering rates over millennial timescales: Measurements at Rio Icacos, Puerto Rico, *Geochimica et Cosmochimica Acta*, in review.

#### Refereed publications (\*=current or former student)

*N.B. These are classified by 3-letter codes according to the general disciplines to which they belong:*

- H2O *Catchment hydrology and geochemistry*  
 GEO *Geomorphology and Earth surface processes*  
 ECO *Evolution and ecology*  
 OTH *All other topics*

*N.B. reprints of most of these papers are available from <http://www.seismo.berkeley.edu/~kirchner>*

90. (H2O) Lee, J., X. Feng, A.M. Faiia, E.S. Posmentier, **J.W. Kirchner**, R. Osterhuber, and S. Taylor, Isotopic evolution of a seasonal snowcover and its melt by isotopic exchange between liquid water and ice, *Chemical Geology*, 270, 126-134, 2010.

89. (GEO) Perron, J.T.,\* **J.W. Kirchner**, and W.E. Dietrich, Formation of evenly spaced ridges and valleys, *Nature*, **460**, 502-505, doi:10.1038/nature08174, 2009.
88. (H2O) Godsey, S.E.\*, **J.W. Kirchner** and D.W. Clow, Concentration-discharge relationships reflect chemostatic characteristics of catchments, *Hydrological Processes*, **23**, 1844-1864, 2009.
87. (GEO) Nelson, P.A., J.G. Venditti, W.E. Dietrich, **J.W. Kirchner**, H. Ikeda, F. Iseya, and L.S. Sklar, Response of bed surface patchiness to reductions in sediment supply, *Journal of Geophysical Research -- Earth Surface*, **114**, F02005, doi:10.1029/2008JF001144, 2009.
86. (H2O) **Kirchner, J.W.**, Catchments as simple dynamical systems: catchment characterization, rainfall-runoff modeling, and doing hydrology backward, *Water Resources Research*, **45**, W02429, doi:10.1029/2008WR006912, 2009.
85. (GEO) Perron, J.T.,\* W.E. Dietrich, and **J.W. Kirchner**, Controls on the spacing of first-order valleys, *Journal of Geophysical Research -- Earth Surface*, **113**, F04016, doi:10.1029/2007JF000977, 2008.
84. (GEO) Ferrier, K.L.\* and **J.W. Kirchner**, Effects of physical erosion on chemical denudation rates: A numerical modeling study of soil-mantled hillslopes, *Earth and Planetary Science Letters*, **272**, 591-599, 2008.
83. (GEO) Perron, J.T.,\* **J.W. Kirchner**, and W.E. Dietrich, Spectral signatures of characteristic spatial scales and non-fractal structure in landscapes, *Journal of Geophysical Research -- Earth Surface*, **113**, F04003, doi:10.1029/2007JF000866, 2008.
82. (H2O) Lee, J., V.E. Nez, X. Feng, **J.W. Kirchner**, R. Osterhuber, and C.E. Renshaw, A study of solute redistribution and transport in seasonal snowpack using natural and artificial tracers, *Journal of Hydrology*, **357**, 243-254, 2008.
81. (H2O) Lee, J., X. Feng, E.S. Posmentier, A.M. Faiia, R. Osterhuber, and **J.W. Kirchner**, Modeling of solute transport in snow using conservative tracers and artificial rain-on-snow experiments, *Water Resources Research*, **44**, W02411, doi:10.1029/2006WR005477, 2008.
80. (GEO) Roering, J.J.,\* J.T. Perron,\* and **J.W. Kirchner**, Functional relationships between denudation and hillslope form and relief, *Earth and Planetary Science Letters*, **264**, 245-258, 2007.
79. (H2O) McDonnell, J. J., M. Sivapalan, K. Vaché, S. Dunn, G. Grant, R. Haggerty, C. Hinz, R. Hooper, **J. Kirchner**, M. L. Roderick, J. Selker and M. Weiler, Moving beyond heterogeneity and process complexity: A new vision for watershed hydrology, *Water Resources Research*, **43**, W07301, doi:10.1029/2006WR005467, 2007.
78. (GEO) Yager, E.M.,\* **J.W. Kirchner**, and W.E. Dietrich, Calculating bed load transport in steep boulder-bed channels, *Water Resources Research*, **43**, W07418, doi:10.1029/2006WR005432, 2007.
77. (H2O) **Kirchner, J.W.**, Getting the right answers for the right reasons: linking measurements, analyses, and models to advance the science of hydrology, *Water Resources Research*, **42**, Art. No. WR004362, 2006.

