Vita: ROBERT K. KAUFMANN

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EDUCATION

Ph.D. Energy Management & Policy, 1988 University of Pennsylvania.

M.A. Economics, 1984 University of New Hampshire.

B.S. Biology (Concentration: Ecology & Systematics), 1979 with honors Cornell University.

PROFESSIONAL EXPERIENCE

Chair, Department of Geography & Environment, Boston University, September 2009 – August, 2012.

Founding Partner, First Fuel Software 420 Bedford St. Lexington, MA 02420 November 2009 – 2019. First Fuel sold to *Uplight* June 2019.

Governor's Energy Policy Review Commission, January 2013 – October 2013. The Governor of Massachusetts has charged this committee with writing a report to the legislature on the success and cost-effectiveness of programs under chapter 169 of the acts of 2008 (the Green Communities Act).

Director, Center for Energy & Environmental Studies, Boston University, September 2006 – August, 2009; September 2012-present.

Professor, Department of Geography and the Center for Energy & Environmental Studies, Boston University, September 2003 - present.

Associate Professor, Department of Geography and the Center for Energy & Environmental Studies, Boston University, September 1995 - 2003.

Assistant Professor, Department of Geography and the Center for Energy & Environmental Studies, Boston University, September 1989 - 1995.

Senior Economist, Energy Department, Wharton Econometrics, September 1987 - August 1989.

Research Scientist, Complex Systems Research Center, University of New Hampshire, February 1982 - August 1984.

Research Technician, Complex Systems Research Center University of New Hampshire, September 1979 - January 1982.

BOOKS

R.K. Kaufmann and C.J. Cleveland. 2007. *Environmental Science*. McGraw-Hill, New York.

C.A.S. Hall, C. Cleveland, and R. Kaufmann. 1986. *Energy and Resource Quality: The Ecology of the Economic Process*, John Wiley & Sons, New York. Reprinted by University Press of Colorado, Niwot CO. 1992.

J. Gever, R. Kaufmann, D. Skole, and C. Vorosmarty. 1986. *Beyond Oil: The Threat to Food and Fuel in the Coming Decades*. Ballinger Press, Cambridge, Mass. Reprinted by the University Press of Colorado, Niwot Colorado. 1992.

PEER REVIEW ARTICLES

Kaufmann, R.K., M.K. Fair, and C. Schroer, in press, Distributive energy justice: Who lost power in texas during the 2021 winter storm? *Energy Research & Social Science*.

Kaufmann, R.K., N. Kulatilaka, M. Mittelman, 2023, Evaluating hedge fund activism: Engine Number 1 and ExxonMobil, *Journal of Climate* Finanance, 5, https://doi.org/10.1016/j.jclimf.2023.100018

Kaufmann, R.K., 2023, Energy price volatility affects decisions to purchase energy using capital: motor vehicles, *Energy Economics*, 126 106915 https://doi.org/10.1016/j.eneco.2023.106915

Kaufmann, RK, and C. Schroer, 2023, Social and environmental events disrupt the relation between motor gasoline prices and market fundamentals, *Energy Economics*, 126: 106914 https://doi.org/10.1016/j.eneco.2023.106914

Tendler, A.C. and R.K. Kaufmann 2023, A learning by doing multiplier accelerates the transition to photovolataic cells, *Journal of Climate Finance*, 4100016, https://doi.org/10.1016/j.eneco.2023.106915

Kaufmann, R.K. and F. Pretis, 2023, An empirical estimate for the snow albedo feedback effect, *Climatic Change*, 176:107 https://doi.org/10.1007/s10584-023-03572-7

Tucker, C. M. Brandt, P. Hiernaux, A. Kariryaa, K. Rasmussen, J. Small, C. Igel, F. Reiner, K. Melocik, J. Meyer, S. Sinno, E. Romero, E. Glennie, Y. Fitts, A. Morin, J. Pinzon, D. McClain, P. Morin, C. Porter, S. Loeffler, L. Kergoat, B. Issoufou, P. Savadogo, J. Wigneron, B. Poulter, P. Ciais, R. K. Kaufmann, R. Myneni, S. Saatchi, and R. Fensholt. in prres, Sub-continental scale carbon stocks of individual trees in African drylands, *Nature*. **615**: 80–86 https://doi.org/10.1038/s41586-022-05653-6

Pollack, A., and R.K. Kaufmann, 2022, Increasing storm risk, structural defense, and house prices in the Florida Keys, *Ecological Economics* 194:107350.

Arampatzidis, I, T. Dergiades, R.K. Kaufmann, and T. Panagiotidis, 2021, Oil and the U.S. stock market: implications for low carbon policies, *Energy Economics*, 103:105588.

Turiel, J.S. and R.K. Kaufmann, 2021, Evidence of air quality data misreporting in China: An impulse indicator saturation model comparison of local government-reported and U.S. embassy-reported PM_{2.5} concentrations (2015-2017), *PLoS ONE* 16(4): e0249063.

Kaufmann, R.K., D. Newberry, C Xin, and S. Gopal. 2021, Feedbacks among electric vehicle adoption, charging, and the cost and installation of rooftop solar, *Nature Energy*, doi.org/10.1038/s41560-020-00746-w

Kaufmann, R.K. and F. Pretis, 2021, Understanding glacial cycles: a multivariate disequilibrium approach, *Quaternary Science Reviews*, 251 106694.

Kaufmann, RK. and C. Connelly, 2020, Non-market forces significantly affect oil prices, *Nature Energy*. https://doi.org/10.1038/s41560-020-0549-1

Chang, Y. R.K. Kaufmann, C.K. Kim, J. I. Miller, J.Y. Park, S. Park, 2020, Evaluating trends in time series of distributions: a spatial fingerprint of human effects on climate, *Journal of Econometrics*, 214:274-294.

Hallack, L. N., Kaufmann, R., & Szklo, A. S. 2020. Price discovery in Brazil: causal relations among prices for crude oil, ethanol, and gasoline. *Energy Sources, Part B: Economics, Planning, and Policy*, 15(4), 230-251.

Kaufmann, R.K. 2020, A regionalized or unified oil market: the price spread between Brent and WTI, *Economics of Energy & Environmental Policy* 9(2):11-30.

Stanimirova, R., Arévalo, P., Kaufmann, R. K., Maus, V., Lesiv, M., Havlík, P., & Friedl, M. A. 2019, Sensitivity of Global Pasturelands to Climate Variation. *Earth's Future*,7.https://doi.org/10.1029/2019EF001316

Hallack, L.N. R.K. Kaufmann, and A. Szklo, 2019, The effect of productivity and country risk on development in the Brazilian pre-salt province, *Energy Sources, Part B Economics, Planning, and Policy*, 14(3):80-97.

Ansari, E. and R.K. Kaufmann, 2019, The effect of oil and gas price and price volatility on rig activity in tight formations and OPEC Strategy, *Nature Energy*.4:321-328.

R.K. Kaufmann, R.K. 2019, Pass-Through of Motor Gasoline Taxes: Efficiency and Efficacy of Environmental Taxes, *Energy Policy*, 125:207-215.

Kaufmann, RK and E. Hines, 2018, The effect of combined-cycle generation and hydraulic fracturing on prices for coal, oil, and natural gas: implications for carbon taxes, *Energy Policy*, 118:601-611.

Kaufmann, R. K., 2017, Airfares and oil prices: 'feathers and rockets' adjustments, *Energy Economics*, 68:515-521.

Veliz, K.D. R.K. Kaufmann, C.J. Cleveland, and A Stoner, 2017 The effect of climate change on electricity expenditures in Massachusetts. *Energy Policy* 106:1-11.

Kaufmann, R.K., M. L Mann, S. Gopal, J. A Liederman, P.D. Howe, F. Pretis, X.Tang, M. Gilmore, 2017, The Spatial Heterogeneity of Climate Change as an Experiential Basis for Skepticism, *Proceedings National Academy of Sciences*, 114(1):67-71.

Kaufmann, RK, and D. Vaid. 2016, Lower electricity prices and greenhouse gas emissions due to rooftop solar; empirical results for Massachusetts, *Energy Policy*, 91:345-352.

Kaufmann, RK, 2016, Price differences among crude oils: the private costs of supply disruptions, *Energy Economics*, 56:1-8.

Kaufmann, R.K. and K. Juselius, 2016, Testing competing forms of the Milankovitch hypothesis: a multivariate approach, *Paleoceanography*. 31, doi:10.1002/2014PA002767.

