

July 2016

Carl J. Bauer, Ph.D.
Associate Professor
School of Geography and Development
University of Arizona

P.O. Box 210137 / ENR2 Building, 1064 E. Lowell St., #S-525
Tucson, AZ, 85721, U.S.A.
Tel. 520-621-1917 / Fax 520-621-2889 / cjbauer@email.arizona.edu

For more information, see websites:
<http://geography.arizona.edu/user/84>; <http://cjbauer.faculty.arizona.edu>

**Affiliated Faculty, Arid Lands Resource Sciences Graduate Interdisciplinary Program;
Center for Latin American Studies; College of Law; Global Change Graduate
Interdisciplinary Program; Institute of the Environment; School of Government and
Public Policy; Faculty Associate, Udall Center for Studies in Public Policy**

EXPERTISE / RESEARCH AND TEACHING INTERESTS

Water - Comparative & International Water Law & Policy

- History & Political Economy of Water

Water rights, water markets, & privatization	Hydropower & river basin management
Legal & institutional aspects of water economics	Hydropower as water/energy nexus
Water conflicts, governance, & courts	Environmental flows
Regional expertise in Western United States & Latin America (especially Chile) - Familiar with international water policies & institutions	

Law, Geography, & Environment

Property rights & markets in natural resources & environment

Law & society, law & institutional economics, history & political economy

EDUCATION

Ph.D. (1995), M.A. (1990) *Jurisprudence and Social Policy*, University of California-Berkeley Law School. Interdisciplinary study of law, social sciences, and history. Fields in environmental law and regulation; geography and law (property rights and natural resources). Ph.D. dissertation: *Against the Current? Privatization, Markets, and the State in Water Rights: Chile, 1979-1993*. Ph.D. advisor: Martin Shapiro.

M.S. (1988) *Geography*, University of Wisconsin-Madison. Fields in historical and economic geography of United States; water resources policy and management. M.S. thesis: *Labor Without Brains: Water Development, Law, and Policy in Washington State, 1890-1940*. M.S. advisor: Robert Ostergren.

B.A. (1983) *Geology*, Yale University, New Haven, CT. Thesis: *Reclamation of Land after Surface Mining for Coal*.

EMPLOYMENT

2006-now Associate Professor, School of Geography & Development (SGD), Univ. of Arizona, Tucson, AZ.
Interim Director, SGD, 2012-2013. Acting Director, July-Dec. 2010.

2006-2008 Associate Director, Water Resources Research Center, U. Arizona, Tucson, AZ.

1999-2006 Research Fellow, Resources for the Future, Washington, DC. Policy research and public outreach about comparative and international water law and policy, focused on Latin America and the Western United States. Includes three years working in Chile and Argentina, 2001-2004.

2004 Visiting Professor, Diego Portales University Law School, Santiago, Chile. Helped to create and build new program in Environmental Law and Policy.

Fall 2002 Visiting Professor, Catholic University Law School, Santiago, Chile. Taught course for Chilean doctoral students in Comparative Water Law (in Spanish).

1996-1998 Independent Consultant on water law, policy, and economics to international organizations, including United Nations, World Bank, Global Water Partnership, and others. Oakland, CA.

Spring 1998 Lecturer, Dept. of Geography, Univ. of California-Berkeley. Taught upper-level undergraduate course in Political Economy of Natural Resources.

- 1995-1997** **Ciriacy-Wantrup Post-Doctoral Research Fellow**, Dept. of Environmental Science, Policy, and Management, Univ. California-Berkeley. Research and publications about water rights, markets, and policy in Chile.
- Fall 1993, 1995** **Visiting Professor**, Institute of Mining and Water Law, Univ. of Atacama, Santiago, Chile. Taught course for Chilean lawyers in Comparative Water Law (in Spanish).
- Spring 1995** **Lecturer**, Dept. of Environmental Science, Policy, and Management, Univ. California-Berkeley. Taught upper-level undergraduate course in Sociology of Natural Resources.
- 1989-1991, 1994** **Teaching Assistant**, Univ. California-Berkeley, for upper-level undergraduate courses in Dept. of Legal Studies (Theories of Law and Society; Law, Politics, and Society) and Dept. of Conservation and Resource Studies (U.S. Environmental Law and Policy; U.S. Agricultural Policy and Political Economy).
- 1986-88** **Teaching Assistant**, Univ. of Wisconsin-Madison, for upper-level undergraduate course in Dept. of Geography (Environmental Conservation).
- 1980s** **Carpenter (journeyman)**, custom home-building and remodeling, San Francisco Bay Area, CA.
- 1980-81** **Legal Assistant / Interviewer**, Lawyer Referral Service, Bar Association of San Francisco, San Francisco, CA.

PUBLICATIONS

Books

- 2015** *Canto de Sirenas: El Derecho de Aguas Chileno como Modelo para Reformas Internacionales*, expanded 2nd ed. (Santiago, Chile: Ediciones El Desconcierto.cl). [Spanish translation of *Siren Song* by Juan Pablo Orrego]
- 2004** *Siren Song: Chilean Water Law as a Model for International Reform* (Washington, DC: RFF Press). (<http://www.earthscan.co.uk/?tabid=102216>).
- 2004** *Canto de Sirenas: El Derecho de Aguas Chileno como Modelo para Reformas Internacionales*, Colección Nueva Cultura del Agua No.13 (Bilbao, Spain: Bakeaz). [Spanish translation of *Siren Song* by Juan Pablo Orrego]

- 2002** *Contra la Corriente: Privatización, Mercados de Agua y el Estado en Chile* (Santiago, Chile: LOM Ediciones/Fundación Terram/Resources for the Future). [Spanish translation of *Against the Current* by Juan Pablo Orrego] (www.lom.cl)
- 1998** *Against the Current: Privatization, Water Markets, and the State in Chile* (Boston, MA: Kluwer Academic Publishers).
<http://www.springer.com/earth+sciences+and+geography/hydrogeology/book/978-0-7923-8227-0>).