76. (H2O) Novak, M., **J.W. Kirchner**, D. Fottova, E. Prechova, I. Jackova, P. Kram, and J. Hruska, Isotopic evidence for processes of sulfur retention/release in 13 Central European catchments spanning a strong pollution gradient, *Global Biogeochemical Cycles*, **19** (4): Art. No. GB4012, 2005.
75. (GEO) Ferrier, K.L.\*, **J.W. Kirchner**, and R.C. Finkel, Erosion rates over millennial and decadal timescales at Caspar Creek and Redwood Creek, Northern California Coast Ranges, *Earth Surface Processes and Landforms*, **30**, 1025-1038, 2005.
74. (OTH) **Kirchner, J.W.**, Aliasing in  $1/f^\alpha$  noise spectra: origins, consequences, and remedies, *Physical Review E*, **71**, 066110, 2005.
73. (GEO) Roering, J.J.\*, **J.W. Kirchner** and W.E. Dietrich, Characterizing structural and lithologic controls on deep-seated landsliding: Implications for topographic relief and landscape evolution in the Oregon Coast Range, USA, *Geological Society of America Bulletin*, **117**, 654-668, 2005.
72. (ECO) **Kirchner, J.W.** and A. Weil, Fossils make waves (News & Views), *Nature*, **434**, 147-148, 2005.
71. (GEO) Riebe, C.S.\*, **J.W. Kirchner**, and R.C. Finkel, Erosional and climatic effects on long-term chemical weathering rates in granitic landscapes spanning diverse climate regimes, *Earth and Planetary Science Letters*, **224**, 547-562, 2004.
70. (H2O) Manga, M. and **J.W. Kirchner**, Interpreting the temperature of water at cold springs and the importance of gravitational potential energy, *Water Resources Research*, **40** (5): Art. No. W05110, 2004.
69. (H2O) Feng, X., **J.W. Kirchner**, and C. Neal, Measuring catchment-scale chemical retardation using spectral analysis of reactive and passive chemical tracer time series, *Journal of Hydrology*, **292**, 296-307, 2004.
68. (H2O) Feng, X., **J.W. Kirchner**, and C. Neal, Spectral analysis of chemical time series from long-term catchment monitoring studies: hydrochemical insights and data requirements, *Water, Air, and Soil Pollution: Focus*, **4**, 221-235, 2004.
67. (H2O) **Kirchner, J.W.**, X. Feng, C. Neal, and A.J. Robson, The fine structure of water-quality dynamics: the (high-frequency) wave of the future, *Hydrological Processes*, **18**, 1353-1359, 2004.
66. (GEO) Micheli, E.R.\*, **J.W. Kirchner**, and E.W. Larsen, Quantifying the effect of riparian forest versus agricultural vegetation on river meander migration rates, Central Sacramento River, California, U.S.A., *River Research and Applications*, **20**, 537-548, 2004.
65. (GEO) Riebe, C.S.\*, **J.W. Kirchner**, and R.C. Finkel, Sharp decrease in long-term chemical weathering rates along an altitudinal transect, *Earth and Planetary Science Letters*, **218**, 421-434, 2004.
64. (GEO) Riebe, C.S.\*, **J.W. Kirchner**, and R.C. Finkel, Long-term rates of chemical weathering and physical erosion from cosmogenic nuclides and geochemical mass balance, *Geochimica et Cosmochimica Acta*, **62**, 4411-4427, 2003.

63. (H2O) **Kirchner, J.W.**, A double paradox in catchment hydrology and geochemistry, *Hydrological Processes*, **17**, 871-874, 2003.
62. (ECO) **Kirchner, J.W.**, The Gaia hypothesis: conjectures and refutations, *Climatic Change*, **58**, 21-45, 2003.
61. (H2O) Taylor, S., X. Feng, C.E. Renshaw, and **J.W. Kirchner**, Isotopic evolution of snowmelt: II. Verification and parameterization of a 1-D model using laboratory experiments, *Water Resources Research*, **38**, 1218, doi:10.1029/2001WR000815, 2002.
60. (H2O) Feng, X., S. Taylor, C.E. Renshaw, and **J.W. Kirchner**, Isotopic evolution of snowmelt: I. A physically based 1-D model, *Water Resources Research*, **38**, 1217, doi:10.1029/2001WR000814, 2002.
59. (ECO) **Kirchner, J.W.**, Evolutionary speed limits inferred from the fossil record, *Nature*, **415**, 65-68, 2002.
58. (GEO) Micheli, E.R.\* and **J.W. Kirchner**, Effects of wet meadow vegetation on streambank erosion. 2: Measurements of vegetated bank strength and consequences for failure mechanics, *Earth Surface Processes and Landforms*, **27**, 687-697, 2002.
57. (GEO) Micheli, E.R.\* and **J.W. Kirchner**, Effects of wet meadow vegetation on streambank erosion. 1: Remote sensing measurements of stream bank migration and erodibility, *Earth Surface Processes and Landforms*, **27**, 627-639, 2002.
56. (ECO) **Kirchner, J.W.** and B.A. Roy, Evolutionary implications of host-pathogen specificity: Fitness consequences of pathogen virulence traits, *Evolutionary Ecology Research*, **4**, 27-48, 2002.
55. (ECO) **Kirchner, J.W.**, The Gaia hypothesis: fact, theory, and wishful thinking, *Climatic Change*, **52**, 391-408, 2002.
54. (GEO) Roering, J.J.\*, **J.W. Kirchner**, L.E. Sklar and W.E. Dietrich, Hillslope evolution by nonlinear creep and landsliding: an experimental study: Reply to Bons and van Milligen, *Geology*, **30**, 482, 2002.
53. (OTH) Balsler, T.C., **J.W. Kirchner** and M.K. Firestone, Methodological variability in microbial community level physiological profiles, *Soil Science Society of America Journal*, **66**, 519-523, 2002.
52. (ECO) **Kirchner, J.W.**, Fractal power spectra plotted upside-down: Comment on 'Scaling of power spectrum of extinction events in the fossil record', *Earth and Planetary Science Letters*, **192**, 617-621, 2001.
51. (ECO) **Kirchner, J.W.** and B.A. Roy, Evolutionary implications of host-pathogen specificity: Fitness consequences of host life history traits, *Evolutionary Ecology*, **14**, 665-692, 2001.
50. (H2O) **Kirchner, J.W.**, X.H. Feng, and C. Neal, Catchment-scale advection and dispersion as a mechanism for fractal scaling in stream tracer concentrations, *Journal of Hydrology*, **254**, 81-100, 2001.