Dergiades, T., R.K. Kaufmann, T. Panagiotidis, 2016, Long-run changes in radiative forcing and surface temperature: the effect of human activity over the last five centuries *Journal of Environmental Economics and Management*, 76:67-85.

Pretis, F, M. Mann, and R.K. Kaufmann, 2015, Testing competing models of the temperature hiatus: Assessing the effects of conditioning variables and temporal uncertainties through sample-wide break detection, *Climatic Change* **131:705-718**, DOI 10.1007/s10584-015-1391-5.

Kolodziej, M., R.K. Kaufmann, N. Kulatilaka, D. Bicchetti, N. Maystre, 2014, Crude oil: Commodity or financial asset, *Energy Economics* 46:216-223.

Kaufmann, RK and S. Banerjee, 2014, A unified world oil market: regions in physical, economic, geographic, and political space, *Energy Policy* 74:235-242.

Kolodzeij, M. and R.K. Kaufmann, 2014, Oil demand shocks reconsidered: A cointegrated vector autoregression, *Energy Economics*, 41:33-40.

Kaufmann, R.K. The end of cheap oil: Economic, social, and political change in the US and Former Soviet Union, 2014, *Energies* 7:6225-6241 doi:10.3390/en7106225.

Mann, M.L. R. K. Kaufmann, D.M. Bauer, S. Gopal, M. Nomack, J. Womack, K. Sullivan, B. Soares Filho, 2014, Pasture conversion and competitive land rents in the Amazon, *Ecological Economics*, 97:182-190.

Stern, D.I. and R.K. Kaufmann, 2014, Anthropogenic and natural causes of climate change, *Climatic Change*, 122:257-269.

Kolodzeij, M. and R.K. Kaufmann, 2013, The role of trader positions in spot and futures prices for WTI, *Energy Economics* 40:176-182.

Kaufmann, RK and K. Juselius, 2013, Testing hypotheses about glacial cycles against the observational record, *Paleoceanography*, 28, 1–10, doi:10.1002/palo.20021.

Kaufmann, RK, H. Kauppi, ML Mann, and J.H Stock, 2013, Does temperature contain a stochastic trend: linking statistical results to physical mechanisms, *Climatic Change*. doi 10.1007/s10584-012-0683-2.

Kaufmann, RK, S. Gopal, X. Tang, S. M. Raciti, PE Lyons, N. Geron, and F. Craig, Revisiting the weather effect on energy consumption; implications for the impact of climate change, 2013, *Energy Policy* 62:1377-1384, doi:10.1016/j.enpol.2013.07.056

Knyazikhin, Y. P. Lewis, M.I. Disney, M. Mottus, M. Rautiainen, P. Stenberg, R.K. Kaufmann, A. Marshak, M.A. Schull, Y. Carmona, W. Vanderbilt, A.B. Davis, F. Baret, S., Jacquemoud, P.L. A. Lyapustin, Yang, and R.B. Myneni, 2013, Reply to Ollinger et al: Remote sensing of leaf nitrogen and emergent ecosystem properties, *Proceedings National Academy of Sciences*, DOI: 10.1073/pnas.1305930110.

Knyazikhin, Y. P. Lewis, M.I. Disney, M. Mottus, M. Rautiainen, P. Stenberg, R.K. Kaufmann, A. Marshak, M.A. Schull, Y. Carmona, W. Vanderbilt, A.B. Davis, F. Baret, S., Jacquemoud, P.L. A. Lyapustin, Yang, and R.B. Myneni, 2013, Reply to Townsend et al: Remote sensing of leaf nitrogen and emergent ecosystem properties, *Proceedings National Academy of Sciences*, DOI: 10.1073/pnas.1301247110.

Knyazikhin, Y. P. Lewis, MI Disney, P. Stenberg, M. Mottus, M. Rautiainen, R.K. Kaufmann, A. Marshak, MA. Schull, P.L. Carmona, V. Vanderbilt, AB Davis, F. Baret, S. Jacquemond, A. Lyapustin, Y. Yang, and R.B. Myneni, 2013, Hyperspectral remote sensing of foliar nitrogen content, *Proceedings National Academy of Sciences*, doi:10.1073/pnas.1210196109

Mann, M.L. R.K. Kaufmann, D.M. Bauer, S. Gopal, J.G. Baldwin, M. Vera-Diaz, 2012, Ecosystem service value and agricultural conversion in the Amazon, implications for policy intervention, *Resource and Environmental Economics*. 53(2):279-295.

Miller-Rushing AJ, Primack RB, Phillips N, Kaufmann RK (2012) Effects of Warming Temperatures on Winning Times in the Boston Marathon. PLoS ONE 7(9): e43579. doi:10.1371.

Kaufmann, RK, H. Kauppi, ML Mann, and J.H Stock, 2011, Reconciling anthropogenic climate change with observed temperature 1998-2008, *Proceedings National Academy of Sciences* 108(29):11790-11793 doi/10.073/pnas.1102467108.

Kaufmann, RK. 2011, The role of market fundamentals and speculation in recent price changes for crude oil, *Energy Policy*, 39(1);105-115.

Kaufmann, R.K, N. Gonzalez, T.A. Nickerson, T.S. Nesbit, 2011, Do household energy expenditures affect mortgage delinquency rates? *Energy Economics*. 33:188-194.

Kaufmann, R.K. H. Kauppi, and J.H. Stock, 2010, Does temperature contain a stochastic trend? Evaluating conflicting statistical results. *Climatic Change*. 101:395-405.

Mann, M., R.K. Kaufmann, D. Bauer, S. Gopal, Maria Del Carmen Vera-Diaz, D. Nepstad, F. Merry, J. Kallay, G.S. Amacher, 2010 The economics of cropland conversion in Amazonia: The importance of agricultural rent, *Ecological Economics*. 69:1503-1509.

Kaufmann, RK. and B. Ullman, 2009, Oil prices, speculation, and fundamentals, interpreting causal relations among spot and futures prices, *Energy Economics*. 31:550-558.

Kaufmann, RK S. Dees, and M. Mann, 2009, Horizontal and vertical transmissions in the US oil supply chain, *Energy Policy* 37:644-650.

Kaufmann, R.K. R.D. D'Arrigo, L.F. Paletta, H.Q. Tian, R.B. Myneni, 2008, Identifying climate controls on ring width: the timing of correlations between tree rings and NDVI *Earth Interactions* DOI: 10.1175/2008EI263.1.

Kaufmann, RK. P. Karadeloglou, F diMauro, 2008, Will oil prices decline over the long run? European Central Bank Occasional Paper 98

Kaufmann, RK. and L.D. Shiers, 2008, The effect of resource uncertainty on the peak in global oil production and the production of alternatives, *Ecological Economics*.67:405-411.

Kaufmann⁹ RK, L.F. Paletta, H.Q. Tian, R.B. Myneni, R.D. D'Arrigo, 2008, Causal relationships between NDVI and atmospheric carbon dioxide, *Earth Interactions* DOI: 10.1175/2007EI240.1

Wang, W, B. T. Anderson, D. Entekhabi, D. Huang, Y. Su, R.K. Kaufmann, R. Myneni, 2008. Intraseasonal interactions between temperature and vegetation over the boreal forests, Earth Interactions.

Kaufmann, RK S. Dees, A, Gasteuil, and M. Mann, 2008, Oil prices, the role of refinery utilization, futures markets, and non-linearities, *Energy Economics* 30:2609-2622.

Vera-Diaz, M.C. R.K. Kaufmann D.C. Nepstad, and P. Schlesinger, 2008, An Interdisciplinary Model of Soybean Yield in the Amazon Basin: The climatic, edaphic, and economic determinants, *Ecological Economics* 65:420-431.

Dees, S, A Gasteuil, R.K. Kaufmann, and M. Mann, 2008, Assessing the factors behind oil price changes, European Central Bank Discussion Paper 855.

Kaufmann, RK, A Bradford, L.H. Belanger, J. Mclaughlin, Y. Miki, 2008, Determinants of OPEC production: implications for OPEC behavior. *Energy Economics*, 30:333-351.

Richmond, A.K, R.K. Kaufmann, and R.B. Myneni, 2007, Valuing ecosystem services: a shadow price for net primary production, *Ecological Economics* 64:454-462.

Kaufmann, R.K. 2007, Monthly changes in the intrannual cycle of atmospheric carbon dioxide at Mauna Loa: possible asymmetric effects of warming, *Earth interactions*. 11Art. No. 10 DOI:10.1175/E1224.1

Kaufmann, R.K., K.C. Seto, A. Schneider, L. Zhou and Z. Liu, 2007, Climate response to rapid urban growth: evidence of a human-induced precipitation deficit, *Journal of Climate*, 20:2299-2306.