Journal Articles

- 2016** “Represas y mercados: Ríos y energía eléctrica en Chile,” *Revista de Derecho Ambiental*, Univ. of Chile Law School, Año IV, No. 5, pp. 9-68 [Spanish translation of “Dams and markets: Rivers and electric power in Chile,” *Natural Resources Journal*, 2009]
- 2015** “Water conflicts and entrenched governance problems in Chile’s market model,” *Water Alternatives* Vol. 8, No. 2, pp. 147-172
- 2012** Manuel Prieto and Carl Bauer, “Hydroelectric power generation in Chile: An institutional critique of the neutrality of market mechanisms,” *Water International* Vol. 37, No. 2, pp. 131-146
- 2011** David Tecklin, Carl Bauer, and Manuel Prieto, “Making environmental law for the market: The emergence, character, and implications of Chile’s environmental regime,” *Environmental Politics* Vol. 20, No. 6, pp. 879-898
- 2010** “El abanico de bancos de aguas en las Américas,” *Estudios de Economía Aplicada*, Vol. 28, No. 2, pp. 227-236 (Valladolid, Spain). [“The range of water banks in the Americas”]
- 2009** “Dams and markets: Rivers and electric power in Chile,” *Natural Resources Journal* Vol. 49, Nos. 3-4, pp. 583-651.
- 2009** Dustin Garrick, Mark Siebentritt, Bruce Aylward, Carl Bauer, and Andrew Purkey, “Water markets and freshwater ecosystem services: Policy reform and implementation in the Columbia and Murray-Darling Basins,” *Ecological Economics*, doi:10.1016/j.ecolecon.2009.08.004
- 2005** “In the image of the market: The Chilean model of water resources management,” *International Journal of Water* Vol. 3, No. 2, pp.146-165.
- 2004** “Results of Chilean water markets: Empirical research since 1990,” *Water Resources Research* Vol. 40, W09S06, doi:10.1029/2003WR002838.

- 2000** “Derechos de agua, hidroenergía, y la gestión ecológica de aguas: El caso del oeste norteamericano,” *Revista de Derecho Administrativo Económico* Vol. 2, No. 1, pp. 55-61 (Santiago, Chile). [“Water rights, hydropower, and ecological management of water resources: The case of the North American West,” *Journal of Administrative and Economic Law*]
- 1999** “El mercado de aguas en California,” *Revista de Derecho Administrativo Económico* Vol. 1, No. 2, pp. 231-241 (Santiago, Chile) [“The water market in California,” *Journal of Administrative and Economic Law*] [republished from book chapter, 1996]
- 1998** “Derecho y economía en la Constitución de 1980,” *Perspectivas en Política, Economía y Gestión* Vol. 2, No. 1, pp. 23-47 (Santiago, Chile). [“Law and economics in the 1980 Constitution,” *Perspectives in Politics, Economics, and Management*]
Republished in *El Otro Derecho [Beyond Law]* No. 24, 2000, pp. 129-158 (Bogotá, Colombia).
- 1998** “Slippery property rights: Multiple water uses and the neoliberal model in Chile, 1981-1995,” *Natural Resources Journal* Vol. 38, No. 1 (Winter), pp. 109-155.
Republished in Pedro Arrojo and Javier Martínez, eds., *El Agua a Debate desde la Universidad*, Congreso Ibérico sobre Gestión y Planificación de Aguas, Zaragoza, Spain, 14-18 September 1998 [*Water in Debate from the University*, Iberian Conference on Water Management and Planning].
- 1997** “Bringing water markets down to earth: The political economy of water rights in Chile, 1976-1995,” *World Development* Vol. 25, No. 5, pp. 639-656.
- 1993** “Los derechos de agua y el mercado: Efectos e implicancias del Código de Aguas Chileno de 1981,” *Revista de Derecho de Aguas* Vol. 4, pp. 17-63 (Santiago, Chile). [“Water rights and the market: Effects and implications of the 1981 Chilean Water Code,” *Journal of Water Law*]
- 1993** “Water, property rights, and the State: The United States experience,” *CEPAL Review* No. 49 (April), pp. 75-89 (Santiago, Chile). Published in Spanish as “Régimen jurídico del agua: La experiencia de Estados Unidos,” *Revista de la CEPAL* No. 49, pp. 75-90.
Republished in *Revista de Derecho de Minas y Aguas [Journal of Mining and Water Law]* Vol. 3, pp. 111-128 (Santiago, Chile).

Book Chapters

- 2014** “¿La ley del péndulo? Conflictos de aguas y gobernanza en Chile desde 2005,” in Jorge Aranda, Ximena Insunza, Sergio Montenegro, Pilar Moraga, Ana Lya Uriarte, eds., *Actas de las VII Jornadas de Derecho Ambiental*, pp. 637-373 (Thomson Reuters) [“The law of the pendulum? Water conflicts and governance in Chile since 2005”]

- 2014** Manuel Prieto and Carl Bauer, "Hydroelectric power generation in Chile: An institutional critique of the neutrality of market mechanisms," in Christopher Scott and Bernard de Gouvello, eds., *The Future of Public Water Governance: Has Water Privatization Peaked?*, pp. 47-62 (Routledge). [republished from journal article, *Water International* 2012]
- 2013** "The experience of water markets and the market model in Chile," in Josefina Maestu, ed., *Water Trading and Global Water Scarcity: International Experiences*, pp. 130-143 (RFF Press).
- 2011** Edella Schlager and Carl Bauer, "Governing water: Institutions, property rights, and sustainability," in Peter Wilderer, ed., *Treatise on Water Science*, Vol. 1, pp. 23-33 (Oxford: Academic Press).
- 2005** (Contributing author) "Freshwater ecosystem services," *Ecosystems and Human Well-Being: Policy Responses*, Vol. 3, pp. 213-255, Millennium Ecosystem Assessment (Washington, DC: Island Press).
- 2003** "Activos líquidos: Derechos de aguas, mercados de aguas y consecuencias para los mercados de tierras rurales," in Pedro Tejo, ed., *Mercados de Tierras Agrícolas en América Latina y el Caribe*, pp. 85-125 (Santiago, Chile: Comisión Económica para América Latina y el Caribe). ["Liquid assets: Water rights, water markets, and consequences for rural land markets," in *Agricultural Land Markets in Latin America and the Caribbean*]
- 1996** "El mercado de aguas en California," in Antonio Embid, ed., *Precios y Mercados del Agua*, pp. 179-205 (Madrid, Spain: Editorial Civitas). ["The water market in California," in *Prices and Markets for Water*]

