

D.L. MARRIN

Dr. Marrin (nickname West) is an applied scientist in the fields of biogeochemistry, pollutant dynamics, water resources, and aquatic ecology. He has developed analytical and interpretive techniques to assess the biodegradation and partitioning of contaminants in aquifers, soils and surface freshwaters, as well as to detect wastewater impacts on coastal marine ecosystems. His lectures focus on water quality and footprints, hydromimicry, the water-energy-food nexus and related perceptual challenges. He maintains a multi-faceted water forum/consultancy and has taught at three universities, including as an adjunct professor at San Diego State University. His clients include environmental firms, corporations, public health agencies and NGOs.

EDUCATION

Ph.D., Water Resources (hydrochemistry); The University of Arizona.

M.S., Environmental Science (fisheries); University of California, Berkeley.

B.S., Biological Sciences (ecology/biochemistry); University of California, Irvine.

Cert., Wastewater Treatment; Nutrition. *CPE*, Biomimicry; Neurocognition.

PROFESSION

Consulting Scientist (Worldwide/California-based); 2008-present.

Working with corporations, public agencies, NGOs and environmental firms on projects involving the analysis and behavior of aqueous pollutants and the chemistry of potable waters. Assisting clients with education and R&D programs related to water-energy-food and to water technologies and perceptions.

Associate Founder, Fundación Somos Agua (México DF, Yucatán Peninsula); 2008-2015.

Designed projects that addressed water issues, emphasizing technical simplicity, hydromimicry, watershed compatibility, ocean protection and collaborations among artists, scientists, engineers and architects.

Research Scientist & Writer (Hawaii); 1999-2008.

Investigated a range of water-related disciplines (e.g., biogeochemistry, hydrology, systems theory, ancient traditions, non-scientific research) in writing three books. Also consulted on local water quality issues.

Adjunct Professor, San Diego State University; 1988-1999.

Taught graduate courses (hydrochemistry, biogeochemistry) and served on thesis committees in the SDSU Geosciences Department. Also lectured in science and health courses for the UC San Diego Extension.

President & CEO, InterPhase Environmental Inc. (California); 1988-1995.

Founded an applied research firm that specialized in detecting volatile pollutants, validating in-situ remediation/biodegradation processes, and measuring the in-situ production of greenhouse gases.

PROJECTS

- Projecting the contribution of greenhouse gases to the atmosphere from the aerobic and anaerobic biodegradation of organic pollutants in shallow soils and aquifers.
- Critiquing the application of remedial technologies for contaminated surface and ground waters.
- Utilizing natural and anthropogenic tracers to evaluate the locations of saline water intrusion into coastal aquifers and the submarine groundwater discharge from coastal aquifers.
- Evaluating changes in water quality and fisheries composition following the treatment of subalpine lakes.
- Assessing the potential impacts of crude oil spills on the distribution and productivity of marine algae.
- Evaluating the biochemistry, treatment and prevention of biofilms within water distribution systems.
- Providing litigation support on cases involving water pollution/remediation and resource allocation.

- Using footprint and life cycle analyses to assess the demands of food and energy on water resources.
- Documenting the production rates, chemical variability, microbial status, treatment options, probable recharge zones and regulatory requirements for mountain spring waters.
- Serving as an advisor and mentor to diverse groups focused on investment in the water sector.
- Estimating the demands and potential impacts of alternative energy sources (e.g., hydrogen, biofuels, solar, wind) on water supply and quality.
- Applying systems and information theories (i.e., emergence, connectivity, feedback, complexity) to generally describe and specifically identify changes in watersheds and aquatic ecosystems.
- Exploring the use of pattern recognition, interpretation and projection techniques to more efficiently identify and communicate water quality issues for people with diverse backgrounds.
- Collaborating with artists, musicians, and filmmakers to design and build a visual, auditory, and interactive display for attendees at an international water exhibition.

RECENT PUBLICATIONS

2019. Natural resource constraints on the food system. In: *Environmental Nutrition*, Elsevier Publ.; Amsterdam, Netherlands (Chapter 4).
2019. Emergent properties of water resources and associated watershed systems. *MDPI Proceedings 48*: 18.
2019. Water footprint of meat analogs: Selected indicators according to life cycle assessment. (w/U. Fresán et al.). *Water 11(4)*: 728.
2018. *A Global Compendium on Water Quality Guidelines* (w/H. Bond et al.). International Water Resources Association: Paris, France (155 pp).
2018. Perspectives on altering our perceptions of water. *Interalia Magazine (September issue)*, 9 pp.
2017. Pattern-based approaches to evaluating water quality. *MDPI Proceedings 2*: 176.
2017. The commonality of patterns. *SciArt Magazine (STEAM issue)*: feature article, 4 pp.
2016. Using water footprints to identify alternatives for conserving local water resources in California. *Water 8(11)*: 497.
2014. Reducing water and energy footprints via dietary changes among consumers. *International Journal of Nutrition and Food Sciences 3(5)*: 361.
2014. Functional art and water science. *SciArt Magazine (June issue)*: 34.
2012. Water, fractals, and watershed processes. In: *Environmental Landscape Sustainability*, Sousse Univ., Sousse, Tunisia (p 161).
2010. *Hydromimicry: Strategies for a Water Planet*. Water Sciences & Insights; Kauai, HI.
2010. Perspectives on the relationship between water and carbon. *American Institute of Physics 1251*: 12.
2008. Water requirements and impacts associated with alternative energy sources. In: *Water Scarcity, Global Changes, and Groundwater Management*, Univ. of California, Irvine, CA (Chapter 1).
2006. *Altered Perceptions: Addressing the Real Water Crises*, Unlimited Publ., Bloomington, IN.
2005. Sound in Water; Cosmic Water; Molecular Network Dynamics; Water Symbolism. In: *The Water Encyclopedia*, Wiley Interscience, New York, NY (pp 189, 511, 569, 785).
2002. *Universal Water: The Ancient Wisdom and Scientific Theory of Water*, Inner Ocean Publ.; Maui, HI.
2000. Potential atmospheric contribution of methane from fractured bedrock aquifers. *EOS 81(26)*: 290.