Dees, S, P. Karadeloglou, R.K. Kaufmann, and M. Sanchez, 2007, Modelling the world oil market: assessment of a quarterly econometric model, *Energy Policy* 35:178-191.

W. Wang, B. T. Anderson, N. Phillips, R.K. Kaufmann, C. Potter, R.B. Myneni, Feedbacks of Vegetation on Summertime Climate Variability over the North American Grasslands: 1. Statistical Analysis, *Earth Interactions*. 10: Art. No. 17.

W. Wang, B. T. Anderson, D. Entekhabi, D. Huang, R.K. Kaufmann, C. Potter, R.B. Myneni, In press, Feedbacks of Vegetation on Summertime Climate Variability over North American grasslands: 2. a coupled stochastic model, *Earth Interactions*. 10: Art. No. 16.

Kaufmann RK, 2006, Energy returns on ethanol production, *Science* 312 (5781): 1747-1747.

Richmond, A.K. and R.K. Kaufmann 2006, Energy prices and turning points in the relationship between income and energy use/carbon emissions, *The Energy Journal*, 27(4)157-180.

Kaufmann, R.K. H. Kauppi, and J.H. Stock, 2006, Emission, concentrations, & temperature: a time series analysis. *Climatic Change* 77:249-278

Kaufmann, R.K. H. Kauppi, and J.H. Stock, 2006, The relationship between radiative forcing and temperature: what do statistical analyses of the instrumental temperature record measure? *Climatic Change* 77:279-289.

Richmond, A. and R.K. Kaufmann, 2006, Is there a turning point in the relationship between income and energy use and/or carbon emissions? *Ecological Economics* 56:176-189.

Seto, K.C. and R.K. Kaufmann, 2005, Using logit models to classify land-use change from Landsat Thematic Mapper. *International Journal of Remote Sensing*. 26 (3): 563-577

Kaufmann, R.K. and C. Laskowski, 2005, Causes for an asymmetric relation between the price of crude oil and refined petroleum products, *Energy Policy* 33:1587-1596.

Wang, W, B. Anderson, R.K. Kaufmann, and R.B. Myneni, 2004, On the relation between the North Atlantic Oscillation and SSTs in the North Atlantic basin. *Journal of Climate*. **17** (24), 4752-4759.

Kaufmann, R.K, S. Dees, P. Karadeloglou, and M. Sanchez, 2004, Does OPEC matter? an econometric analysis of oil prices *The Energy Journal* 25(4):67-90.

D'Arrigo, R.D., R.K, Kaufmann, N. Davi, G C. Jacoby, C. Laskowski, R.B. Myneni, Paolo Cherubini, 2004, Thresholds for warming-induced growth decline at northern treeline, *Global Biogeochemical Cycles* 18,GB3021,doi:10.1029/2004/GB002249.

Zhou, L. R.E. Dickinson, Y. Tian, J. Fang, R.K Kaufmann, and R.B. Myneni, Evidence for a significant urbanization effect on climate in China, *Proceeding National Academy of Sciences*, 2004, 101(26):9540-9541.

Kaufmann, R. K., R. D. D'Arrigo, C. Laskowski, R. B. Myneni, L. Zhou, and N. K. Davi 2004, The effect of growing season and summer greenness on northern forests, *Geophys. Res. Lett.*, *31*, L09205, doi:10.1029/2004GL019608.

Kaufmann, R.K. 2004, The mechanisms for autonomous increases in energy efficiency: a cointegration analysis of the US energy/GDP ratio *The Energy Journal* 25(1) 121-144.

Kaufmann, R.K. Zhou, L, R.B. Myneni C.J. Tucker, D. Slayback, N.V. Shabanov, and J. Pinzon, 2003, The effect of vegetation on surface temperature: a statistical analysis of NDVI and climate data *Geophysical Research Letters* **30**(2) 2137, doi: 10.1029/2003GL018251.

- Kaufmann, R.K. and J.H. Stock, 2003, Testing hypotheses about the unknown carbon sink: a time series analysis *Global Biogeochemical Cycles* **17**(2), 1072 *doi:10.1029/2002GB001962*.
- Kaufmann, R.K. L. Zhou, C.J. Tucker, D. Slayback, N.V. Shabanov, and R.B. Myneni. 2003. Reply to comment by M. Lanfredi et al. to "Variations in northern vegetation activity inferred from satellite data of vegetation index during 1981 to 1999" by L. Zhou et al. *Journal of Geophysical Research.* 2002JD003287, 2003.
- Seto, K.C. and R.K. Kaufmann, 2003, Modeling the drivers of urban land-use change in the Pearl River Delta, China: Integrating remote sensing with socioeconomic data, *Land Economics* **79**(1):106-121.
- Dong, J., R.K. Kaufmann, R.B. Myneni, C.J. Tucker, P.E. Kauppi J. Liski, W. Buermann, V. Alexeyev, and M.K. Hughes. 2003. Remote sensing estimates of boreal and temperate forest woody biomass carbon pools, sources, and sinks. *Remote Sensing of Environment* **84**(3): 393-410.
- Zhou, L. R.K. Kaufmann. Y. Tian, R.B. Myneni, and C.J. Tucker, 2003, Relation between interannual variations in satellite measures of vegetation greenness and climate between 1982 and 1999, *Journal of Geophysical Research* 108(D1), 4004, doi:10.1029/2002JD002510,2003.
- Cleveland, C.J. and R.K. Kaufmann, 2003 Oil supply and oil politics: Deja vu all over again. *Energy Policy* **31**:485-489.
- Harvey, L.D. and Kaufmann, 2002. R.K. Simultaneously constraining climate sensitivity and aerosol radiative forcing. *Journal of Climate* **15**(20) 2837-2861.
- Salvucci, G.D., J.A. Saleem, and R. K. Kaufmann, 2002. Investigating soil moisture feedbacks on precipitation with tests of Granger Causality. *Advances in Water Resources* **25**:1305-1312.
- Kaufmann, R.K. Zhou, L, C.J. Tucker, D. Slayback, N.V. Shabanov, and R.B. Myneni. 2002. Reply to the comment by R. Ahlbeck to Variations in northern vegetation activity inferred from satellite data of vegetation index during 1981 to 1999. *Journal of Geophysical Research* Vol. 107(D11), 10.1029/2001JD001516.
- Kaufmann, R.K. and D.I. Stern. 2002 Cointegration analysis of hemispheric temperature relations. *Journal of Geophysical Research*. 107 D2 10.1029, 2000JD000174.
- Seto, K. C.E. Woodcock, C. Song, X. Huang, J. Lu, and R.K. Kaufmann. 2002. Monitoring land-use change in the Pearl River Delta using Landsat TM. *International Journal of Remote Sensing.* 23:1985 2004

Zhou, L, C.J. Tucker, R.K. Kaufmann, D. Slayback, N.V. Shabanov, and R.B. Myneni. 2001. Variations in northern vegetation activity inferred from satellite data of vegetation index during 1981 to 1999. *Journal of Geophysical Research* 106:20069-20083.

Kaufmann, R.K. and K.C. Seto, 2001. Change detection, accuracy, and bias in a sequential analysis of Landsat imagery: a time series technique. *Agriculture, Ecosystems, & Environment.* **85**: 95-105.

Kaufmann, R.K. and C.J. Cleveland, 2001, Oil production in the lower 48 states; Economic, geological, and institutional determinants. *The Energy Journal.* 22:27-49.

Kaufmann, R.K. L. Zhou, Y. Knyazikhin, N.V. Shabanov, R.B. Myneni, and C.J. Tucker. 2000. Effects of orbital drift and sensor changes on the time series of AVHRR vegetation index data *IEEE Transactions on Geoscience and Remote Sensing* **38**(6):2584-2597.

Stern, D.I. and R.K. Kaufmann, 2000, Is there a global warming signal in hemispheric temperature series: a structural time series approach *Climatic Change*. 47:411-438.

Seto, K.C., R.K. Kaufmann, and C.E. Woodcock. 2000. Agricultural land conversion in southern China. *Nature* **406**:121.

Snell, S.E., S. Gopal, and R.K. Kaufmann. 2000. Spatial Interpolation of GCM Forecasts Using Artificial Neural Networks *Journal of Climate* **13**:886-895.