Short Articles and Other Publications

- 2014** Book review of *Tapping Water Markets*, by Terry Anderson, Brandon Scarborough, and Lawrence Watson, *Water Alternatives*, Vol. 7 (2), pp. 436-438
- 2011** Book review of *Out of the Mainstream: Water Rights, Politics and Identity*, by Rutgard Boelens, David Getches, and Armando Guevara-Gil, eds., *Journal of Peasant Studies*, Vol. 38, No. 3, pp. 653-657
- 2010** "Represas y mercados: Ríos y energía eléctrica en Chile," *Ambiente y Desarrollo* Vol. XXIV, No. 2, pp. 5-9 ["Dams and markets: Rivers and electric power in Chile," *Environment and Development*]
- 2010** "Market approaches to water allocation: Lessons from Latin America," *Journal of Contemporary Water Research and Education* No. 144, pp. 44-49

- 2009** Book review of *Water, Place, and Equity*, by John Whiteley, Helen Ingram, and Richard Perry, eds., *Environmental Health Perspectives* Vol. 117, No. 8, p. A366
- 2003** "Marketing water, marketing reform: Lessons from the Chilean experience," *Resources* No. 151 (Summer), pp. 11-14.
Published in Spanish as "Vendiendo agua, vendiendo reformas: Lecciones de la experiencia chilena," *Ambiente y Desarrollo* Vol. XIX, Nos. 3-4, pp. 6-9 [*Environment and Development*]
- 2002** "Veinte años del Código de Aguas chileno: Lecciones nacionales e internacionales para las reformas del derecho de aguas," *Revista de Derecho Administrativo Económico* Vol. 4, No. 1, pp. 51-55 (Santiago, Chile). ["Twenty years of the Chilean Water Code: National and international lessons about water law reforms," *Journal of Administrative and Economic Law*]
- 2000** Carl Bauer and Kate Probst, *Long-Term Stewardship of Contaminated Sites: Trust Funds as Mechanisms for Financing and Oversight*, Resources for the Future Discussion Paper 00-54.
- 2000** "Los resultados del mercado de aguas en Chile," *Revista Tierra* No. 2, pp. 25-26 (Valencia, Spain). ["The results of the water market in Chile," *Earth Journal*]
- 2000** Book review of *Derecho de Aguas* (1998) [*Water Law*] by Alejandro Vergara Blanco, *University of Miami Inter-American Law Review* Vol. 31, No. 1, pp. 197-202. Published in Spanish in *Revista de Derecho Público* [*Journal of Public Law*] Vol. 62, pp. 347-350 (Santiago, Chile).
- 1997** "Water and equity in Chile," *Common Property Resource Digest* No. 43 (Sept.), pp. 5-7.
- 1996** "Economic instruments in integrated water resource management: Advantages and constraints," in Inter-American Development Bank, *Workshop on Strategies for Integrated Water Resource Management in Latin America and the Caribbean: Proceedings*, pp. 114-122 (Washington, DC: Inter-American Development Bank). Workshop held in San José, Costa Rica, 6-7 May 1996. Published in Spanish as "Instrumentos económicos del manejo integrado de recursos hídricos: Ventajas y obstáculos."
- 1996** "Privatización y capacidades institucionales: Los resultados del mercado de aguas en Chile," *Ambiente y Desarrollo* Vol. 12, No. 2, pp. 15-23 (Santiago, Chile). ["Privatization and institutional capacity: The results of the water market in Chile," *Environment and Development*]
- 1992** "Estructura reglamentaria e implementación de derecho ambiental en Estados Unidos: Algunas lecciones," in F. Faranda and O. Parra, eds., *Legislación Ambiental*, Centro EULA, Actas de Seminarios Científicos Vol. 3, pp. 13-18 (Concepción, Chile).

["Regulatory structure and implementation of environmental law in the United States," in *Environmental Legislation*]

INTERNATIONAL CONSULTING EXPERIENCE

- 2016** Political Economy of Water Markets, Ecosystem Economics, LLC (March-July 2016).
- 2013-2015** Senior advisor, U. of Chile, Dept. of Environmental Sciences & Renewable Natural Resources, "Pilot System for Geospatialized Water Bank in Sectors 5 and 6 of Copiapó Aquifer, Chile" (funded by CORFO, Government of Chile).
- 2011-2013** Senior advisor, U. of Chile, Dept. of Environmental Sciences & Renewable Natural Resources, "Sustainable Groundwater Management in Azapa Valley, Chile" (funded by FONDEF, Government of Chile).
- Dec. 2009** Diego Portales University Law School, Santiago, Chile. Taught short course on Water as an Environmental and Economic Resource (in Spanish) for lawyers at Council for Defense of the State, Environment Division, Government of Chile.
- Nov. 2007- Feb. '08** Member, Advisory Committee, Ministry of Environment, Government of Spain. Co-author of report, *Estado de la Cuestión en Materia de Transferencia de Derechos Privativos de Uso de Aguas en España*, about current issues in transferring private water rights in Spain; wrote appendix, "El Abanico de Bancos de Aguas en las Américas" ["The range of water banks in the Americas"].
- Jan.-May 2004** World Bank, Mexico City, Mexico. Wrote report, "El PADUA y los Mercados de Derechos de Agua en México," analyzing water rights markets in Mexico in relation to conservation of groundwater. (See M. Asad and H. Garduño (2005) *Water Resources Management in Mexico: The Role of the Water Rights Adjustment Program (WRAP) in Water Sustainability and Rural Development*, World Bank Sustainable Development Working Paper No. 24, pp. 41-45.)
- July 2002** Center of Applied Economics, University of Chile, Santiago, Chile. Taught short course on Regulation of Water Resources (in Spanish), for staff at the Chilean government's regulatory agency for drinking water and sanitation (*Superintendencia de Servicios Sanitarios*).