49. (H2O) Feng, X.H., **J.W. Kirchner**, C. E. Renshaw, R. Osterhuber, B. Klaue and S. Taylor, A study of solute transport mechanisms using rare earth element tracers and artificial rain storms on snow, *Water Resources Research*, **37**, 1425-1435, 2001.
48. (H2O) Taylor, S., X. Feng, **J.W. Kirchner**, C. Renshaw, B. Klaue and R. Osterhuber, Isotopic evolution of a seasonal snowpack and its melt, *Water Resources Research*, **37**, 759-769, 2001.
47. (GEO) Riebe, C.S.\*, **J.W. Kirchner**, and D.E. Granger\*, Quantifying quartz enrichment and its consequences for cosmogenic measurements of erosion rates from alluvial sediment and regolith, *Geomorphology*, **40**, 15-19, 2001.
46. (GEO) Granger, D.E.\*, C.S. Riebe\*, **J.W. Kirchner**, and R.C. Finkel, Modulation of erosion on steep granitic slopes by boulder armoring, as revealed by cosmogenic  $^{26}\text{Al}$  and  $^{10}\text{Be}$ , *Earth and Planetary Science Letters*, **186**, 269-281, 2001.
45. (GEO) Roering, J.J.\*, **J.W. Kirchner**, and W.E. Dietrich, Hillslope evolution by nonlinear, slope-dependent transport: Steady-state morphology and equilibrium adjustment timescales, *Journal of Geophysical Research*, **106 B8**, 16499-16514, 2001.
44. (GEO) Roering, J.J.\*, **J.W. Kirchner**, L.E. Sklar and W.E. Dietrich, Hillslope evolution by nonlinear creep and landsliding: an experimental study, *Geology*, **29**, 143-146, 2001.
43. (GEO) **Kirchner, J.W.**, R.C. Finkel, C.S. Riebe\*, D.E. Granger\*, J.L. Clayton, J.G. King and W.F. Megahan, Mountain erosion over 10-year, 10,000-year, and 10,000,000-year timescales, *Geology*, **29**, 591-594, 2001.
42. (H2O) Riebe, C.S.\*, **J.W. Kirchner**, D.E. Granger\*, and R.C. Finkel, Strong tectonic and weak climatic control of long-term chemical weathering rates, *Geology*, **29**, 511-514, 2001.
41. (GEO) Riebe, C.S.\*, **J.W. Kirchner**, D.E. Granger\*, and R.C. Finkel, Minimal climatic control on erosion rates in the Sierra Nevada, California, *Geology*, **29**, 447-450, 2001.
40. (GEO) Riebe, C.S.\*, **J.W. Kirchner**, D.E. Granger\* and R.C. Finkel, Erosional equilibrium and disequilibrium in the Sierra Nevada, inferred from cosmogenic  $^{26}\text{Al}$  and  $^{10}\text{Be}$  in alluvial sediment, *Geology*, **28**, 803-806, 2000.
39. (GEO) Manga, M. and **J.W. Kirchner**, Stress partitioning in streams by large woody debris, *Water Resources Research*, **36**, 2373-2379, 2000.
38. (H2O) **Kirchner, J.W.**, X.H. Feng and C. Neal, Fractal stream chemistry and its implications for contaminant transport in catchments, *Nature*, **403**, 524-527, 2000.
37. (H2O) Neal, C. and **J.W. Kirchner**, Sodium and chloride levels in rainfall, mist, streamwater and groundwater at the Plynlimon catchments, mid-Wales: inferences on hydrological and chemical controls, *Hydrology and Earth System Sciences*, **4**, 295-310, 2000.
36. (H2O) Novak, M., **J.W. Kirchner**, H. Groscheova, M. Havel, J. Cerny and R. Krejci, Sulphur isotope dynamics in two Central European watersheds affected by high atmospheric deposition of SO<sub>x</sub>, *Geochimica et Cosmochimica Acta*, **64**, 367-383, 2000.

35. (H2O) Whyte, D.C.\* and **J.W. Kirchner**, Assessing water quality impacts and cleanup effectiveness in streams dominated by episodic mercury discharges, *Science of the Total Environment*, **260**, 1-9, 2000.
34. (ECO) **Kirchner, J.W.** and A. Weil, Delayed biological recovery from extinctions throughout the fossil record, *Nature*, **404**, 177-180, 2000.
33. (ECO) **Kirchner, J.W.** and A. Weil, Correlations in fossil extinctions and originations through geologic time, *Proceedings of the Royal Society of London*, **B267**, 1301-1309, 2000.
32. (ECO) Roy, B.A. and **J.W. Kirchner**, Evolutionary dynamics of pathogen resistance and tolerance, *Evolution*, **54**, 51-63, 2000.
31. (ECO) Roy, B.A., **J.W. Kirchner**, C.S. Christian and L.E. Rose, High disease incidence and apparent disease tolerance in a North American Great Basin plant community, *Evolutionary Ecology*, **14**, 421-438, 2000.
30. (ECO) **Kirchner, J.W.** and B.A. Roy, The evolutionary advantages of dying young: epidemiological implications of longevity in metapopulations, *The American Naturalist*, **154**, 140-159, 1999.
29. (GEO) Roering, J.J.\*, **J.W. Kirchner** and W.E. Dietrich, Evidence for non-linear, diffusive sediment transport on hillslopes and implications for landscape morphology, *Water Resources Research*, **35**, 853-870, 1999.
28. (ECO) **Kirchner, J.W.** and A. Weil, No fractals in fossil extinction statistics, *Nature*, **395**, 337-338, 1998.
27. (H2O) Taylor S., X. Feng, B. Klaue, M. Albert and **J. Kirchner**, Rare earth elements as chemical tracers in snow studies, *Proceedings of the 55th Annual Eastern Snow Conference* (S. Taylor and J. Hardy, eds.), 13-20, 1998.
26. (GEO) Granger, D.E.\*, **J.W. Kirchner**, and R.C. Finkel, Quaternary downcutting rate of the New River, Virginia, measured from <sup>26</sup>Al and <sup>10</sup>Be in cave-deposited alluvium, *Geology*, **25**, 107-110, 1997.
25. (GEO) Granger, D.E.\*, **J.W. Kirchner**, and R.C. Finkel, Spatially averaged long-term erosion rates measured from *in situ* cosmogenic nuclides in alluvial sediment, *Journal of Geology*, **104**, 249-257, 1996.
24. (H2O) **Kirchner, J.W.**, Acid rain revisited (Letter), *Science*, **273**, 293-294, 1996.
23. (H2O) **Kirchner, J.W.**, R.P. Hooper, C. Kendall, C. Neal, and G. Leavesley, Testing and validating environmental models, *Science of the Total Environment*, **183**, 33-47, 1996.
22. (H2O) **Kirchner, J.W.** and E. Lydersen, Base cation depletion and potential long-term acidification of Norwegian catchments, *Environmental Science and Technology*, **29**, 1953-1960, 1995.
21. (GEO) Seidl, M.A., W.E. Dietrich, and **J.W. Kirchner**, Longitudinal profile development into bedrock: an analysis of Hawaiian channels, *Journal of Geology*, **102**, 457-474, 1994.

