CURRICULUM VITAE

Sergio A. Valbuena
Ph.D., M.Sc.
University of California, Davis
1 Shields Ave. Davis, CA 95616
Email: savalbuena10@gmail.com
Web: LinkedIn
Phone: +1-707-567-9287

EDUCATION & TRAINING

University of California, Davis, USA	Ph.D. Civil and Environmental Eng.	2017-2022
University of California, Davis, USA	M.Sc. Civil and Environmental Eng.	2017-2020
Colombian School of Engineering Julio Garavito, Bogota, CO	B.S. Civil Eng.	2011-2016

FELLOWSHIPS AND AWARDS

Business Development Fellowship Program	2023
Nominated for Excellence in Graduate Student Research Award by *Fabián A. Bombardelli*	2022
Goldman - Schladow Limnology Fellowship	2022
David and Dana Loury Foundation Fellowship	2022
California Lake Management Society Scholarship	2021
Graduate Student Travel Award	2021
COLFUTURO Scholarship	2017
M.Sc. Scholarship Colombian School of Engineering Julio Garavito	2016
Summa Cum Laude Colombian School of Engineering Julio Garavito	2016

RESEARCH & PROFESSIONAL EXPERIENCE

University of California, Davis, USA, Tahoe Environmental Research Center, Postdoctoral Scholar Researcher. *Development of 3D mercury numerical model to address mercury cycle and uptake at Clear Lake, a mine contaminated site*. 2023 – Present

University of California, Davis, USA, Tahoe Environmental Research Center, Graduate Student Researcher. *Data management and analysis of the Nearshore Network long-term program to monitor water quality near the shore around Lake Tahoe*. 2019 – Present

University of California, Davis, USA, Department of Civil and Environmental Engineering, Graduate Student Researcher. *Water clarity losses due to anthropogenic activities in the nearshore area of a lake*. 2019 – 2023

University of California, Davis, USA, Department of Civil and Environmental Engineering, Graduate Student Researcher. *Development and validation of ecological numerical model for Lake Tahoe*. 2021 – 2022

University of California, Davis, USA, Tahoe Environmental Research Center, Graduate Student Researcher. *Development of a 3D hydrodynamic numerical model for lake conditions website at Lake Tahoe*. 2021 – 2022

University of California, Davis, USA, Department of Civil and Environmental Engineering, Graduate Student Researcher. *laboratory sampling for physical models for hydraulic structures*. 2021 – 2022

Innovatech Strategic Solutions S.A.S, Bogota, CO, Poject Engineer. *Professional support in the construction, plan monitoring strategy, budget structuring, preparation of reports, progress, and traceability of projects*. 2016 – 2017

Alejandro Duran Engineering, Bogota, CO, Hydraulic Engineer. *Highway hydraulic design, and hydrologic and hydraulic studies on more than 100 small lakes and wetlands*. 2016 – 2017

PUBLICATIONS

Journal

1. **Sergio A. Valbuena**, Fabián A. Bombardelli, Alicia Cortés, John L. Largier, Derek C. Roberts, Alexander L. Forrest, and S. Geoffrey Schladow, 3D Flow Structures During Upwelling Events in Lakes of Moderate Size, Water Resour. Res. **58**, 1–35 (2022).
2. **Sergio A. Valbuena**, Fabián A Bombardelli, John L Largier, and Geoffrey Schladow, Deep Water Re-oxygenation from Lake Upwelling (Submitted to Limnology & Oceanography) (2023).
3. **Sergio A. Valbuena**, Fabián A. Bombardelli, John L. Largier, and S. Geoffrey Schladow, Determining the Threshold for Rotational Effects in Lake Upwelling (In preparation for Journal of Geophysical Research) (2023).

Conference

4. Federico Zabaleta, Fabián A. Bombardelli, and **Sergio A. Valbuena**, Preliminary Evaluation and Design of a New Energy Dissipation Stilling Basin via Numerical and Experimental Modeling, in *9th International Symposium on Hydraulic Structures*, October (2022).
5. **Sergio A. Valbuena**, Fabián A. Bombardelli, and S. Geoffrey Schladow, Boat induced sediment resuspension and water clarity in shallow flows, in *River Flow 2020 10th Conf. Fluv. Hydraul.*, edited by Wim Uijttewaal, Mário J. Franca, Daniel Valero, Victor Chavarrias, Clàudia Ylla Arbós, Ralph Schielen, and Alessandra Crosato (CRC Press, Delft, 2020) pp. 1333–1341.