Cleveland, C.J., R. K. Kaufmann and D. I. Stern. 2000. The Aggregation of Energy and Materials in Economic Indicators of Sustainability: Thermodynamic, Biophysical, and Economic Approaches. *Ecological Economics*. **32**:301-317.

Stern D. I. and R. K. Kaufmann. 1999. Econometric analysis of global climate change. *Environmental Modelling and Software* 14: 597-605.

Kaufmann, R.K. S. S.E. Snell, S. Gopal, and R. Dezzani. 1999. The significance of synoptic patterns identified by the Kirchhofer technique: A Monte Carlo approach *International Journal of Climate* **19**(6):619-626.

Kaufmann, R.K. 1998. The impact of climate change on US agriculture: a response to Mendelsohn et al., 1994. *Ecological Economics* **26**:113-119.

Kaufmann, R.K. B. Davidsdottir, S. Garnham, P. Pauly. 1998. The determinants of atmospheric SO₂ concentrations: reconsidering the environmental Kuznets curve. *Ecological Economics* **25**:208-220.

Kaufmann, R.K. and D.I. Stern. 1997. Evidence for human influence on climate from hemispheric temperature relations. *Nature* **388**:39-44.

Kaufmann, R.K. and S. Snell. 1997. A biophysical model of corn yield: Integrating physical and economic determinants. *American Journal of Agricultural Economics*. **79**(1):178-190.

Kaufmann, R.K. 1997. Assessing the DICE model: uncertainty associated with the emission and retention of greenhouse gases. *Climatic Change* **35**:435-448.

Schimel, D.W., M. Grubb, F. Joos, R.K. Kaufmann, R. Moss, W. Ogana, R. Richels, T.M.L. Wigley. 1997. Stabilization of atmospheric greenhouse gases: physical, biological, and socioeconomic implications. IPCC Technical Paper III.

Cleveland, C.J. and R.K. Kaufmann. 1997. Natural gas in the US: How far can technology stretch the resource base? *The Energy Journal* **18**(2):89-108.

Stern, D.I. and R.K. Kaufmann. 1996. Estimates of global anthropogenic methane emissions 1860-1993. *Chemosphere* **33**(1):159-176.

Kaufmann, R.K and C.J. Cleveland. 1995. Measuring sustainability: needed--an interdisciplinary approach to an interdisciplinary concept. *Ecological Economics* **15**:109-112.

Kaufmann, R.K. 1995. A model of the world oil market for Project LINK: Integrating economics, geology, and politics. *Economic Modelling*. **12**(2):165-178.

Kaufmann, R.K. 1995. The economic multiplier of environmental life support: Can capital substitute for a degraded environment? *Ecological Economics* **12**:67-79.

Kaufmann, R.K. 1994. The relation between marginal product and price in US energy markets: Implications for climate change policy. *Energy Economics* **16**(2):145-158.

Kaufmann, R. K. 1994. An empirical analysis of the relation between expected energy prices and energy demand: Implications for carbon taxes and energy conservation. *Resource and Energy Economics* **16**:167-188.

Kaufmann, R.K, W. Gruen, and R. Montesi. 1994. Drilling rates and expected oil prices: The own price elasticity of US oil supply. *Energy Sources* **16**:39-58.

Kaufmann, R.K. 1993. An empirical exploration of the relation among diversity, stability, and performance in economic systems. *Structural Change and Economic Dynamics* 4(2):299-313.

Kaufmann, R.K, P. Pauly, and J. Sweitzer.1993. The effects of NAFTA on the environment. *The Energy Journal* 14:217-240.

Kaufmann, R.K. and L.H. Thompson. 1993. Carbon taxes: Their benefits, liabilities. Forum for Applied Research and Public Policy **8**(3) 113-116.

Kaufmann, R.K. B. Moore, S.Piccot, T. Lynch, and P.J. Chappell. 1992. Tracking the emission of carbon dioxide by nation, sector, and fuel: A trace gas accounting system (TGAS) *Journal of Energy Systems and Policy* **15**:189-210.

Kaufmann, R. K. 1992. A Biophysical analysis of the energy/real GDP ratio: implications for substitution and technical change. *Ecological Economics* **6**(1) 35-56.

Kaufmann, R.K. and C.J. Cleveland. 1992. Failure and impacts of oil policies in the US. *Solar Today* **6**:38.

Kaufmann, R. K. 1991, Limits on the economic effectiveness of a carbon tax. *The Energy Journal.* **12**(4) 139-144.

Kaufmann, R.K. and C.J. Cleveland. 1991. Policies to increase US oil production: Likely to fail, damage the economy, and damage the environment. *Annual Review of Energy and the Environment* **16**:379-400.

Kaufmann, R. K. 1991. Oil production in the lower 48 states: Reconciling curve fitting and econometric models. *Resources and Energy* 13:111-127.

Cleveland, C.J. and R.K. Kaufmann. 1991. Forecasting ultimate oil recovery and its rate of production: Incorporating economic forces into the models of M. King Hubbert. *The Energy Journal.* **12**(2):17-46.

Kaufmann, R.K 1987. Biophysical and Marxist economists: Learning from each other. *Ecological Modelling* **38**:91-105.

Cleveland, C.J. R. Costanza, C.A.S. Hall, R. Kaufmann. 1984. Energy and the United States economy: A biophysical perspective. *Science* 225:890-897.

Kaufmann, R.K. and F. Harvey Pough, 1982, The effect of temperature upon the efficiency of assimilation of preformed water by the desert iguana, *Dipsosaurus dorsalis. J. Comparative Biochem. & Physiology* **72**A:221-224.

ARTICLES UNDER REVIEW

Kaufmann, R.K., A. Argentar, and V. Ballacer, in review, Physiological forcing creates a local relation between temperature and fossil fuel combustion, *Climatic Change*.

POPULAR PRESS

Kaufmann, R.K. 2006, Planning for the peak in world oil production, *World*Watch* **19**(1):19-21.

BOOK CHAPTERS

Kaufmann, R.K. 2009. Using the market to address climate change, *State of the World*, 2009 World Resources Institute, p103-106.

Seto, K.C. C.E. Woodcock, and R.K. Kaufmann, 2004, Changes in land cover and land use in the Pearl River Delta, China, In *Land Change Science*, G Gutman (ed.), Kluwer Academic Publishers.

Kaufmann, R.K. and B. Kuhl. In press. Energy and the macroeconomy. Encyclopedia of Life Support Science.

Cleveland, C,J, R.K. Kaufmann, and D. I Stern, 2004. Aggregation of Energy In *Encyclopedia of Energy Volume 1* Elsevier Press.

Seto, K.C. R.K. Kaufmann, and C.E. Woodcock, 2002. Monitoring land use change in the Pearl River Delta, China. In: Linking People, Place, and Policy: A GIScience Approach. S.J. Walsh and K.A. Crews-Meyer (ed.) Kluwer Academic Press. Boston.

Kaufmann, R.K. 2001. The Environment and Economic Wellbeing In. Frontiers of Environmental Economics H Folmer, H.L. Gabel, S. Gerking and A Rose (Ed). Edward Elgar. Cheltenham, UK

Cleveland, C.J. C.A.S. Hall, and R.K. Kaufmann. 2000. Meeting the Ecological Limits. In Climatic Change: Socioeconomic dimensions and consequences of mitigation measures. P. Pirila (ed.). Edita. Helsinki. pp. 67-123.

Kaufmann, R.K. and P. Pauly. 1998. International aspects of a carbon tax. In LINK Proceedings. Lawrence Klein and Bert Hickman (eds.) World Scientific Publishing Pte. Ltd. pp. 119-152.

R.K. Kaufmann 1997. La relacion entre la degrada ambiental el ingreso y el desarrollo sostenible. IN Medio Ambiente en Latinoamerica: Desafios y propuestas E. Calco, E. Figuerora, and J.R. Vargas (eds.) IIICE Centre Costa Rica.

R.K. Kaufmann. 1992. Is the forecast for carbon taxes generated by TGAS an outlier: Why the forecast generated by other models are too low. In: Controlling Global Carbon Emissions: Costs and Policy Options. Stanford University Press.

Shackleton, R., M. Shelby, A. Cristafaro, R. Brinner, J. Yanchar, L. Goulder, D. Jorgenson, P. Wilcoxen, P. Pauly, and R. K. Kaufmann. In press. The efficiency value of carbon tax revenues. In: Controlling Global Carbon Emissions: Costs and Policy Options. Stanford University Press.