- Oct. 1998** World Bank, Washington, DC. Wrote report, "Recent Trends in Water Law and Management in Latin America: A Review of the Literature about Empirical Assessment."
- June-Aug. 1998** Associate Economic Affairs Officer, United Nations Economic Commission for Latin America and the Caribbean, Agricultural Development Unit, Santiago, Chile. Wrote report on the significance of water rights and water markets for rural land markets, for ECLAC / GTZ Project on Rural Land Markets in Latin America.
- Nov. 1997** United Nations Economic Commission for Latin America and the Caribbean, Agricultural Development Unit, Santiago, Chile. Taught short course on Water as a Productive Resource in Agriculture (in Spanish) for U.N. professional staff.
- Oct. 1997-Mar. '98** Carl Bro International / Danish International Development Assistance. Taught short course on Water Economics and Use of Economic Instruments in Water Management (in Spanish), for government staff and other stakeholders; analyzed the use of economic instruments in the Nicaragua Action Plan for Water Resources, Ministry of Environment and Natural Resources, Managua, Nicaragua.
- April 1997** United Nations Dept. for Development Support and Management Services. Invited by China's Ministry of Water Resources to participate in International Seminar on the Role of Laws, Institutions and Capacity Building: Sustainable Water Management for China, held at Nanjing Institute of Hydrology and Water Resources, Nanjing, China, 21-25 April 1997. Presented the United States experience in river basin management (Tennessee Valley Authority) and water markets.
- Sept. 1996** Global Water Partnership / Swedish International Development Agency, Stockholm, Sweden. Wrote paper on water markets in relation to the Principles of Dublin.
- Apr.-May 1996** Inter-American Development Bank, Environment Division, Washington, DC. Wrote and presented paper on economic instruments in integrated water resource management (in Spanish) at IADB Workshop on Strategies for Integrated Water Resource Management, with Latin American government officials, San José, Costa Rica, 6-7 May 1996.
- Oct.-Dec. 1993** United Nations Economic Commission for Latin America and the Caribbean, Agricultural Development Unit, Santiago, Chile. Wrote report analyzing recent evolution and tendencies of U.S. agricultural policies (in Spanish).

INVITED INTERNATIONAL TALKS**Academic**

- 2016** “Ventajas y debilidades del modelo chileno de la gobernanza del agua,” Diplomado en Gestión de Aguas, U. of Chile, Dept. of Environmental Sciences and Renewable Natural Resources, Santiago, Chile (June). [“Strengths and weaknesses of the Chilean model of water governance”]
- 2015** “Ventajas y debilidades del modelo chileno de la gobernanza del agua,” Diplomado en Gestión de Aguas, U. of Chile, Dept. of Environmental Sciences and Renewable Natural Resources, Santiago, Chile (July). [“Strengths and weaknesses of the Chilean model of water governance”]
- 2014** *Inaugural plenary lecture, “¿La ley del péndulo? Conflictos de aguas y gobernanza en Chile desde 2005,”* VII Jornadas de Derecho Ambiental, University of Chile Law School, Santiago, Chile (October). [“The law of the pendulum? Water conflicts and governance in Chile since 2005,” 7th Biennial Conference on Environmental Law]
- 2014** “Ventajas y debilidades del modelo chileno de la gobernanza del agua,” Diplomado en Gestión de Aguas, U. of Chile, Dept. of Environmental Sciences and Renewable Natural Resources, Santiago, Chile (May) and Copiapó, Chile (June). [“Strengths and weaknesses of the Chilean model of water governance”]
- 2013** “Water/energy nexus: Legal, regulatory, and policy challenges,” Pan-American Advanced Studies Institute: Adaptive Water-Energy Management in the Arid Americas, funded by U.S. National Science Foundation, La Serena, Chile (July).
- 2013** “Ventajas y debilidades del modelo chileno de la gobernanza del agua,” Diplomado en Gestión de Aguas, U. of Chile, Dept. of Environmental Sciences and Renewable Natural Resources, Santiago, Chile (June). [“Strengths and weaknesses of the Chilean model of water governance”]
- 2012** “Virtudes y debilidades del modelo chileno de derechos de aguas,” Diplomado en Gestión de Aguas, U. of Chile, Dept. of Environmental Sciences and Renewable Natural Resources, Arica, Chile (June). [“Strengths and weaknesses of the Chilean model of water rights”]
- 2012** “Algunas reflexiones sobre tendencias recientes en política de aguas en Chile,” University of Chile, Dept. of Environmental Sciences and Renewable Natural Resources, Santiago, Chile (March). [“Reflections on recent trends in water policies in Chile”]

- 2011** “Represas y mercados: Los ríos y la generación eléctrica en Chile,” Univ. de los Andes, Dept. of History and Geography, Bogotá, Colombia (October). [“Dams and markets: Rivers and electric power in Chile”]
- 2011** “Intercambios de derechos de aguas,” Speaker and coordinator of workshop, 7th Iberian Conference on Water Management and Planning, Talavera de la Reina, Spain (February). [“Exchanges of water rights”]
- 2010** “El modelo chileno de la gestión de aguas,” University of Chile, Dept. of Environmental Sciences and Renewable Natural Resources, Santiago, Chile (June). [“The Chilean model of water management”]
- 2009** *1st Annual Lecture*, “Represas y mercados: Los ríos y la generación eléctrica en Chile,” Environmental Law and Policy Program, Diego Portales University Law School, Santiago, Chile (July). [“Dams and markets: Rivers and electric power in Chile”]
- 2009** “Derecho y política de aguas en Chile,” University of Chile, Dept. of Environmental Sciences and Renewable Natural Resources, Santiago, Chile (July). [“Water law and politics in Chile”]
- 2008** “Mercados y bancos de agua en Chile y EEUU,” Colegio de Sonora, Hermosillo, Mexico (May). [“Water markets and banks in Chile and the US”]
- 2006** *Plenary lecture*, “El abanico de los bancos de aguas en las Américas,” 5th Iberian Conference on Water Management and Planning, Faro, Portugal (December). [“The range of water banks in the Americas”]
- 2005** “Hydropower law and regulation in Chile,” Pan-American Advanced Study Institute: Balancing Hydropower Development and Biodiversity, funded by U.S. National Science Foundation, Concepción, Chile (January).
- 2003** “Canto de sirenas: El derecho de aguas chileno como modelo para reformas internacionales,” Dept. of Economics, University of CEMA, Buenos Aires, Argentina (October). [“Siren song: Chilean water law as a model for international reform”]
- 2002** “Derecho y economía de recursos hídricos: Veinte años del modelo chileno,” 7th Annual Conference of Latin American Law and Economics Association, Santiago, Chile (December). [“Law and economics of water resources: Twenty years of the Chilean model”]
- 2002** “Veinte años después del Código de Aguas: La experiencia chilena desde la mirada internacional,” 5th Annual Chilean Conference on Water Law, Catholic University, School of Law, Santiago, Chile (November). [“Twenty years after the Water Code: The Chilean experience in international perspective”]