20. (GEO) **Kirchner, J.W.**, Statistical inevitability of Horton's laws and the apparent randomness of stream channel networks--Reply to Troutman and Karlinger, *Geology*, **22**, 574-575, 1994.
19. (GEO) **Kirchner, J.W.**, Statistical inevitability of Horton's laws and the apparent randomness of stream channel networks--Reply to Masek and Turcotte, *Geology*, **22**, 380-381, 1994.
18. (GEO) **Kirchner, J.W.**, Statistical inevitability of Horton's laws and the apparent randomness of stream channel networks, *Geology*, **21**, 591-594, 1993.
17. (H2O) **Kirchner, J.W.**, P.J. Dillon and B.D. LaZerte, Predictability of geochemical buffering and runoff acidification in spatially heterogeneous catchments, *Water Resources Research*, **29**, 3891-3901, 1993.
16. (H2O) **Kirchner, J.W.**, P.J. Dillon and B.D. LaZerte, Separating hydrological and geochemical influences on runoff acidification in spatially heterogeneous catchments, *Water Resources Research*, **29**, 3903-3916, 1993.
15. (H2O) **Kirchner, J.W.**, P.J. Dillon and B.D. LaZerte, Predicted response of stream chemistry to acid loading tested in Canadian catchments, *Nature*, **358**, 478-482, 1992.
14. (H2O) **Kirchner, J.W.**, Heterogeneous geochemistry of catchment acidification, *Geochimica et Cosmochimica Acta*, **56**, 2311-2327, 1992.
13. (GEO) Buffington, J., W.E. Dietrich, and **J.W. Kirchner**, Friction angle measurements on a naturally-formed gravel streambed: implications for critical boundary shear stress, *Water Resources Research*, **28**, 411-425, 1992.
12. (ECO) **Kirchner, J. W.**, The Gaia hypotheses: are they testable? Are they useful?, *Scientists on Gaia* (S.H. Schneider and P.J. Boston, eds.), pp. 38-46, M.I.T. Press, 1991. Also reprinted in *Environmental Ethics: Readings in Theory and Application* (L.P. Pojman, ed.), pp. 146-154, Jones and Bartlett Publishers, 1994.
11. (H2O) **Kirchner, J.W.**, A strategy for predicting watershed acidification, Ph.D. Thesis, Energy and Resources Group, University of California, Berkeley, CA., 169 pp., 1990.
10. (GEO) **Kirchner, J.W.**, W.E. Dietrich, F. Iseya, and H. Ikeda, The variability of critical shear stress, friction angle, and grain protrusion in water-worked sediments, *Sedimentology*, **37**, 647-672, 1990.
9. (GEO) Dietrich, W.E., **J.W. Kirchner**, H. Ikeda, and F. Iseya, Sediment supply and the development of the coarse surface layer in gravel-bedded rivers, *Nature*, **340**, 215-217, 1989.
8. (ECO) **Kirchner, J.W.**, Gaia metaphor unfalsifiable (Letter), *Nature*, **345**, 470, 1990.
7. (ECO) **Kirchner, J.W.**, The Gaia hypothesis: can it be tested?, *Reviews of Geophysics*, **27**, 223-235, 1989.
6. (OTH) **Kirchner, J.W.**, Diabolical speculations and divine artefacts (Letter), *Nature*, **337**, 498, 1989.

5. (OTH) **Kirchner, J.W.**, G. Ledec, R.J.A. Goodland, and J.M. Drake, Carrying capacity, population growth, and sustainable development, *Rapid Population Growth and Human Carrying Capacity: Two Perspectives* (D.J. Mahar, ed.), World Bank Staff Working Paper no. 690, The World Bank, Washington, pp. 41-89, 1985.
4. (OTH) Singh, I., L. Squire, and **J. Kirchner**, *Agricultural Pricing and Marketing Policies in an African Context: A Framework for Analysis*, World Bank Staff Working Paper no. 743, The World Bank, Washington, 106 pp., 1985.
3. (OTH) **Kirchner, J.W.**, Alleviating fuelwood crises in developing countries, M.S. Thesis, Resource Policy Center, Thayer School of Engineering, Dartmouth College, Hanover, N.H., 276 pp., 1982.
2. (OTH) **Kirchner, J.W.**, A conceptual framework for system dynamics model evaluation, in *Proceedings of the 1981 System Dynamics Research Conference* (D. Andersen and J. Morecroft, eds.), State University of New York at Albany, 1981.
1. (OTH) Kirchner, H.P. and **J.W. Kirchner**, Fracture mechanics of fracture mirrors, *Journal of the American Ceramics Society*, **62**, 198-202, 1979.