- B. Moore and R.K. Kaufmann. 1992. The carbon cycle and the carbon dioxide problem. In Global Climate Change: Implications, Challenges, and Mitigation Measures. S.K. Mjumdar, L.S. Kalkstein, B. Yarnel, E.W. Miller, and L.M. Rosenfeld. (eds.). p117-144. Pennsylvania Academy of Science, Easton, PA.
- R. Kaufmann. 1989. Will OPEC be able to raise prices by cutting production: A quantitative analysis. In *Competition, Profitability, and Policy in the Energy Industries*. International Association of Energy Economists. pp. 42-53.
- J. Dowd, R. Dye, and R. Kaufmann. 1987. Do flexible functional forms generate accurate elasticities? In *The Changing World Energy Economy*. International Association of Energy Economists pp. 456-460.
- C.A.S. Hall, R. Kaufmann, and C. Cleveland. 1984. Time series analysis of energy and the US economy. In: *Integration of Economy and Ecology -- An Outlook for the Eighties*. M. Jansson (Ed.) Wallenberg Symposium Series pp. 69 72.
- R. Kaufmann, B. Moore, and M.M. Averner. 1983. Modelling gas exchange in a closed biological system. In: *State of the Art in Ecological Modelling*. W.K. Lauenroth, G.V. Skogerboe and M. Flug (Eds.). Amsterdam: Elsevier Scientific pp. 219 227.
- R. Kaufmann and C.A.S. Hall. 1981. Energy return on investment for imported petroleum fuels. In: *Energy and Economic Modelling*. W.J. Mitsch, R.W. Bosserman, and J.M. Klopatek (Eds.). Amsterdam: Elsevier Scientific pp. 697-701.

PUBLISHED REPORTS AND CONFERENCE PROCEEDINGS

- S. Piccot, T. Lynch, R. K. Kaufmann, C.J. Cleveland, and B. Moore. 1991. Project Summary: Analysis of historical radiatively important trace gases (RITG) emissions: Development of a trace gas accounting system (T-GAS) for 14 countries. EPA/600/S9-91-019. Air and Energy Engineering Research Laboratory.
- S. Piccot, T. Lynch, R. K. Kaufmann, C.J. Cleveland, and B. Moore. 1991. Analysis of historical radiatively important trace gases (RITG) emissions: Development of a trace gas accounting system (T-GAS) for 14 countries. EPA -600/9-91-019. National Technical Information Service.
- R. K. Kaufmann and I. Azary-Lee. 1991. A biophysical analysis of substitution: Does substitution save energy in the US forest products industry? In Ecological Economics: Implications for Forest Management and Practice. Dennis P. Bradley and P.O. Nilsson (Eds). The Swedish University of Agricultural Sciences. Garpenberg. pp. 111-123.
- R. Kaufmann. 1989. A new model of the link between energy and economics. In *Proceedings, The Third National Conference of Microcomputer Applications in Energy*. Pages 3-9.

- R. Kaufmann, B. Moore, and M.M. Averner. 1983. A qualitative analysis of gas exchange in a closed ecological life support system. Society of Automotive Engineers Technical Paper Series, 820888.
- B. Moore, R. Kaufmann, and C. Reinhold. 1981. Design and control strategies for a CELSS: integrating mechanistic paradigms and biological complexities. American Society of Mechanical Engineers.

TECHNICAL REPORTS

Kaufmann, R.K. 1994. The Outlook for the World Oil Market. Prepared for the World Project LINK Conference. The United Nations, NY.

Kaufmann, R.K. H.Y. Li, P. Pauly, K Seto, J. Sweitzer. 1993. A Preliminary analysis of international aspects of a carbon tax: the role of the world oil market. Prepared for the US Environmental Protection Agency.

Kaufmann, R.K. 1994. The Outlook for the World Oil Market. Prepared for the World Project LINK Conference. Beijing, The People's Republic of China.

Kaufmann, R.K., and J.L. Sweitzer. 1992. The Effect of Environmental Policy of the Oil and Natural Gas Industry. Prepared for the Japan National Oil Corporation

Kaufmann, R.K. H.Y. Li, P. Pauly, and L.H. Thompson. 1991. Global Macroeconomic Effects of carbon taxes: A feasibility study. Prepared for the US Environmental Protection Agency.

Kaufmann, R. K. and J.L. Sweitzer. 1991. Acid Deposition and Global Warming: Their Relation to and Effect on the Oil and Natural Gas Industry. Prepared for the Japan National Oil Corporation.

B. Moore, R. Kaufmann, S. Wolf, and R. Mason. 1982. CELSS workshop Reports I & II: *Biological problems and experimental program for a controlled ecological life support system*. CELSS Research Reports. Prepared for the National Aeronautics and Space Agency.

BOOK REVIEWS & LETTERS

R.K. Kaufmann, 2005, Book Review, Beyond Oil: The View From Hubbert's Peak,. By Kenneth S. Deffeyes. *Nature* **434**:960.

R.K. Kaufmann. 1996. Book Review: Managing the Global Commons: The Economics of Climate Change. By. W.D. Nordhaus. *Ecological Economics* 19:96.

R.K. Kaufmann. 1996. Book Review: This Fissured Land: An Ecological History of India By M. Gadgil and R. Guha. *Ecological Economics* **18**:260-261.

- R.K. Kaufmann. 1993. Book Review: In the Servitude of Power: Energy and Civilization Through the Ages. By J.C. Debier, J.P. Delage, and D. Hemery. *Ecological Economics* **8**:313-314.
- R. K. Kaufmann. 1993. Book Review: Beyond the Limits. By D. Meadows, D. Meadows, and J. Randers. *Natural Resources Forum* **17**(1):68-69.
- R. K. Kaufmann. 1993. Book Review: Blueprint for a Green Planet. By D. Pearce, A. Makandya, and E. Barbier. *Ecological Economics* 7:75-78.
- C. Cleveland, R. Costanza, C.A.S. Hall and R. Kaufmann. 1985. Energy and Economic Activity. *Science*. **230**:738.

FUNDED RESEARCH

- R.K. Kaufmann (Principal Investigator), Energy efficiency in low income housing, Wells Fargo Bank, August 2015.
- N. Phillips (Principal Investigator), Robert K Kaufmann (Co-investigator). Urban metabolism of Boston, ULTRA-Ex Program, National Science Foundation, October 2009-March 2012 \$209,000
- D. Nepstad (Principal investigator), Woods Hole Research Center, Robert Kaufmann (Coinvestigator) Feedbacks among forestry, fire, and agriculture in Amazonia, Biocomplexity Program National Science Foundation, 9/1/04-8/31/10 \$249,996
- D. Nepstad (Principal investigator), Woods Hole Research Center, Robert Kaufmann (Coinvestigator) A Scientific Framework for Basin Wide Conservation Gordon and Betty Moore Foundation 6/1/03-5/31/06 \$157,999
- R.K. Kaufmann (Principal investigator), R. Myneni (Co-Investigator) Monitoring recent changes in biospheric activity using tree rings and NDVI. With Roseanne D'Arrigo (Principal Investigator) Tree-Ring Laboratory, Lamont Doherty Earth Observatory. National Science Foundation (Ecological Rates of Change) Boston University portion \$149,300 9/1/02-8/31/04
- Myneni, Ranga (Principal investigator), Boston University, R. Kaufmann ((Co-Investigator), The Greening Earth: Proposal for Monitoring the Pulse of Global Vegetation with Data from Multiple Satellites Since 1981 into the 21st Century. \$580,000 12/1/02-11/31/05
- D. Nepstad (Principal investigator), Woods Hole Research Center, (Klink, Carlos, Universidade de Brasilia & Moutinho, Paulo S, Instituto de Pesquisa Ambiental), Robert Kaufmann (Co-investigator) Amazon Scenarios: Modeling Interactions Among Land Use, Fire and Climate. NASA. Boston University portion \$115,000 12/1/02-11/31/05