- 2002** “Veinte años después del Código de Aguas neoliberal de Chile: Lecciones sobre las reformas del derecho y economía del agua,” Center for Applied Economics, University of Chile, Santiago, Chile (May). [“Twenty years after Chile’s neoliberal Water Code: Lessons about reforming water law and economics”]
- 2001** “Veinte años del Código de Aguas chileno: Lecciones nacionales e internacionales para las reformas del derecho de aguas,” 4th Annual Chilean Conference on Water Law, Catholic University, School of Law, Santiago, Chile (November). [“Twenty years of the Chilean Water Code: National and international lessons about water law reforms”]
- 2001** “Los mercados de aguas en Chile: Implicancias del modelo neoliberal,” Dept. of Applied Economics, University of La Laguna, Tenerife, Canary Islands, Spain (March). [“Water markets in Chile: Implications of the neoliberal model”]
- 2000** “Mercados de aguas en el mundo,” Iberoamerican University-León, for certificate program in Integrated Water and Watershed Management organized jointly with the State of Guanajuato Water and Sanitation Commission, León, Mexico (June). [“Water markets in the world”]
- 1999** “Derecho y economía en la Constitución chilena de 1980,” Diego Portales University Law School, Santiago, Chile (December). [“Law and economics in the 1980 Chilean Constitution”]
- 1999** *Inaugural plenary lecture*, “Derechos de agua, hidroenergía, y la gestión ecológica de aguas: El caso del oeste norteamericano,” 2nd Annual Chilean Conference on Water Law, Catholic University Law School, Santiago, Chile (November). [“Water rights, hydropower, and ecological management of water resources: The case of the North American West”]
- 1998** *Plenary lectures*, “La gestión de las aguas en California” [“Water management in California”] and “El mercado de las aguas en Chile” [“The water market in Chile”], 1st Annual Chilean Conference on Water Law, Catholic University Law School, Santiago, Chile (November).
- 1998** “Los usos múltiples del agua y el modelo neoliberal en Chile,” Iberian Conference on Water Management and Planning, University of Zaragoza, Zaragoza, Spain (September). [“Multiple water uses and the neoliberal model in Chile”]
- 1998** “Derechos de propiedad y mecanismos de mercado en la gestión del agua: El modelo chileno,” Dept. of Economics and Economic History, University of Salamanca, Salamanca, Spain (September). [“Property rights and market mechanisms in water management: The Chilean model”]

- 1998** “Derechos y mercados de aguas en Estados Unidos y Chile,” Catholic University Law School, Santiago, Chile (July). [“Water rights and water markets in the U.S. and Chile”]
- 1996** *Plenary lecture*, “El mercado de aguas en California,” 6th Annual Conference on Water Law, University of Zaragoza Law School, Zaragoza, Spain (March). [“The water market in California”]
- 1995** “La definición de derechos de propiedad: Derecho, economía y el uso múltiple de aguas en Chile,” Center for Applied Economics, University of Chile, Santiago, Chile (November). [“Defining property rights: Law, economics, and multiple water use in Chile”]

Public and Professional Outreach

- 2015** “Conflictos de agua y problemas de gobernanza en Chile,” Reunión de Expertos, “La Formulación de Políticas de Agua en el Contexto de la Agenda de Desarrollo Post-2015,” U.N. Economic Commission for Latin America & Caribbean, Santiago, Chile (July). [“Water conflicts and governance problems in Chile”]
- 2014** “Mercados de aguas con fines ambientales y gobernanza de cuencas/GIRH,” Iniciativa del Agua y Medio Ambiente, Santiago, Chile (June). [“Water markets for environmental purposes and integrated basin governance”]
- 2011** “La gobernanza del agua: Orígenes y futuros,” International Conference on Water and Economy, Central Bank of Colombia, Bogotá, Colombia (October). [“Water governance: Origins and futures”]
- 2008** “The experience of Chilean water markets,” Expo Zaragoza Water Tribune, Thematic Week on Economics and Financing: The Role of Market Instruments in Integrated Water Management, Zaragoza, Spain (July).
- 2007** “La sequía y los derechos de agua en el Siglo XXI,” International Forum on Drought, Sevilla, Spain (June). [“Drought and water rights in the 21st Century”]
- 2006** “25 years of pro-market water reforms in Chile: Impacts on the rural poor,” International Conference on Water Reform and Access to Water for the Rural Poor, Danish Water Forum / Danish Institute for International Studies / Danida, Copenhagen, Denmark (September).
- 2005** *Keynote lecture*, “La experiencia de los bancos de aguas en las Américas: Los casos de California y Chile,” Conference on Public Water Banks: An Effective Tool in Times of Drought, Ministry of Environment, Madrid, Spain (October). [“The experience of water banks in the Americas: California and Chile”]
Also presented to Catalan Water Agency, Barcelona, Spain (October).

- 2005** “El Código de Aguas y la regulación ambiental en Chile,” International Conference on Hydroelectric Development in Chilean Patagonia: Challenges, Research Needs, and the Decision-Making Process, Coyhaique, Chile (January). [“The Water Code and environmental regulation in Chile”]
- 2004** “Canto de sirenas: El derecho de aguas chileno como modelo para reformas internacionales,” presentation to the Director and senior staff at General Water Directorate, the Chilean government agency for water rights and water resources management, Santiago, Chile (August). [“Siren song: Chilean water law as a model for international reform”]
- 2003** “Canto de sirenas: El derecho de aguas chileno como modelo para reformas internacionales,” National Institute of Public Administration, Buenos Aires, Argentina (October). [“Siren song: Chilean water law as a model for international reform”]
- 2003** “Gestión de cuencas hidrográficas en los EEUU,” General Department of Irrigation, Mendoza Province, Mendoza, Argentina (April). [“River basin management in the U.S.”]
- 2002** “Veinte años después del Código de Aguas de 1981: Lecciones de la experiencia chilena para las reformas del derecho y economía del agua,” Institute for Agricultural Development, Ministry of Agriculture, Santiago, Chile (September) and Santa Cruz, Chile (October). [“Twenty years after the 1981 Water Code: Lessons of the Chilean experience for reforming water law and economics”]
- 2000** “Activos líquidos: Derechos de agua, mercados de agua y las implicancias para los mercados de tierras rurales,” Regional Seminar about Land Markets in Latin America and the Caribbean, United Nations Economic Commission for Latin America and the Caribbean, Santiago, Chile (November-December). [“Liquid assets: Water rights, water markets, and the implications for rural land markets”]
- 1999** “Los mercados de aguas en la gestión de aguas,” EXPO-AGUA 2000, organized by State of Guanajuato Water & Sanitation Commission, León, Mexico (September). [“Water markets in water management”]
- 1998** “Mercados e instrumentos económicos en la gestión del agua,” 1st Latin American Parliamentary Session on Water Policies, organized by the Senate of Argentina and the United Nations Economic Commission for Latin America and the Caribbean, Buenos Aires, Argentina (November). [“Markets and economic instruments in water management”]