#### Technical reports

10. **Kirchner, J.W.**, Chemical weathering rates in granitic mountain catchments over 10-year and 10,000-year timescales, Technical completion report, U.S. Forest Service Rocky Mountain Research Station, 16 pp., 2001.
9. **Kirchner, J.W.**, R.C. Finkel and C.S. Riebe, Direct measurement of climate effects on long-term rates of erosion and weathering, Institute of Geophysics and Planetary Physics 1997 Annual Report, Lawrence Livermore National Laboratory, UCRL-53809-97, pp. 88-91, 1998.
8. **Kirchner, J.W.**, L. Micheli and J. Farrington. Effects of herbaceous riparian vegetation on stream bank stability. Technical completion report, University of California Water Resources Center, 43 pp., 1998.
7. **Kirchner, J.W.**, Expected effects of closing the Sota channel on flood stage and bank erosion of the Ganges River, near Varanasi, Uttar Pradesh, U.S.-Asia Environmental Partnership Environmental Exchange Program, 23 pp., 1997.
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23. Micheli, E.\* and **J.W. Kirchner**, Quantifying how herbaceous vegetation stabilizes stream banks: Monache Meadow, South Fork of the Kern River, Southern Sierra Nevada, *Eos, Transactions, American Geophysical Union*, **78**, F306, 1997 (American Geophysical Union Fall Meeting, San Francisco, December 1997).
22. Riebe, C.S.\* and **J.W. Kirchner**, Quantifying how topography, soil depth and bedrock erodibility affect long-term erosion rates, using cosmogenic nuclides in alluvial sediment, *Eos, Transactions, American Geophysical Union*, **78**, F288, 1997 (American Geophysical Union Fall Meeting, San Francisco, December 1997).
21. Roering, J.J.,\* **J.W. Kirchner** and W.E. Dietrich, Evidence for a non-linear diffusive mass wasting transport law and implications for hillslope evolution in the Oregon Coast Range, *Eos, Transactions, American Geophysical Union*, **78**, F286, 1997 (American Geophysical Union Fall Meeting, San Francisco, December 1997).
20. Granger, D.E.\*, **J.W. Kirchner** and C.S. Riebe,\* Inferring exhumation rates and processes from cosmogenic nuclides in sediments, *GSA Abstracts with Programs*, 1997.
19. **Kirchner, J.W.**, D.E. Granger\* and C.S. Riebe,\* Cosmogenic isotope methods for measuring catchment erosion and weathering rates, *Journal of Conference Abstracts*, **2**, 217, 1997 (BIOGEOMON 3rd Int'l Symposium on Ecosystem Behavior, Villanova University, June 1997).
18. Novak, M., **J.W. Kirchner** and H. Groscheova, Sulphur isotope dynamics in two mountaintop forest catchments in the Black Triangle, Central Europe, *Journal of Conference Abstracts*, **2**, 261, 1997 (BIOGEOMON 3rd Int'l Symposium on Ecosystem Behavior, Villanova University, June 1997).
17. Roy, B.A., **J.W. Kirchner**, C. Christian and L. Rose, High disease incidence and disease tolerance in a Great Basin plant community (abstract), *Bulletin of the Ecological Society of America*, **78**, 173, 1997 (Ecological Society of America Annual Meeting, 1997).
16. Granger, D.E.\*, L. Piccini, **J.W. Kirchner**, L. Carmignani, P. Fantozzi, M. Meccheri and E. Tavarnelli, Dating exhumation of orogenic belts using cosmogenic isotopes in cave deposits and alluvial terraces, *Proceedings, IV International Conference on Geomorphology, Bologna, Italy*, 1997

15. Riebe, C.S.,\* D.E. Granger\* and **J.W. Kirchner**, Quantifying effects of climate and topography on long-term erosion rates using cosmogenic nuclide concentrations in alluvial sediment, *Eos, Transactions, American Geophysical Union*, **77**, F251, 1996 (American Geophysical Union Fall Meeting, San Francisco, December 1996).
14. Roering, J.J.,\* **J.W. Kirchner** and W.E. Dietrich, Identification and characterization of deep-seated landslides in the Oregon Coast Range using digital terrain data (abstract), *Eos, Transactions, American Geophysical Union*, **77**, F246, 1996 (American Geophysical Union Fall Meeting, San Francisco, December 1996).
13. **Kirchner, J.W.**, Long-term acidification resulting from catchment base cation depletion: geochemical theory and field observations, *Journal of Conference Abstracts*, **1**, 312, 1996 (Sixth V.M. Goldschmidt International Conference in Geochemistry, Heidelberg, April 1996).
12. Granger, D.E.\* and **J.W. Kirchner**, Downcutting rate of the New River, Virginia, from  $^{26}\text{Al}/^{10}\text{Be}$  in buried river gravels, *Eos, Transactions, American Geophysical Union*, **76**, F689, 1995 (American Geophysical Union Fall Meeting, San Francisco, December 1995).
11. Granger, D.E.\* and **J.W. Kirchner**, Erosional response to tectonic forcing inferred from cosmogenic isotopes in alluvial sediment, *Eos Trans. Amer. Geophys. Union* **75**, 289, 1994 (American Geophysical Union Fall Meeting, San Francisco, December 1994).
10. Granger D.E.\* and **J.W. Kirchner**, Estimating catchment-wide denudation rates from cosmogenic isotope concentrations in alluvial sediment: Fort Sage Mountains, California, in *Abstracts of the Eighth International Conference on Geochronology, Cosmochronology, and Isotope Geology* (M.A. Lanphere, G.B. Dalrymple and B.D. Turrin, eds.), pp. 116. U.S.G.S. Circular 1107, 1994.
9. **Kirchner J.W.**, Chronic base cation depletion revealed by long-term monitoring data from Norwegian catchments, in *Abstracts: Biogeomon Symposium on Ecosystem Behavior: Evaluation of Integrated Monitoring in Small Catchments* (ed. J. Cerny), pp. 146-147. Czech Geological Survey, Prague, 1993.
8. **Kirchner, J.W.**, Geochemical methods for interpreting runoff chemistry from manipulated catchments, in *Experimental Manipulations of Biota and Biogeochemical Cycling in Ecosystems* (L. Rasmussen, T. Brydges and P. Mathy, eds.), pp. 128-130, 1993.
7. **Kirchner J.W.**, Chronic base cation depletion revealed by long-term monitoring data from Norwegian catchments, *Eos Trans. Amer. Geophys. Union* **74**, 279, 1993 (American Geophysical Union Fall Meeting, San Francisco, December 1993).
6. **Kirchner J.W.**, Predictability of geochemical buffering and runoff acidification in spatially heterogeneous catchments, *Eos Trans. Amer. Geophys. Union* **73**, 179, 1992 (American Geophysical Union Fall Meeting, San Francisco, December 1992).
5. **Kirchner J.W.**, Heterogeneous geochemistry of catchment acidification, *Eos Trans. Amer. Geophys. Union* **72**, 194, 1991 (American Geophysical Union Fall Meeting, San Francisco, December 1991).
4. **Kirchner J.W.** and J. Harte, A theory and an experimental strategy for predicting watershed acidification, *Eos Trans. Amer. Geophys. Union* **69**, 1199, 1988 (American Geophysical Union Fall Meeting, San Francisco, December 1988).