- R.K. Kaufmann (Principal investigator), C. Woodcock, D. Dye, and K. Seto. Modelling and forecasting land use change in China based on socioeconomic drivers. NASA LCLUC-0002 (\$295,000) May 1, 1997 April 31, 2000.
- R.K. Kaufmann (Principal investigator) and S Gopal and L. Scuderi. The Impact of climate change on US agriculture. National Science Foundation Grant Number #95-23600. (\$155,623) September 1 1995 August 31, 1998.
- C.E. Woodcock, (Principal Investigator), F. El-Baz, C. Cleveland, M. Friedl, S. Gopal, R. Kaufmann, J. Key, D.Dye, R. Myneni, G. Salvucci, A. Strahler, Co-Investigators. Center for Excellence in Remote Sensing at Boston University. NASA (\$380,000) October 1, 1997 September 30, 1998.
- Peter Pauly (Principal Investigator) and R.K. Kaufmann (Co-Principal Investigator) Economic and environmental effects of carbon taxes: A multi-country study. US Environmental Protection Agency \$290,000 (Boston University (\$90,000). October 1, 1992 August 31, 1994.
- R.K. Kaufmann (Principal Investigator). Using Project LINK to assess the emissions of carbon dioxide. US Environmental Protection Agency \$27,755, March 1, 1992 August 31, 1992.
- R.K. Kaufmann (Principal Investigator). Analyzing Non-OPEC oil production. Japan National Oil Corporation. \$12,500. July 1, 1992 August 31 1992.
- R.K. Kaufmann (Principal Investigator) Using Project LINK to assess the emissions of carbon dioxide. US Environmental Protection Agency. \$15,000 September 1 1991 February 28 1992.
- R.K. Kaufmann (Principal Investigator). The effect of environmental policy on the oil and natural gas industry. Japan National Oil Corporation. \$15,000 September 1 1991 January 31 1992.
- R.K. Kaufmann (Principal Investigator) Analyzing the effect of policies to global climate change on economic activity and carbon emissions. US. Environmental Protection Agency. \$10,200 January 1 August 31 1991.
- R.K. Kaufmann (Principal Investigator). Analyzing the effect of policies to slow global warming and acid deposition on the oil and gas industry: Japan National Oil Company (Geography) \$15,000 September 1, 1990 January 31 1991.

New Faculty Seed Grant. Boston University (\$2,000).

FELLOWSHIPS & AWARDS

2016 Bloomberg New Energy Pioneer Award, FirstFuel Software.

Scientific American Fifty Most Important Papers Published in 2001. Zhou, L, C.J. Tucker, R.K. Kaufmann, D. Slayback, N.V. Shabanov, and R.B. Myneni. 2001. Variations in northern vegetation activity inferred from satellite data of vegetation index during 1981 to 1999. Journal of Geophysical Research 106:20069-20083.

Agronomy Journal Editors' Citation for Excellence in Manuscript review, 2000.

The International Association of Energy Economists Publication Award For The Best Paper Published in 1991. Forecasting ultimate oil recovery and its rate of production: Incorporating economic forces into the models of M. King Hubbert.

Chairman's Dissertation Award. University of Pennsylvania. Spring 1988.

University Fellow. University of Pennsylvania. 1984 - 1986.

National Wildlife Federation Publication Award. "Energy and the United States Economy: A Biophysical Perspective." *Science*, 225:890-898 (1984).

RESEARCH PANELS & WORKSHOPS

Coping with volatile oil and commodity prices, European Central Bank, November, 2011.

Commodity prices: drivers and economic impacts, The Bank of England/European Central Bank, London, February 2009.

General Accounting Office, Crude Oil: Uncertainty about future oil supply makes it important to develop a strategy for addressing a peak and decline in oil production, GAO-07-283, February 2007.

Land-Use/Land-Cover Change Steering Committee, NASA.

Project LINK Modelling Center. Built and maintain the model of the world oil market for Project LINK, the econometric model supported by the United Nations.

Intergovernmental Panel on Climate Change. Working Group I.

External drivers of deforestation and regrowth: Human dimensions of deforestation and regrowth in the Brazilian Amazon. Sponsored by the University of Florida, University of New Hampshire, Marathon Florida. February 20-23, 1997.

Assessing the role of human and natural capital in economic production. Sponsored by the MacArthur Foundation and held at the Center for Energy & Environmental Studies, Boston University.

Integrated Models of Global Climate Change: Coupling Social and Natural Sciences. Sponsored by the Potsdam Institute for Research on Climate Change Impacts. Potsdam, Germany.

Complex Ecological Economics Systems Dynamics Workshop. Sponsored by the Beijer Institute, International Institute for Ecological Economics, The Swedish Royal Academy of Sciences.

Stanford Energy Modelling Forum 12. Global Climate Change: Energy Sector Impacts of Greenhouse Gas Emission Control Strategies. September 1990 - June 1992.

Stanford Energy Modelling Forum 11. International Oil Supplies and Demands. September 1989 - September 1990.

INVITED LECTURES

Kaufmann, R.K., Who lost power in Texas during the 2021 winter storm? *Uplight Customer Advisory Board*, Boulder CO, October, 2022.

Kaufmann, R.K., The Effect of Price Volatility on Decisions About Energy Efficiency: Implications for Climate Policy, *Climate Econometrics*, Virtual August, 2021.

Kaufmann, R.K., Using gross primary production to measure the economic benefits of ecosystem services and the economic impacts of climate change, *Euroframe Conference*, Virtual, June 2021.

Kaufmann, R.K., An empirical estimate for the snow albedo feedback effect, *University of Pennsylvania, Department of Economics Econometrics Seminar*, Virtual, April 2021.

Kaufmann, R.K., Does the market price storm risk? home prices, household structural defense, and amenities in the Florida Keys, *Climate Econometrics Seminar Series*, Virtual, January 2021.

Kaufmann, R.K. Feedbacks among electric vehicle adoption, charging, and the cost and installation of rooftop solar. In *ISE Panel Discussion*. Virtual October 2020.

Kaufmann, R.K. A Regionalized or Unified Oil Market: Price Divergence Between WTI and Brent. In *Brent, Oil Supply and Demand, and Geopolitics Symposium*. Virtual, April 2020.

Kaufmann, R. Snow albedo feedback effect. In *Climate Econometrics Board Meeting*. Virtual, Virtual August, 2020.

A Unified World Oil Market: Decoupling between Brent & WTI, Macromodels 2019, Wroclaw, Poland November 2019.

A relation between local forcing and temperature in an urban environment? Climate Econometrics Meeting, Milan, August, 2019

Virtuous circles enhancing the transition to renewables: Causal relations among electric vehicles, rooftop solar, installation costs, and charging stations Project LINK meeting, New York, June 2019.

Why do oil prices stray from fundamentals? Economics Seminar, University of Victoria, February, 2018.

Why do oil prices stray from fundamentals? Project LINK meeting, Santiago, Chile, September 2018.

Pass-through of motor gasoline taxes: efficiency and efficacy of environmental taxes, Project LINK meeting, Geneva, October 2017.

The Spatial Heterogeneity of Climate Change as an Experiential Basis for Skepticism, University of Missouri, March, 2017.

The effect of combined-cycle generation and hydraulic fracturing on prices for coal, oil, and natural gas: implications for carbon taxes, Project LINK Meeting, Toronto, October 2016.

The econometrics of climate change, Oxford University, Oxford, UK, November 2015.

Airfares and oil prices: symmetric airfare Adjustments to a 'feathers and rockets' effect in oil markets. United Nations, New York, New York, October 2015.

The forecast for world oil prices. United Nations, New York, New York, October 2015.

Price differences among crude oils: the private costs of supply disruptions. George Washington University, November 2014.

The relation among trader positions and oil prices: going beyond causal order, Coping with volatile oil and commodity prices, European Central Bank, Frankfurt, Germany, November 2011.

National Contributions to and Moral Responsibility for Climate Change, Public Affairs Lecture Series, Farleigh Dickenson University, NJ October, 2011.

The relation among trader positions and oil prices: going beyond causal order, Coping with volatile oil and commodity prices, New York, New York, October 2011.

The outlook for global oil prices? Project LINK, New York, October 2011.

The role of speculation vs. fundamentals in the recent oil price rise. Plenary Talk OPEC at Fifty, NEPI, Tulsa Oklahoma, March 2011.

Oil supply ands energy transitions in the USSR and USA. Energy Transitions Workshop, Boston University, Boston, MA February 2011.

Testing hypotheses about glacial cycles against the observational record, Woods Hole Oceanographic Institution March 2011.

Testing hypotheses about glacial cycles against the observational record, Boston University Earth Science Seminar, February 2011.

China's Impact on the Global Environment, Brown University, December 2010.

Climate Change: Why So Skeptical? Public Affairs Lecture Series, Farleigh Dickenson University, NJ November, 2010.

Climate Change: Why So Skeptical? SeniorLife, MA October, 2010.

The role of market fundamentals and speculation in recent price changes for crude oil Project LINK, New York, New York, October 2010

Oil and the American Way of Life, Denver, CO August, 2010.