- 1998** “Los mercados de aguas y los organismos de cuencas,” 1st Congress of the Latin American Network of River Basin Organizations, Bogotá, Colombia (August). [“Water markets and river basin organizations”]
- 1997** “El Código de Aguas y la pequeña agricultura,” Institute of Agricultural Development, Ministry of Agriculture, Santiago, Chile (December). [“The Water Code and peasant agriculture”]
- 1997** “Instrumentos económicos en el manejo de aguas,” International Workshop on Water Resources Management, organized by Nicaragua Action Plan for Water Resources, Managua, Nicaragua (September). [“Economic instruments in water management”]
- 1995** “Privatización, regulación y los arreglos institucionales en Chile,” International Conference on Privatization of Water Utilities, United Nations Economic Commission for Latin America, Santiago, Chile (October). [“Privatization, regulation, and institutional arrangements in Chile”]

INVITED TALKS IN U.S.A.

Academic

- 2014** “Drought, water rights reform, and hydropower in Chile and California,” 3rd Chile-California Conference, U. of California-Berkeley, Berkeley, CA (November).
- 2014** “Water, law, and development in Chile/California cooperation, 1960s-1970s,” Hemispheric Institute on the Americas, U. of California-Davis, Davis, CA (October).
- 2014** “Chilean water policy and water rights,” U. of California-Davis Law School, Water Association of Law & Policy and the Environmental Law Society, Davis, CA (October).
- 2013** “Hydropower governance and historical geography in California: Water rights and electricity law since 1890s,” Center for the Study of Law and Society, U. of California-Berkeley, Berkeley, CA (March).
- 2012** “Water and law in Chile and California, 1960s to present,” Utah State Univ., College of Natural Resources, 3rd Annual Distinguished Geographer Lecture (March).
- 2010** “River governance and water markets in Chile: Law, economics, and geography,” Dept. of Geography, U. New Mexico (April).
- 2010** “Ups and downs of the Chilean water model,” Dept. of Geography, University of California-Berkeley, Berkeley, CA (January).

- 2010** "Dams and markets: Rivers and electric power in Chile," Center for Watershed Sciences, University of California-Davis, Davis, CA (January).
- 2008** "Rivers and power in Chile," Dept. of Geography, University of Arizona, Tucson, AZ (May).
- 2005** "Free markets and water reforms: The Chilean experience and international water policy debates," Dept. of Geography, University of Arizona, Tucson, AZ (December).
- 2005** "Hydropower, river protection, and negotiating water rights in Chilean Patagonia," International Association for the Study of Common Property, seminar hosted by the International Food Policy Research Institute, Washington, DC (May).
- 2001** "Water and power markets in South America: Legal underpinnings of neoliberal economics," Department of Economics, University of Washington, Seattle, WA (May).

Public and Professional Outreach

- 2016** "Chile case study: Maipo River basin and national policy reforms," Political Economy of Water Markets Workshop, Ecosystem Economics, LLC, Stanford Univ., Palo Alto, CA (May).
- 2004** "Siren song: Chilean water law as a model for international reform," Resources for the Future, Public Seminar Series, Washington, DC (June).
- 2003** "Canto de sirenas: El derecho de aguas chileno como modelo para reformas internacionales," Inter-American Development Bank, Washington, DC (June). ["Siren song: Chilean water law as a model for international reform"]
- 2001** "Water rights and markets in Chile: Lessons for Washington," Washington Water Law Conference, Law Seminars International, Seattle, WA (May).

CONFERENCE PRESENTATIONS (U.S. & INTERNATIONAL)

- 2016** "Water conflicts and entrenched governance problems in Chile's market model," American Association of Geographers Annual Conference, San Francisco, CA (March).
- 2015** "Water, law, and development in Chile/California cooperation, 1960s-1970s," Law and Society Association Annual Conference, Seattle, WA (May).
- 2013** "Water, law, and development in the Chile/California programs," Association of American Geographers Annual Conference, Los Angeles, CA (April).

- 2011** “Water and energy governance in Chile and California: Law and geography and global change,” Law and Society Association Annual Conference, San Francisco, CA (June).
- 2011** “Water and energy governance in Chile and California: Law and geography and global change,” Association of American Geographers Annual Conference, Seattle, WA (April).
- 2010** “Fifty years of Chile/California programs: Water science, politics, and reform,” North American Regional Meeting of International Association for the Study of the Commons, Arizona State University, Tempe, AZ (October).
- 2010** “Gobernanza regulatoria de la hidroelectricidad en Chile: El nexo agua-energía,” *Gobernanza y Conflictos del Agua en las Americas*, Seminar of GDRI, International Research Network on Water Governance and Access to Water in the Americas, National Center for Scientific Research, France, held at Diego Portales University Law School, Santiago, Chile (June). [“Regulatory governance of hydroelectricity in Chile: The water-energy nexus”]
- 2009** “Dams and markets: Rivers and electric power in Chile,” Law and Society Association Annual Conference, Denver, CO (May).
- 2007** “Rivers and power in Chilean Patagonia,” Association of American Geographers Annual Conference, San Francisco, CA (April).
- 2006** “Hydropower and electricity regulation in Chile: Prologue to Patagonia,” Law and Society Association Annual Conference, Baltimore, MD (July).
- 2004** “Siren song: Chilean water law as a model for international reform,” *Author-meets-readers book panel*, Law and Society Association Annual Conference, Chicago, IL (May).
- 2002** “Twenty years after Chile’s free market Water Code: Lessons about reforming water law and economics,” *Allocating and Managing Water for a Sustainable Future: Lessons from Around the World*, 23rd Summer Conference on Water Law, University of Colorado, Natural Resources Law Center, Boulder, CO (June).
- 2000** “Second generation reforms and the rule of law in Chile and Argentina: Privatization and regulation in water, energy, and environment,” Law and Society Association Annual Conference, Miami Beach, FL (May).
- 1998** “Understanding Pangué Dam: Multiple water uses and the neoliberal institutional model in Chile,” 5th Biennial Conference, International Society for Ecological Economics, Santiago, Chile (November).