3. Blanchard P.E., C.L. Blanchard and **J.W. Kirchner**, Surface waters, snow melt, and ground water in an alpine/subalpine watershed, *Eos Trans. Amer. Geophys. Union* **69**, 1199, 1988 (American Geophysical Union Fall Meeting, San Francisco, December 1988).
2. Dietrich, W.E., **J.W. Kirchner**, F. Iseya and H. Ikeda, The origin of the coarse surface layer in gravel-bedded streams: the role of sediment supply, *GSA Abstracts with programs* **19**, 642, 1987.
1. **Kirchner J.W.**, and J. Harte, The titration of a subalpine watershed: a model for predicting the chronology of acidification, *Eos Trans. Amer. Geophys. Union* **67**, 935, 1986 (American Geophysical Union Fall Meeting, San Francisco, December 1986).

#### **Invited talks, and conference presentations without published abstracts**

91. **Kirchner, J.W.**, Simple models for complex hydrologic behavior: a challenge for basic research and engineering, *Invited plenary presentation, 6th Swiss Geoscience Meeting, Lugano*, November 2008.
90. **Kirchner, J.W.**, The geochemistry of landscape dynamics, *Invited keynote presentation, 33rd International Geological Congress, Oslo*, August 2008.
89. Clow, D., S.E. Godsey, and **J.W. Kirchner**, Sensitivity of mineral weathering rates to annual variations in runoff, *Invited lecture, 18th international V.M. Goldschmidt Conference, Vancouver, Canada*, July 2008.
88. **Kirchner, J.W.**, Exploring environmental systems by studying their streams, *AGU Fellow Address, American Geophysical Union 2008 Joint Assembly, Fort Lauderdale, Florida*, May 2008.
87. **Kirchner, J.W.**, Are hydrologic systems complex, or just complicated, or maybe simpler than we thought?, *Invited plenary lecture, European Geosciences Union General Assembly, Vienna*, April 2008.
86. **Kirchner, J.W.**, Simple models for complex hydrologic behavior: a challenge for basic research and engineering, *Invited keynote presentation, European Geosciences Union General Assembly, Vienna*, April 2008.
85. **Kirchner, J.W.**, Exploring catchments by studying their streams, *Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Kastanienbaum, Switzerland*, April 2008.
84. **Kirchner, J.W.**, Exploring catchments by studying their streams, *University of California, Merced*, February 2008.
83. **Kirchner, J.W.**, Exploring catchments by studying their streams, *National Institute of Water and Atmospheric Research, Christchurch, New Zealand*, January 2008.
82. **Kirchner, J.W.**, Exploring environmental systems by studying their streams, *Institute of Environmental Engineering, Swiss Federal Institute of Technology (ETH), Zurich*, November 2007.
81. **Kirchner, J.W.**, Exploring watersheds by studying their streams, *Bren School of Environmental Science and Management, University of California, Santa Barbara*, November 2007.

80. **Kirchner, J.W.**, The chemistry of Earth's dynamic surface: linkages between physical erosion and chemical weathering in mountainous granitic landscapes, *Institute for Tibetan Plateau Research, Chinese Academy of Sciences, Beijing*, September, 2007.
79. **Kirchner, J.W.**, The chemistry of Earth's dynamic surface: linkages between physical erosion and chemical weathering in mountainous granitic landscapes, *University of Colorado, Boulder*, September, 2007.
78. **Kirchner, J.W.**, The chemistry of Earth's dynamic surface, *Invited plenary lecture, 17th international V.M. Goldschmidt Conference, Cologne, Germany*, August 2007.
77. **Kirchner, J.W.**, Developing a dynamical systems approach to hydrology, using intensively monitored research watersheds, *Invited lecture, Gordon Research Conference on Catchment Science*, July 2007.
76. **Kirchner, J.W.**, Doing hydrology backwards: inferring catchment-scale governing equations, rainfall rates, and evapotranspiration patterns from streamflow time series, *University of California, Los Angeles*, May 2007.
75. **Kirchner, J.W.**, Exploring forest ecosystems by studying their streams, *Swiss Federal Institute for Forest, Snow, and Landscape Research, Zurich*, and *Swiss Federal Institute for Snow and Avalanche Research, Davos*, March 2007.
74. **Kirchner, J.W.**, Exploring forest ecosystems by studying their streams, *Stanford University*, February 2007.
73. **Kirchner, J.W.**, Reflections of preferential flow at the hillslope and catchment scale, *Monte Verita International Workshop on Preferential Flow and Transport Processes in Soil, Ascona, Switzerland*, November 2006.
72. **Kirchner, J.W.**, Environmental physics of hillslopes and catchments, *Swiss Federal Institute of Technology (ETH), Zurich*, November 2006.
71. **Kirchner, J.W.**, Doing hydrology backwards: inferring catchment-scale governing equations, rainfall rates, and evapotranspiration patterns from streamflow time series, *Invited lecture, Workshop on Prediction in Ungauged Basins, Corvallis, OR*, October 2006.
70. **Kirchner, J.W.**, Understanding forest ecosystems by studying their streams, *USFS Forest Sustainability Conference, Nevada City, CA*, October 2005.
69. **Kirchner, J.W.**, A spectral view of catchment hydrology and geochemistry, *Duke University*, October 2005.
68. **Kirchner, J.W.**, C.S. Riebe,\* K.L. Ferrier,\* and R.C. Finkel, Cosmogenic nuclide methods for measuring long-term rates of physical erosion and chemical weathering, *Invited keynote presentation, Seventh International Symposium on Geochemistry of the Earth's Surface, Aix-en-Provence, France*, August 2005.
67. **Kirchner, J.W.**, Sediment yields on timescales from minutes to millions of years, *Keynote address, California Conference on Water Quality, Redding, CA*, April 2005.

