

# 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, surface waters and sediments, as well as to detect wastewater impacts on coastal marine ecosystems. His lectures focus on global water quality issues, water footprints, hydromimicry, the water-energy-food nexus, and perceptual challenges to communicating science. He maintains a multifaceted water consultancy and served as an adjunct professor at San Diego State University. His clients include environmental firms, corporations, public health agencies and NPOs.

## EDUCATION

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

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

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

*Cert.*, Wastewater Treatment (CSUS); Nutrition/Wellness (AFPA). *C.P.D.*, Neuroscience (NSA).

## RECENT POSITIONS

*Consulting Scientist* (California and Hawaii-based) 1999-present.

Providing expertise on projects involving drinking water chemistry, R&D programs related to technology implementation, applications of the water-energy-food nexus, and perceptual shifts around water issues.

*Scientific Associate*, EverBlue Ventures/HydroDAO (Hawaii) 2022-present.

Technically assessing startup and early-stage firms in the water sector that are considered for investment, and working with other water professionals in an NPO focused on cooperation, innovation and perception.

*Principal Scientist*, Fundación Somos Agua (México) 2008-2015.

Collaborated with artists, designers and community leaders to address regional water resource challenges.

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

Developed water quality metrics, authored several books, and consulted on local ocean and water problems.

*Adjunct Professor*, San Diego State University (California) 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*, InterPhase Environmental (California) 1988-1996.

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

## REPRESENTATIVE 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 discharge of groundwater from coastal aquifers to nearshore seawater.
- Assessing the potential impacts of chemical and thermal pollution on marine/freshwater fishes.
- 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.
- Estimating the water requirements and potential impacts of selected alternative energies and proposed geoenvironmental technologies on local water resources and cycles.
- Evaluating the quality of potable waters generated by desalination, air condensation, and cloud capture.
- Applying systems and information science approaches (including emergence, connectivity, complexity) to generally describe and specifically identify changes in watersheds and aquatic ecosystems.
- Exploring the use of pattern recognition, interpretation and projection techniques to perceive and effectively communicate water quality issues to people with diverse backgrounds.
- Serving as a scientific advisor to artists focused on worldwide ocean and freshwater issues and to R&D programs or capital ventures focused on the water technology/management sector.

### **SELECTED RECENT PUBLICATIONS**

2023. Evaluating methods to enhance the taste and health benefits of alternative potable waters. *Environmental Sciences Proceedings 25*: 58.
2022. *Patterns and Perceptions: Musings on Reality, Consciousness and the Self*. Water Sciences & Insights, 35 pp.
2020. Emergent properties of water resources and associated watershed systems. *MDPI Proceedings 48*: 18.
2019. Natural resource constraints on the food system. *In: Environmental Nutrition*, Elsevier, Chapter 4.
2019. Water footprint of meat analogs: selected indicators according to life cycle assessment (w/U. Fresán, et al.). *Water 11*: 728.
2018. *A Global Compendium on Water Quality Guidelines* (w/H. Bond, et al.). International Water Resources Association, 155 pp.
2018. Perspectives on altering our perceptions of water. *Interalia Magazine, September issue*.
2018. Pattern-based approaches to evaluating water quality. *MDPI Proceedings 2*: 176.
2016. Using water footprints to identify alternatives for conserving local water resources in California. *Water 8*: 497.
2014. Reducing water and energy footprints via dietary changes among consumers. *International Journal of Nutrition and Food Sciences 3*: 361.
2014. Functional art and water science. *SciArt Magazine, June issue*.
2012. Water, fractals & watershed processes. *In: Environmental Landscape Sustainability*, Sousse Univ., 161.
2010. Hydromimicry: water as a model for technology and management. *Energy Bulletin, 11 August*.
2010. *Hydromimicry: Strategies for a Water Planet*. Water Sciences & Insights, 72 pp.
2010. Perspectives on the relationship between water and carbon. *American Institute of Physics 1251*: 12.
2006. *Altered Perceptions: Addressing the Real Water Crises*, Unlimited Publ., 149 pp.
2002. *Universal Water: The Ancient Wisdom and Scientific Theory of Water*, Inner Ocean Publ., 341 pp.
2000. Potential atmospheric contribution of methane from fractured bedrock aquifers. *EOS 81*: 290.
2000. Hydration structures and dynamics: an alternative perspective on remediation processes. *Physical and Thermal Technologies C2*: 285.