- 1996 "Why have water markets in Chile been so inactive?" 71st Annual Western Economic Association International Conference, San Francisco, CA (July).
- 1996 "Slippery definitions of property rights: Multiple water uses and the market model in Chile," 6th Annual Conference of International Association for the Study of Common Property, Berkeley, CA (June).
- 1995 "The contradictory role of the judiciary in Chile's neoliberal economic model," 1st Congress of the Latin American Law and Economics Association, Mexico City, Mexico (February).

OTHER PUBLIC OUTREACH

Interviewed regularly by journalists in U.S., Latin America, Spain, and other countries (TV, radio, print, and web media).

Invited talks at meetings in Tucson of local governmental and non-governmental organizations dealing with water: e.g., Sustainable Tucson (community group); City of Tucson and Pima County Water/Wastewater Study; Tucson Rotary Club.

INTERNATIONAL RESEARCH COLLABORATION

Participating faculty, AQUASEC, Center for Water Security, international network led by Univ. of Arizona and Catholic University of Chile (2011-now).

Member and lead U.S. partner, International Research Network on Water Governance and Access to Water in the Americas, National Center for Scientific Research, France (2007-2012). Network consisted of universities and research institutes in France, U.S.A., Chile, and Argentina. Network led by Dr. Graciela Schneier-Madanes, CNRS.

PROFESSIONAL SERVICE

Member, Series Advisory Committee, RFF Press Book Series, *Issues in Water Resource Policy*

Member, Editorial Board, *Water Alternatives* (www.water-alternatives.org), 2007-now

Member, Constitution & By-Laws Committee, Association of American Geographers, 2011-2014; Chair, 2013-2014

Article manuscript reviewer for the following journals:
Annals of the Association of American Geographers

Environment & Planning D: Society & Space
Geoforum
Geographical Journal
Global Environmental Politics
International Journal of Water
Journal of the American Water Resources Association
Law and Society Review
Regional Environmental Change
Regulation & Governance
Singapore Journal of Tropical Geography
Water Alternatives
Water International
Water Policy
Water Resources Research
World Development

Book manuscript reviewer for university presses and other specialized publishers.

Proposal reviewer for National Science Foundation; Social Sciences and Humanities Research Council of Canada; Netherlands Organization for Scientific Research.

Co-organizer of numerous sessions and workshops at academic conferences.

Professional memberships:

Association of American Geographers (member, Water Resources Specialty Group, Energy & Environment Specialty Group)

Law and Society Association (member, Collaborative Research Network on Regulatory Governance)

Universities Council on Water Resources (delegate, U. of Arizona)

UNIVERSITY OF ARIZONA SERVICE

Director of Graduate Studies, SGD, 2008-2012, 2015-now.

Faculty Coordinator, UA Graduate Certificate in Water Policy, 2007-2013.

HONORS, AWARDS, FELLOWSHIPS

2011 **Udall Center/Institute of the Environment Fellowship**, University of Arizona.
Release from teaching to conduct research for Fall semester.

- 2009** **1st Annual Lecture in Environmental Law and Policy**, Diego Portales University Law School, Santiago, Chile (July).
- 2003** **Fulbright Scholar Award for Lecturing/ Research**, U.S. Dept. of State and Council for International Exchange of Scholars, for a semester at National University of Cuyo, Dept. of Political and Social Sciences, Mendoza, Argentina. Taught post-graduate seminar about Contemporary Issues in Comparative Water Law and Economics (in Spanish). Research about hydropower, water, and energy policies in Argentina.
- 2001-2002** **Visiting Scholar**, Center for Applied Economics, University of Chile, Santiago, Chile. Research about water and energy policy in Chile.
- 1997-1999** **Visiting Scholar**, Dept. of Environmental Science, Policy, and Management, University of California-Berkeley. Research about water law, policy, and institutions in Latin America.
- 1995-1997** **Ciriacy-Wantrup Post-Doctoral Research Fellowship**, University of California-Berkeley, Dept. of Environmental Science, Policy, and Management.
- 1994** **John M. Olin Foundation Fellowship.**
George C. and Helen N. Pardee Scholarship.
 Support for Ph.D. dissertation write-up, University of California-Berkeley.
- 1991-1993** **Fulbright-Hays Fellowship for Doctoral Dissertation Research Abroad.**
Social Science Research Council International Dissertation Fellowship.
Inter-American Foundation Dissertation Fellowship.
 Support for Ph.D. field research in Chile. While in Chile, affiliated with United Nations Economic Commission for Latin America (Santiago); University of Concepción (Concepción); and Institute of Mining and Water Law, University of Atacama (Santiago).
- 1990** **Tinker Foundation/ U. California-Berkeley Center for Latin American Studies.**
 Grant for summer travel to Chile for exploratory research.
- 1989** **Tinker Foundation/ U. California-Berkeley Center for Latin American Studies.**
 Grant for summer travel to Bolivia for exploratory research.
- 1989** **U.S. Dept. of Education, Foreign Language and Area Studies Summer Language Fellowship.**
 Grant for Spanish language study in Mexico (June-July).
- 1985-86** **Wisconsin Alumni Research Foundation Fellowship**, U. Wisconsin-Madison.