Oil and the American Way of Life, Public Affairs Lecture Series, Farleigh Dickenson University, NJ November, 2009.

The Outlook for Global Oil Prices? Project LINK, Bangkok, Thailand, October 2009

Do Household energy expenditures affect mortgage delinquency rates? Project LINK, Bangkok, Thailand, October 2009.

Oil and the American Way of Life, University of Dayton, Dayton, OH October, 2009.

Oil and the American Way of Life, Princeton Plasma Physics Laboratory, Princeton, NJ April, 2009.

Oil prices, speculation and fundamentals: Why were oil prices so high in the summer of 2008. University of Copenhagen, Copenhagen, Denmark, March 2009.

High & Low crude oil prices: Speculation versus fundamentals, Bank of England, London, February 2009.

Conversion in Amazonia: the importance of rent, Centre d'Etudes et de Recherches sur le Développement International, Cleremont-Ferrand, France, November 2008.

Oil and the American Way of Life, Lafayette College, United States Military Academy at West Point, West Point, NY, November 2008

Anthropogenic Climate Change, How Sure Are We, Lafayette College, Easton, PA October, 2008.

Oil and the American Way of Life, Lafayette College, Easton, PA October, 2008

Urban Myths of the Oil Market, Society for Professional journalists, Atlanta, GA September 2008.

The Relationship Among Temperature, CO₂, CH₄, Ice, and Dust: A VECM Analysis of the Vostok Core, Copenhagen, Denmark, September 2008.

Urban Myths of the Oil Market, Foundation for American Communications, Atlanta, GA April 2008.

Will Oil Prices Decline? A Rerun of the 1980's. European Central Bank, Frankfurt, Germany, January, 2008.

Urban Myths of the Oil Market, Foundation for American Communications, Richmond, VA April 2007.

Climate Change for Beginners, Foundation for American Communications, Nashville, TN November 2007.

Urban Myths of the Oil Market, Foundation for American Communications, Rockford, Illinois, October 2007.

Emissions, concentrations, and temperature: a time series analysis, European Science Foundation, Rome, Italy, September 2007.

Valuing Environmental Services, A Shadow Price for Net Primary Production, Project LINK meeting, Beijing, China May, 2007

Urban Myths of the Oil Market, Foundation for American Communications, Orlando, Florida April 2007.

Urban Myths of the Oil Market, Wellesley College, April 2007.

Does OPEC Matter? An Econometric Analysis, Rennselaer Polytechnic Institute, Troy, NY March, 2007.

Urban Myths of the Oil Market, New York State Energy Office, Albany, NY March 2007

Urban Myths of the Oil Market, Foundation for American Communications, Minneapolis-St. Paul, MN March 2007

The Forecast for Oil Prices: The Role of the Downstream Sector, United Nations, Geneva, Switzerland, November 2006.

It's the Economy, Stupid, and Association for the Study of Peak Oil, Boston, and MA October 2006.

Urban Myths of the Oil Market, Southern California Association of Governments, Los Angeles, CA October 2006.

Urban Myths of the Oil Market, Foundation for American Communications, Urbana, Illinois September 2006.

Urban Myths of the Oil Market, Foundation for American Communications, Hartford, May 2006.

The Coming Oil Transition, Duke University, April, 2006.

After the Peak: When Will the World Run Out of Inexpensive Oil? The European Central Bank, Frankfurt, Germany, March, 2006.

World Oil Markets: Living Off the Past, Planning for the Future. World Project LINK Conference, Geneva Switzerland, October 2005.

Valuing Environmental Services: A shadow Price for Net Primary Production, Harvard University, Cambridge, MA October, 2005.

Urban Myths of the Oil Market, Foundation for American Communications, Houston, September, 2005.

Why are Oil Prices So High? The World Bank, September 2005.

Do OTA Contacts reduce the use and by-products of toxic materials? Scientific Advisory Board—Office of technical Assistance, State of Massachusetts, Boston, MA July, 2005

Oil and the American Way of Life,: Don't Ask, Don't Tell. Fermi National Accelerator Laboratory, Chicago, IL, June 2005.

Modeling OPEC Production, World Project LINK Conference. Mexico City, May, 2005.

Changes in the Annual Cycle of Carbon Dioxide at Mauna Loa, University of Arizona, May 2005.

Urban Myths of the Oil Market, Foundation for American Communications, New Orleans, December 2004.

The Outlook for the World Oil Market. World Project LINK Conference. New York, November, 2004.

Oil and the American Way of Life,: Don't Ask, Don't Tell. Spokane Community College, Spokane, WA October 2004.

The Past, Present, and Future of oil prices, production, & demand. University of Maryland, College Park, MD. October, 2004.

The Past, Present, and Future for World Oil Prices. Brazilian Petroleum Institute, Rio de Janeiro, Brazil. July, 2004.

The effect of land use change on local climate in the Pearl River Delta, China, Rensselaer Polytechnic Institute, March, 2004.

The Outlook for the World Oil Market. World Project LINK Conference. New York, November, 2003.

The mechanisms for autonomous increases in energy efficiency: a cointegration analysis of the US energy/GDP ratio US Society for Ecological Economics Saratoga Springs, NY May, 2003.

Does Opec Matter? The European Central Bank, Frankfurt, May, 2003.

The Outlook for the World Oil Market. World Project LINK Conference. New York, April, 2003.

The effect of war on oil prices. IPEA & the Ministry of Finance, Rio de Janeiro, Brazil. March, 2003.

Monitoring and modeling land-use change in the Pearl River Delta, China, using satellite imagery and socioeconomic data. Harvard University, Cambridge. February, 2003

A model of the world oil market, European Central Bank, Frankfurt, Novermber 2002.

The Outlook for the World Oil Market. World Project LINK Conference. Bologna, October, 2002.

The effect of radiative forcing on surface temperature: a statistical approach. School of Public Health, Boston University. April 2001.

The Outlook for the World Oil Market. World Project LINK Conference. New York, April, 2001.

Monitoring and modeling land-use change in the Pearl River Delta, China, using satellite imagery and socioeconomic data. University of Massachusetts, Boston. April, 2001.

A temperature driven biotic sink for carbon in the northern hemisphere. Harvard University. January 2001.

The economic, geological, and institutional determinants of US oil production. Yale University, December 2000.

The Outlook for the World Oil Market. World Project LINK Conference. Oslo, Norway, October, 2000.

An Alternative Model of the Relation Among the Economy, Energy, and Materials: Implications for Climate Change Policy: Harvard University. June 2000.

Statistical Analysis of the Global Carbon Cycle: Identifying Factors Responsible for Missing Carbon: Woods Hole Research Center, May 2000.

The Outlook for the World Oil Market. World Project LINK Conference. United Nations, New York, April, 2000.

Modelling Land Use Land Cover Change in the Pearl River Delta of China. NASA Principal investigators meeting. Virginia. April 2000.

Emissions, Concentrations, & Temperature: A Time Series Analysis (with Jim Stock). Harvard University. February 2000.

Identifying the date of change in land cover classes from a time series of Landsat images. Waiginengen, Netherlands. December, 1999.

The Outlook for the World Oil Market. World Project LINK Conference. Athens, Greece, November, 1999.

Modelling Land Use Land Cover Change in the Pearl River Delta of China. NASA Principal investigators meeting. Virginia. May 1999.

The Outlook for the World Oil Market. World Project LINK Conference. United Nations, New York, May, 1999.

How much oil remains and why should you care? World Oil Forum, Denver. October 1998.

The Outlook for the World Oil Market. World Project LINK Conference. Brazil, September, 1998.

Modelling corn yield; Soil moisture versus precipitation. Community meeting on integrated assessment. Washington, DC July 1998.

Needed: A Truly Interdisciplinary Approach for Assessing Global Climate Change American Geophysical Union, Boston May 1998.

The Outlook for the World Oil Market. World Project LINK Conference. United Nations, New York, March, 1998.

Evidence for human influence on climate from hemispheric temperature relations World Project LINK Conference. Kuala Lumpur, Malaysia, September, 1997.

The Outlook for the World Oil Market. World Project LINK Conference. United Nations, New York, March 24, 1996.

The future of energy and economics; externalities, depletion, and global integration. Tufts University February 14, 1996.

Natural gas in the US: How far can technology stretch the resource base? International Association of Energy Economists. October 29, 1996.

The Outlook for the World Oil Market. World Project LINK Conference. University of Lausanne, Switzerland, September 30, 1996.

