SERGIO VALBUENA

Ph.D., M.Sc., Civil Engineer

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savalbuena

PROFILE

Ph.D. from the University of California – Davis with 5 years of experience in fluid dynamics and numerical modeling of physical processes in water bodies. Knowledgeable in physical processes in lakes influenced by the Coriolis force, Computational Fluid Dynamics (CFD), time series analysis from in-situ observations, and data and instrument management. Adept at implementing innovative practices for engineering problem-solving and optimization. Entrepreneur with fast learning and adaptability skills in search of continuous academic and professional growth in a teamwork environment.

EDUCATION

University of California – Davis
2018 – 2022
Doctor of Philosophy
Civil and Environmental Engineering
Water Resources
Lake Hydrodynamics
Advisors: Fabian Bombardelli & Geoffrey Schladow

University of California – Davis
2017-2020
Master of Science, Civil & Environmental Engineering
Emphasis in Water Resources and Nearshore Lake Hydrodynamics
Advisor: Fabian Bombardelli

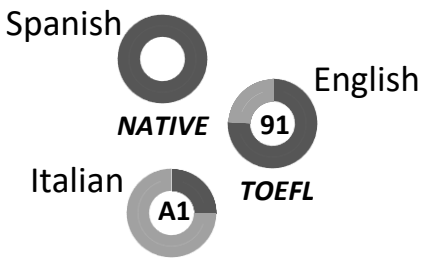
Colombian School of Engineering Julio Garavito
2011-2016
Bachelor of Science, Civil Engineering
Honors:
Summa Cum Laude

TECHNICAL SKILLS

- Matlab A.K.
- si3D A.K.
- OpenFOAM A.K.
- HEC-RAS A.K.
- AutoCAD A.K.
- Python A.K.
- Microsoft Excel A.K.
- Data Management A.K.
- Time Series A.K.
- ArcGIS B.K.
- QGIS B.K.
- Microsoft Project B.K.
- SQL B.K.

advanced knowledge: A.K.
basic knowledge: B.K.

LANGUAGES



RESEARCH EXPERIENCE

Graduate Student Researcher

University of California – Davis, USA / Jan 2018 – Dec 2022

- Led a field campaign to investigate water clarity losses due to anthropogenic activities in the nearshore area of a lake.
- Data manager of the Nearshore Network long-term program for the Tahoe Environmental Research Center to monitor water quality near the shore around Lake Tahoe.
- Investigated boat-induced sediment resuspension in shallow flows by applying 3D numerical modeling of a recreational boat and by analyzing in-situ observations
- Investigated 3D dynamics of upwelling events in rotationally influenced lakes and water quality by applying the hydrodynamical model si3D.
- Defined theoretical thresholds for the influence of the Coriolis force on the flow dynamics during upwelling events in lakes by implementing computational fluid dynamics.
- Investigated deep water re-oxygenation during upwelling events by analyzing in-situ time series observations of over 4 years.

PUBLICATIONS

- Valbuena, S. A., Bombardelli, F. A., Cortés, A., Largier, J. L., Roberts, D. C., Forrest, A. L., & Schladow, S. G. (2022). 3D Flow Structures During Upwelling Events in Lakes of Moderate Size. Water Resources Research, 58(3), 1–20. https://doi.org/10.1029/2021WR030666
- Zabaleta F., Bombardelli, F. A. & Valbuena, S. A. (2022). Preliminary Evaluation and Design of a New Energy Dissipation Stilling Basin via Numerical and Experimental Modeling in 9th IAHR International Symposium on Hydraulic Structures (9th ISHS). Proceedings of the 9th IAHR International Symposium on Hydraulic Structures – 9th ISHS, 24-27 October 2022, IIT Roorkee, Roorkee, India. Palermo, Ahmad, Crookston, and Erpicum Editors. Utah State University, Logan, Utah, USA, 10 pages (DOI: https://doi.org/10.26077/9fa5-ed46) (ISBN 978-1-958416-07-5)
- Valbuena, S. A., Bombardelli, F. A., & Schladow, S. G. (2020). Boat induced sediment resuspension and water clarity in shallow flows. In W. Uijttewaal, M. J. Franca, D. Valero, V. Chavarrias, C. Ylla Arbós, R. Schielen, & A. Crosato (Eds.), River Flow 2020 10th Conference on Fluvial Hydraulics (pp. 1333–1341). CRC Press.

WORK EXPERIENCE

Hydraulic Engineer
Assistant of M.Sc. Alejandro Duran. / Bogotá D.C, Colombia / Sept 2016 – Sept 2017
Functions: perform and report hydrologic and hydraulic studies to more than 100 small lakes and wetlands in Cundinamarca, Colombia. Highway hydraulic design of two road sectors in Cundinamarca, Colombia.

Project Engineer
INNOVATECH STRATEGIC SOLUTIONS S.A.S – Based in Houston, Texas, USA / Office Bogotá D.C, Colombia / Jan 2016 – Sept 2016
Functions: professional support in the construction, plan monitoring strategy, budget structuring, preparation of reports, progress, and traceability of projects.

TEACHING EXPERIENCE

Teaching Assistant
Fluid Dynamics
University of California – Davis, USA / F2019, F2020, W2021
Organized laboratory lectures, demonstrations, and data collections for junior-level fluid dynamics course.
Hydraulics | Open Channel and Pipe Flow
University of California – Davis, USA / W2018, F2018, S2019, S2020
Organized laboratory lectures, demonstsenior-level collection of data for the senior level hydraulics course. Aided in grading laboratory reports and final exams.
Water Resources Simulation
University of California – Davis, USA / W2019
Hold a weekly one-hour discussion session to provide insights about course topics and aid in grading exams.

W – Winter Quarter | S. – Spring Quarter | F. – Fall Quarter

HONORS & AWARDS

University Colombian School of Engineering Julio Garavito – 2016
- Summa Cum Laude within the Civil Engineering department for best overall undergraduate GPA.

California Lake Management Society (CALMS) Scholarship – 2021
- One of the 4 graduate students to receive the scholarship during the summer of 2021

Goldman – Schladow Limnology Fellowship – 2022
- Fellowship awarded to UC Davis graduate students conducting limnological research on California lakes in general and particularly those doing research on Lake Tahoe at TERC

David and Dana Loury Foundation Fellowship – 2022
- Fellowship awarded in recognition of outstanding academic record and promise of productive scholarship.