COURSES TAUGHT AT UNIVERSITY OF ARIZONA (2007-now)

Geography 596I: Comparative and International Water Policy (graduate)

Geography 596L: Law, Geography, and Property (graduate)

Geography 696J: Water Resources Geography: Drought, Climate Change, & Water Policy (graduate) (co-taught with Connie Woodhouse)

Geography 468: Water and Sustainability (undergraduate)

Geography 462: Environmental Law, Geography, and Society (undergraduate)

Geography 304: Water, Environment, and Society (undergraduate)

GRADUATE STUDENTS AT U. ARIZONA

Advisor for 11 Ph.D. students in Geography (3 finished, 8 in process), working in U.S.A., Chile, Israel, Mexico:

Manuel Prieto, 2014, dissertation: "Privatizing Water and Articulating Indigeneity: The Chilean Water Reforms and the Atacameño People (Likan Antai)"

David Tecklin, 2014, dissertation: "Environmental Governance and the Politics of Property in Chile"

Dustin Garrick, 2010, dissertation: "Explaining Institutional Diversity in Emerging Markets for Environmental Flows: A Transaction Costs Approach to Comparative Policy Evaluation in the Columbia Basin"

Committee member for 13 Ph.D. students, 8 in Geography (7 finished) and 5 in other UA programs (all finished)

Advisor for 5 M.A. students in Geography (all finished), working in Mexico, Chile, U.S.A.:

Sophia Borgias, 2016, thesis: "Law, Scarcity, and Social Movements: Water Governance in Chile's Maipo River Basin"

Noah Silber-Coats, 2015, thesis: "Private Hydropower and the Politics of Nature in Mexico's Sierra Madre Oriental"

Amy Stabler, 2014, thesis: "Green River Gridlock: In Search of Consensual Water Governance in Arizona's Verde Valley"

Sarah Kelly-Richards, 2013, thesis: "Tracing Informality's Influence: A Participatory Research Approach to Land Tenure and Sanitation Formalization in Nogales, Sonora"

Committee member for 2 M.A. students in Geography (1 finished)

Committee member for 2 S.J.D. students in Law (i.e. doctorate in law), 1 at UA and 1 at Rovira i Virgili University, Spain (both finished, both Chilean lawyers)

Committee member for 1 LL.M. student in Law (in process)

COURSES TAUGHT PRIOR TO U. OF ARIZONA

- 2003** *Contemporary Issues in Comparative Water Law and Economics* (in Spanish), Department of Political and Social Sciences, National University of Cuyo, Mendoza, Argentina. Postgraduate seminar for university faculty, government officials, and graduate students. Taught while Fulbright Scholar (see **HONORS AND AWARDS**).
- 2002** *Comparative Water Law* (in Spanish) Catholic University Law School, Santiago, Chile. Graduate seminar for doctoral students.
- 1998** *Political Economy of Natural Resources*, Dept. of Geography, University of California-Berkeley. Upper-level undergraduate lecture course.
- 1995** *Sociology of Natural Resources*, Dept. of Environmental Science, Policy, and Management, University of California-Berkeley. Upper-level undergraduate lecture course.
- 1993, '95** *Comparative Water Law* (in Spanish), for lawyers in professional master's program, Institute of Mining and Water Law, University of Atacama, Santiago, Chile.
- 1989-94** **Teaching Assistant**, University of California-Berkeley, Dept. of Legal Studies: *Theories of Law and Society; Law, Politics, and Society*.
Dept. of Conservation and Resource Studies: *U.S. Environmental Law and Policy; U.S. Agricultural Policy and Political Economy*.
- 1986-88** **Teaching Assistant**, University of Wisconsin-Madison, Dept. of Geography: *Environmental Conservation*.

SHORT COURSES FOR PROFESSIONALS (all taught in Spanish)

See **International Consulting**.

- 2009** *Water as an Environmental and Economic Resource*, for lawyers at Council for Defense of the State, Environment Division, Government of Chile; taught at Diego Portales University Law School, Santiago, Chile.
- 2002** *Regulation of Water Resources*, for staff of the Superintendency of Sanitary Services, Government of Chile (regulatory agency for drinking water and sanitation); taught at Center of Applied Economics, University of Chile, Santiago, Chile.
- 1998** *Water Economics and Use of Economic Instruments in Water Management*, for government officials and other stakeholders, Managua, Nicaragua.
- 1997** *Water as a Productive Resource in Agriculture*, for staff at United Nations Economic Commission for Latin America and the Caribbean, Agricultural Development Unit, Santiago, Chile.

GRANTS AND CONTRACTS

- 2014-17** Co-P.I. (20%), Innovative Science and Influential Policy Dialogues for Water Security in the Arid Americas, **Inter-American Institute for Global Change Research**, \$744,274 (UA subtotal = \$296,500).
- 2013-15** **National Science Foundation**, Doctoral Dissertation Research Improvement, Zachary Sugg Co-P.I., *Governing the Unseen: A Comparative Analysis of Arizona and Texas Groundwater Institutions* (\$16,000).
- 2011-14** **National Science Foundation**, Doctoral Dissertation Research Improvement, David Tecklin Co-P.I., *Governing the Environment Privately: Politics, Property, and Markets in Chile's Aquaculture and Forestry Sectors* (\$12,000).
- 2005** **Weeden Foundation**. \$20,000 grant to Resources for the Future for research project: *Hydropower and River Protection in Chilean Patagonia: Legal and Policy Issues*. Wrote paper and advised environmental NGOs.
- 2002-03** **William and Flora Hewlett Foundation, U.S.-Latin America Program**. \$100,000 grant to Resources for the Future for a research project about Water Policy in Chile

and Latin America. Did research in Chile and Argentina; collaborated with local NGOs and universities; published book and articles in 2004-2005.

2000-02 William and Flora Hewlett Foundation, U.S.-Latin America Program. \$200,000 grant to Resources for the Future for a research project about Water and Energy Policy in Chile and Argentina. Did research in the U.S., Chile, and Argentina; collaborated with local NGOs and universities; published Spanish translation of 1998 book.

1999-2000 U.S. Dept. of Energy, Co-investigator (with Katherine Probst, P.I.), Resources for the Future, for report on *Long-Term Stewardship of Contaminated Sites: Trust Funds as Mechanisms for Financing and Oversight*.

PERSONAL INFORMATION

Date of birth: 25 January 1960

Citizenship: U.S.A.

Languages: English (native), Spanish (fluent)

Married, two children (born 2001, 2003)