66. Troch, P., P. Bogaart, R. Uijlenhoet, A. Berne, J. Boll, J. McDonnell, and **J. Kirchner**, Catchment water residence time: Understanding the relation between landscape organization and flow pathways, *VIIth IAHS Scientific Assembly, Foz do Iguaçu, Brazil*, April 2005.
65. **Kirchner, J.W.**, A spectral view of catchment hydrology and geochemistry, *Invited lecture, International Conference on Integrated Assessment of Water Resources and Global Change, Bonn, Germany*, February 2005.
64. **Kirchner, J.W.**, Biodiversity dynamics inferred from the fossil record, *University of California Museum of Paleontology, Berkeley*, October 2005.
63. **Kirchner, J.W.**, A spectral view of catchment hydrology and geochemistry, *Stanford University*, December 2004.
62. **Kirchner, J.W.**, A spectral view of catchment hydrology and geochemistry, *Invited lecture, Gilbert Club Annual Meeting, Berkeley*, December 2004.
61. **Kirchner, J.W.**, Biodiversity dynamics in the fossil record, *Homecoming Faculty Lecture, University of California, Berkeley*, October 2004.
60. **Kirchner, J.W.**, Chemical weathering, physical erosion, and climate: a cosmogenic perspective, *W.T. Smith Lecture, University of Michigan*, October 2004.
59. **Kirchner, J.W.**, A spectral view of catchment processes, *Invited lecture, NSF/CUAHSI Workshop on Catchment Hydrology, Corvallis, OR*, June 2004.
58. **Kirchner, J.W.**, A cosmogenic view of physical erosion and chemical weathering in mountainous granitic landscapes, *Czech Geological Survey, Prague*, March 2004.
57. **Kirchner, J.W.**, A spectral view of catchment hydrology and geochemistry, *Invited lecture, Australia-Japan Workshop on Prediction in Ungauged Basins, Perth, Australia*, February 2004.
56. **Kirchner, J.W.**, A cosmogenic view of physical erosion and chemical weathering in mountainous granitic landscapes, *NSF Weathering System Science Consortium Workshop, Baltimore, MD*, October 2003.
55. **Kirchner, J.W.**, A spectral view of catchment hydrology and geochemistry, *University of California, Berkeley (Dept. of Geography)*, September 2003.
54. **Kirchner, J.W.**, X. Feng and C. Neal, Power-law filters of catchment response: physical interpretations and geochemical implications, *Invited lecture, Gordon Conference on Catchment Science*, July 2003.
53. **Kirchner, J.W.**, A spectral view of catchment hydrology and geochemistry, *Cornell University*, May 2003.
52. **Kirchner, J.W.**, Biodiversity dynamics revealed through spectral analysis of the fossil record, *Miller Institute for Basic Research, University of California, Berkeley*, April 2003.
51. **Kirchner, J.W.**, Dynamics of evolution and extinction revealed through spectral analysis of the fossil record, *Neyman Lecture, Dept. of Statistics, University of California, Berkeley*, January 2003.

50. **Kirchner, J.W.**, Dynamics of evolution and extinction revealed through spectral analysis of the fossil record, *University of California, Berkeley, Faculty Forum*, November 2002.
49. **Kirchner, J.W.**, A spectral view of catchment hydrology and geochemistry, *Oregon State University*, May 2002.
48. **Kirchner, J.W.**, A spectral view of catchment hydrology and geochemistry, *Dartmouth College*, February 2002.
47. **Kirchner, J.W.**, Mountain erosion over 10-year, 10,000-year, and 10,000,000-year timescales, *University of California, Davis*, February 2002.
46. **Kirchner, J.W.**, A spectral view of catchment hydrology and geochemistry, *University of Arizona*, November 2001.
45. **Kirchner, J.W.**, A spectral view of catchment hydrology and geochemistry, *U.C. Berkeley, Dept. of Civil and Environmental Engineering*, November 2001.
44. **Kirchner, J.W.**, A spectral view of catchment hydrology and geochemistry, *Invited lecture, American Geophysical Union Chapman Conference on State-of-the-Art Hillslope Hydrology, Sunriver, OR*, October 2001.
43. **Kirchner, J.W.**, Mountain erosion over 10-year, 10,000-year, and 10,000,000-year timescales, *Idaho Fire and Erosion Workshop, Boise, ID*, July 2001.
42. **Kirchner, J.W.**, Mountain erosion over 10-year, 10,000-year, and 10,000,000-year timescales, *Johns Hopkins University*, April 2001.
41. **Kirchner, J.W.**, Mountain erosion over 10-year, 10,000-year, and 10,000,000-year timescales, *University of California, Berkeley*, December 2000.
40. **Kirchner, J.W.**, Mountain erosion over 10-year, 10,000-year, and 10,000,000-year timescales, *University of California, Santa Cruz*, October 2000.
39. **Kirchner, J.W.**, Simplicity and complexity, in model watersheds and real ones, *Invited lecture, Gordon Conference on Hydrological, Biological, and Geochemical Processes in Forested Catchments*, July 1999.
38. Riebe, C.S.\* and **J.W. Kirchner**, Physical and chemical weathering rates from cosmogenic nuclide and geochemical mass balance techniques: data from six sites in the Sierra Nevada, *GSA Cordilleran Section Meeting, Berkeley, CA*, June 1999.
37. Whyte, D.C.\* and **J.W. Kirchner**, Assessing water quality impacts and cleanup effectiveness in streams dominated by episodic mercury discharges, *Fifth International Conference on Mercury as a Global Pollutant, Rio de Janeiro*, May 1999.
36. Taylor, S., X. Feng, R. Osterhuber, **J. Kirchner** and B. Klaue, Oxygen and hydrogen isotope compositions of snowmelt from an isotopically well-characterized snowpack, *55th Eastern Snow Conference, Jackson, NH*, June 1998.
35. **Kirchner, J.W.**, A systems approach to forest ecosystem research, *Swiss Federal Institute of Technology (ETH), Zurich*, May 1998.