The role of human activity in global temperature: causal order in the historical record and coupled general circulation models. Plenary speaker. International Society of Ecological Economists, August 7, 1996.

The determinants of atmospheric concentrations of SO₂: reconsidering the environmental Kuznets curve. International Society of Ecological Economists, August 7, 1996.

The economic, engineering, and demographic determinants of the energy/GDP ratio: implications for carbon emissions. International Society of Ecological Economists, August 6, 1996.

Can technology reduce emissions of greenhouse gases? Incorporating technology innovation into the consideration of policy responses to human-induced climate change. Center for Global Change. February 9, 1996.

The relation among sustainability, income, and environmental degradation. Seminar on Sustainable development. University of Costa Rica. San Jose, Costa Rica. January 22, 1996.

The Outlook for the World Oil Market. World Project LINK Conference. September 25, 1995. University of Pretoria, South Africa.

The determinants of atmospheric SO₂ concentrations: reconsidering the environmental Kuznets curve. Environmental economics and policy seminar December 7, 1994. Harvard University.

Sustainability: Separating the wheat from the chaff. Sustainable development and environmental quality in the Hudson river valley. November 22, 1994, Garrison, New York.

The relation between marginal product and price in US energy markets. Political Economy of Global Energy. Brown Bag Luncheon Seminar. MIT. March 28, 1994.

The Outlook for the World Oil Market. World Project LINK Conference. March 10, 1994. The United Nations, NY.

The Outlook for the World Oil Market. World Project LINK Conference. September 13, 1993. Beijing, The People's Republic of China.

An Empirical Model of the World Oil Market. New England Chapter International Association for Ecological Economics. MIT. May 16, 1993.

Energy Supply, Economic Activity, and Social Change in the US and Former Soviet Union. Ecological Economics: Linking Economics and the Environment. University of Missouri at St. Louis. March 26, 1993.

An Empirical Model of the World Oil Market. Political Economy of Global Energy. Brown Bag Luncheon Seminar. MIT. March 24, 1993.

Integrating economic and physical models of climate change (Plenary Talk). Integrated Models of Global Climate Change: Coupling Social and Natural Sciences. The Potsdam Institute for Research on Climate Change Impacts. Potsdam, Germany. November 25, 1992.

A User's Guide to Carbon Taxes. University of New Hampshire, October 13, 1992. Durham NH.

An unexpected source of leakages from a unilateral carbon tax. World Project LINK Conference. Ankara, Turkey, September 17, 1992.

The economic cost of reduced yields of corn in Iowa due to climate change. International Society of Ecological Economists. August 6, 1992 Stockholm, Sweden.

The Outlook for the World Oil Market. World Project LINK Conference. September 24, 1991. Moscow, USSR.

Policies to increase US oil production: Likely to fail, damage the economy, and damage the environment. Pennsylvania Energy Office. September 5, 1991. Harrisburg, PA.

A Model of the World oil market for Project LINK. World Project LINK Conference. November 9, 1990 Manila, Philippines.

Tracking the emission of carbon dioxide by nation, sector, and fuel: A trace gas accounting system. International Society for Ecological Economics. May 23, 1990. Washington DC.

A Biophysical Analysis of the Energy/Real GDP Ratio in the "Big Five". International Society for Ecological Economics. May 23, 1990. Washington DC.

A Biophysical Analysis of Substitution: Does Substitution Save Energy in the US Forest Products Industry? Ecological Economics: Implications for Forest Management and Practice. April 4, 1990. St. Paul MN.

World Oil Markets: The Possibility for Another Oil Shock. Wharton International Forum. Wharton Business School, University of Pennsylvania. September 7, 1989.

A New Model of the Link Between Energy and Economics. Plenary Speaker. Third Annual Conference for Microcomputer Applications of Energy Use. November, 1988. Tucson AZ.

Do Flexible Functional Forms Generate Accurate Estimates of Energy Demand? Eighth Annual North American Conference of the International Association of Energy Economists. November, 1986. Boston, Mass.

US Carrying Capacity: What are the Limits? Global Tomorrow Coalition Meeting, June, 1983. Washington, D.C.

Modelling Gas Exchange in a Closed Biological System. Third International Conference on the State of the Art in Ecological Modelling. May 1982. Fort Collins, Colorado.

Net Energy Analysis of Importing Energy. International Symposium on Energy and Ecological Modelling. April 1981. International Society for Ecological Modelling. Louisville, Kentucky.

CONSULTING

European Central Bank. Assembled a long-run forecast for world oil prices.

World Bank. Built model of the world oil market for the modeling division.

ABSAR Corporation, Saudi Arabia, Analyzed the effect of changes in the price of crude oil on end-user prices in OECD nations.

European Central Bank. Built model of world oil market.

IPEA & Ministry of Finance (Brazil) Forecast of US invasion of Iraq on world oil Prices.

Arthur Andersen Consulting. Knowledgespace Consultant.

Nomura Research Institute. 1994. Review of world oil supply and demand models and estimation of energy demand models for newly industrialized economies in Asia.

Japan National Oil Corporation. Built model of world oil market.

Charles River Associates. 1993. Helped assess the effect of the BTU tax included in President Clinton's FY 94 Budget on the US oil production and drilling rates.

Chase Econometrics, Energy, Metals, & Materials. October 1984 - August 1987.

Micromosaics, 1984. Wrote computer program for Ecology Lab, an educational computer game that teaches the fundamental principles of ecology.

WGBH-NOVA, 1985. Wrote the teaching guide for Ecology Lab.

PEER REVIEW

Science Nature

Ecological Economics The International Journal of Forecasting

The Economic Journal Resource and Energy Economics

The Energy Journal Economic Modelling
Landscape Ecology Agronomy Journal
Structural Change and Economic Dynamics Ecological Applications

Energy: The International Journal

The Annals of Regional Science
Environment and Development Economics
Global and Planetary Change

Atmospheric Environment Climatic Change

Review of Economics and Statistics Environmental Management

The Journal of Environmental Economics and Management

Journal of Geophysical Research (D) Atmospheres

PROFESSIONAL SERVICE

Proposal Review

National Science Foundation, NASA, US EPA, US Department of Agriculture, Social Sciences and Humanities Research of Canada, Swiss National Science Foundation.

Review Panels

NASA

Panel for LBA grants (September 1997)

Site visit LBA-Ecology mid tenure review panel February (2001)

Site visit LBA/LCLUCC assessment of Richard Bilsburrow (UNC), Robert Walker (MSU) and Emilio Moran (IU) November 2001)

NSF

Site visit to Carnegie Mellon University to review renewal of NSF grant to the Carnegie Mellon Center for Integrated Study of the Human Dimensions of Global Change (CIS-HDGC) of \$8 million for five years (October 1999)

Review of NSF funding for IIASA (about \$5 Million) February 2001

Media Presentations

I have appeared on the national nightly news on NBC and CBS.

I have been quoted repeatedly in publication such as *The New York Times, National Geographic, Readers Digest* and many newspapers

I have written an Econoblog for *The Wall Street Journal* (with James Hamilton)

About wice a year, I appear on local TV to explain changes in oil prices.

Interviewed by Richard Kerr of *Science* regarding the outlook for world oil prices (Richard A. Kerr OPEC's second coming *Science* **281:**1129.)

Several TV appearances and print interviews for *Journal of Geophysical Research* paper (*Zhou et al.*, 2001).

Research is one of five projects chosen by Boston University to appear on the Boston University Science Coalition Research Website (http://www.bu.edu/research/Features/scicoalition02/warming.html)

Print interviews for *Nature* paper (Kaufmann and Stern, 1997 (e.g. Financial Times of London)

International Society for Ecological Economics

Ran for President of the US chapter of the International Association of Ecological Economists in fall 2000 (Lost).

Helped organize 1996 ISEE meeting at Boston University

UNIVERSITY SERVICE

Director of Graduate Students, Center for Energy and Environmental Studies, Fall 2000 to present

Helped write internal review of the Center for Energy & Environmental Studies

Director, Center for Energy & Environmental Studies, Spring 2000.

Board of Directors, Boston University Children's Center. Spring 1992 - present

Director of Graduate Students, Center for Energy and Environmental Studies, Fall 1989 - Spring 1993.

Freshman and Transfer Summer Advisor, Summer 1990 - 1993.

Chair Search Committee, Department of Geography, Spring 1992

Freshman Friday Lectures, Spring 1992 and Spring 1993.

Center for Talented Youth Lectures, Fall 1992 and Fall 1993.