Technical Reports

6. **Sergio A. Valbuena** and S Geoffrey Schladow, *Water Clarity and Boat Induced Waves in the Nearshore of Lake Tahoe*, Tech. Rep. (University of California Davis, 2023).
7. Alicia Cortés, S Geoffrey Schladow, Lidia Tanaka, **Sergio A. Valbuena**, Sean C. Trommer, Shohei Watanabe, John M Melack, Sudeep Chandra, and Erin K Suenaga, *Lake Tahoe Clarity Analysis and Modeling Phase I : Biogeochemical and Ecological Modeling*, Tech. Rep. (University of California Davis, 2022).
8. **Sergio A. Valbuena**, S Geoffrey Schladow, and Fabian A Bombardelli, *Boat Induced Sediment Resuspension and Water Clarity at Lake Tahoe*, Tech. Rep. (University of California Davis, 2019).
9. Fabián A. Bombardelli, Federico Zabaleta, Kara Carr, and **Sergio A. Valbuena**, *Lake Perris Outlet Tower Modifications Project. Report on results of the Numerical and Physical Models*, Tech. Rep. (University of California, Davis, Davis, CA, 2022).

CONFERENCE PRESENTATIONS WITHOUT PUBLICATION

1. Valbuena, S. A., Bombardelli, F. A., Largier, J. L., & Schladow, S. G. Rotational effects in lake upwelling and the thresholds for conceptual models. Physical Processes in Natural Waters 2023.
2. Valbuena, S. A., Bombardelli, F. A., Cortés, A., Largier, J. L., Roberts, D. C., Forrest, A. L., & Schladow, S. G. The Influence of the Coriolis Force During Upwelling in Lakes of Moderate Size. Physical Processes in Natural Waters 2022.
3. Valbuena, S. A., Bombardelli, F. A., Largier, J. L., & Schladow, S. G.. Forecasting water quality in lakes during upwelling events: The validity of the rotational and non-rotational upwelling setup conceptual models. ASLO Ocean Sciences 2022.
4. Valbuena, S. A., Bombardelli, F. A., Cortés, A., Largier, J. L., Roberts, D. C., Forrest, A. L., & Schladow, S. G. The Coriolis Force Effects During Upwelling in Rotationally Influenced Lakes. XXX Latin American Hydraulics Conference, IAHR 2022.
5. Valbuena, S. A., Bombardelli, F. A., Cortés, A., Largier, J. L., Roberts, D. C., Forrest, A. L., & Schladow, S. G. Flow dynamics during upwelling events in rotationally influenced lakes: A numerical study. AGU Fall Meeting 2021.
6. Valbuena, S. A., Bombardelli, F. A., Largier, J. L., & Schladow, S. G. Boat Induced Sediment Resuspension and Water Clarity at Lake Tahoe. AGU, Fall meeting 2019.

RESEARCH PROJECTS

1. Boat-induced sediment resuspension and water clarity Project (Lake Tahoe, CA, USA).
   - Define strategies to address the project's objectives.
   - Plan and execute field experiments.
   - Post-process and analysis field measurements.
2. 3D Ecological numerical model development project (Lake Tahoe, CA, USA).
   - Calibration and validation of the hydrodynamics of the 3D numerical model.
3. Clear Lake monitoring and modeling project (Lake Tahoe, CA, USA).
   - Perform in-situ measurements for routine sampling.
4. 3D numerical model development for Lake Conditions website (Lake Tahoe, CA, USA).
   - Develop the numerical model embedded within the daily forecast.
   - Advise on website design and data repository.
5. Creation and management of the reorganization and documentation of SI3D-L - a 3D hydrodynamic numerical model for lakes (Website).
   - Develop open-source scripts for ease of use of the numerical model.
   - Design and elaborate the user manual.
   - Lead and collaborate on the reorganization of the code.
6. Lake Perris Outlet Tower Modifications Project (Riverside County, CA, USA).
   - Laboratory sampling on physical model.

TEACHING EXPERIENCE

University of California, Davis, Department of Civil and Environmental Engineering, Graduate Teaching Assistant. ECI 141L: Engineering Hydraulics. ECI 146: Water Resources Simulation. Spatial Data Analysis ECI16 *Responsibilities: Review exams, explain exercises in class, guide students with their homework, lead experimental laboratories.* 2017 – 2021

REVIEWER FOR JOURNALS

1. Journal Nature Water: 1 article
2. Journal of Lake and Reservoir Management: 1 article
3. Journal of Hydraulic Engineering: 2 articles
4. RIBAGUA (Revista Iberoamericana del Agua): 4 articles

NUMERICAL MODELS AND CODES DEVELOPED

1. Three-dimensional mercury cycle module couple within the Si3D-L numerical model (in progress)
2. Three-dimensional suspended sediment module coupled within the Si3D-L numerical model
3. coupling of STWAVE within the SI3D-L numerical model
4. One-dimensional heat budget and eutrophication model for lakes
5. One-dimensional Saint-Venant solver
6. Code reorganization and documentation of 3D shallow-water equations model for lake flows, SI3D-L

SERVICE AND LEADERSHIP

LANGUAGES

English: Full professional proficiency
Spanish: Native