34. **Kirchner, J.W.**, Cosmogenic isotope methods for measuring long-term rates of erosion and weathering, *University of Oregon*, May 1998.
33. **Kirchner, J.W.**, Cosmogenic isotope methods for measuring long-term rates of erosion and weathering, *Swiss Federal Institute of Technology (ETH), Zurich*, May 1998.
32. Whyte, D.\* and **J.W. Kirchner**, Fluvial transport of mercury in a watershed impacted by mining, *Third Annual Mercury Conference, Asilomar, California*, February 1998.
31. **Kirchner, J.W.**, Why the acid rain problem hasn't gone away: long-term effects of acid deposition on the geochemistry of lakes and streams, *Göttingen University*, November 1997.
30. **Kirchner, J.W.**, Cosmogenic isotope methods for measuring long-term rates of erosion and weathering, *University of Reading (UK)*, November, 1997.
29. **Kirchner, J.W.**, Why the acid rain problem hasn't gone away: long-term effects of acid deposition on the geochemistry of lakes and streams, *Georgia Institute of Technology*, May 1997.
28. **Kirchner, J.W.** Hydrologic and geomorphic effects of modifying the Ganges River channel below Varanasi, Uttar Pradesh, India, *Dept. of Civil Engineering, Benares Hindu University, Varanasi, India*, January 1997.
27. **Kirchner, J.W.**, Why the acid rain problem hasn't gone away: long-term effects of acid deposition on the geochemistry of lakes and streams, *Dartmouth College*, December 1996.
26. **Kirchner, J.W.**, What controls rates of weathering and erosion? Linkages between climate change and earth surface processes, *Dartmouth College*, December 1996.
25. **Kirchner, J.W.**, Why the acid rain problem hasn't gone away: long-term effects of acid deposition on the geochemistry of lakes and streams, *Stanford University*, April 1996.
24. **Kirchner, J.W.**, Why the acid rain problem hasn't gone away: long-term effects of acid deposition on the geochemistry of lakes and streams, *University of California, Berkeley (Dept. of Geology and Geophysics)*, August 1995.
23. **Kirchner, J.W.**, Four Lectures in Environmental Science (Testing and evaluating environmental models, Uncertainty in environmental analysis and decisionmaking, Water and energy: interactions between two critical resources, and Acid rain and energy technologies), *20<sup>th</sup> International Nathiagali Summer College on Physics and Contemporary Needs, Bhurban, Pakistan*, July 1995.
22. **Kirchner, J.W.**, Why the acid rain problem hasn't gone away: long-term effects of acid deposition on the geochemistry of lakes and streams, *Swiss Federal Institute of Technology (ETH), Zurich*, June 1995.
21. **Kirchner, J.W.**, Why the acid rain problem hasn't gone away: long-term effects of acid deposition on the geochemistry of lakes and streams, *University of California, Berkeley, Dept. of Civil and Environmental Engineering*, April 1995.
20. **Kirchner, J.W.**, Why the acid rain problem hasn't gone away: long-term effects of acid deposition on the geochemistry of lakes and streams, *Harvard University*, March 1995.

19. **Kirchner, J.W.**, Acid rain made easy: geochemical techniques for predicting watershed acidification and trace element mobilization, *University of Oregon*, April 1994
18. **Kirchner, J.W.**, Acid rain made easy: geochemical techniques for predicting watershed acidification and trace element mobilization, *Harvard University*, March 1994.
17. **Kirchner, J.W.**, Predicted catchment response to long-term depletion of exchangeable bases tested against direct instrumental records, *NATO Advanced Research Workshop on Ecosystem Modeling, Bayreuth*, February 1994.
16. **Kirchner, J.W.**, Predicting runoff acidification in spatially heterogeneous watersheds, *University of California, Berkeley, Dept. of Civil and Environmental Engineering*, February 1993.
15. **Kirchner, J.W.**, Acid rain made easy: geochemical techniques for predicting watershed acidification and trace element mobilization, *University of Oslo*, May 1992.
14. **Kirchner, J.W.**, Acid rain made easy: geochemical techniques for predicting watershed acidification and trace element mobilization, *University of California, Berkeley (Soil science seminar)*, February 1992.
13. **Kirchner, J.W.**, The Gaia hypothesis: fact, theory, metaphor, or religion? *University of California, Berkeley (Integrative biology seminar)*, November 1990.
12. **Kirchner, J.W.**, The topology of stream channel networks: are Horton's laws inevitable, Shreve's "random model" unbeatable, and detailed topological structure unknowable? *University of Wyoming*, February 1990.
11. **Kirchner, J.W.**, A strategy for predicting long-term effects of acid precipitation on surface waters, *Swiss Federal Institute of Technology (ETH), Zurich*, January 1990.
10. **Kirchner, J.W.**, The topology of stream channel networks: are Horton's laws inevitable, Shreve's "random model" unbeatable, and detailed topological structure unknowable? *Swiss Federal Institute of Technology (ETH), Zurich*, January 1990.
9. **Kirchner, J.W.**, A strategy for predicting long-term effects of acid precipitation on surface waters, *Harvard University*, September 1989.
8. Harte, J. and **J.W. Kirchner**, The contribution of water-column colloids to lakewater acid neutralizing capacity, *American Geophysical Union Chapman Conference on Hydrogeochemical Responses of Forested Catchments, Bar Harbor*, September 1989.
7. **Kirchner, J.W.**, A physically-based method for predicting chronic watershed acidification directly from field measurements and laboratory analyses, *American Geophysical Union Chapman Conference on Hydrogeochemical Responses of Forested Catchments, Bar Harbor*, September 1989.
6. **Kirchner, J.W.**, A strategy for predicting long-term effects of acid precipitation on surface waters, *California Institute of Technology*, April 1989.
5. **Kirchner, J.W.**, Analytical acidification predictions, *California Air Resources Board Integrated Watershed Study Review Meeting*, February 1989.

4. **Kirchner, J.W.**, The topology of stream channel networks: are Horton's laws inevitable, Shreve's "random model" unbeatable, and detailed topological structure unknowable? *Gilbert Club Annual Meeting, Berkeley*, December 1988.
3. **Kirchner, J.W.**, The Gaia hypotheses: are they testable? Are they useful? *American Geophysical Union Chapman Conference on the Gaia Hypothesis*, March 1988.
2. **Kirchner, J.W.**, Analyzing the impact of pricing policy: the Malawi agricultural pricing model, U.S. Agency for International Development Economists' Conference, *Washington, DC*, November 1987.
1. **Kirchner, J.W.**, Agricultural policy modeling: lessons from East Africa, *International Institute for Applied Systems Analysis, Vienna*, October 1984.