Wilford Schmidt, PhD

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Personal Data

Nationality	**United States of America**
Languages	English, Spanish, Mathematics
COVID-19	Fully vaccinated and boosted

Professional and Academic Positions

2022	**Alvin Dive 5091 -** 5879 m depth, Puerto Rico Trench North Wall
2021/22	**Selectee and Participant** – **RV Atlantis** and **HOV Alvin 6500 m SVE**
2021	**Chief Scientist –** RV Kruger B, PRT **Free vehicle deployments** (FVD)
2020 **COVID**	**Lead Scientist** – **NOAA Okeanos Explorer** EX Puerto Rico, (FVD)
2019	**Science Editor –** Waves and Beaches, 3rd ed., Patagonia Books
2018	**Lead Scientist – NOAA Nancy Foster**, Anegada Passage (FVD)
2015-present	**Director** – UPRM Center for Ocean Exploration, Research, and Education
2015	**Lead Scientist** – **NOAA Okeanos Explorer** EX1502 Leg 2, (FVD)
2013-present	**Graduate Professor**, UPRM Department of Marine Sciences
2013	Doctor on Call – OET **RV Nautilus** Cruises NA-35,37, and 39
2013-present	**Appointed** to **United Nations World Ocean Assessment** Pool of Experts, Wider Caribbean Region, **United States Representative**
2011	**Awarded tenure** and recommended for full professorship, promotion held until 2013 due to PR economic crisis.
2006-present	**Chief Scientist –** numerous UPRM Free Vehicle (FVD) cruises in PR waters
2006-2013	**Associate Professor**, UPRM Department of Marine Sciences (DMS)
2006-2008	**Support Scientist** – DMS Coastal Hazard Center (**NOAA** tsunami modeling)
2005-2006	**Research Assist. Professor** - University of Florida, Coastal Engineering
2004-2005	**ASEE Research Fellow** – **ONR Naval Research Laboratory - Stennis**, Littoral Processes Group
2003-2004	**Post-Doctoral Research Associate - SIO Center for Coastal Studies**

Education

2003	**Ph.D.**	Oceanography, **Scripps Institution of Oceanography**, UCSD
2001	M.Sc.	Oceanography, Scripps Institution of Oceanography, UCSD
1996	B.Sc.	Environmental Science, Texas A&M University, Corpus Christi, ***Summa cum laude*, Minors – Geology, Chemistry, and Mathematics**

Research Interests

Oceanographic instrument design/development. Hadal research and instrumentation. Near-shore and coastal processes. Bathymetric influences on gravity-wave driven currents. Tsunami and hurricane coastal inundation. Internal wave and mesoscale eddy effects on mesophotic corals.

Courses

Marine Sciences (graduate = G, senior undergraduate = U)

- Physical Oceanography (G)
- Physical Oceanography Laboratory (G)
- Coastal Physical Oceanography (G)
- Physical Oceanographic Data Analysis (G)
- Special Topics – Hadal Free Vehicle Biota Trap Design (G)
  - Hadal Free Vehicle Payload Design (G)
  - Deep and Shallow Currents in Puerto Rico Coastal Waters (G)
  - Coastal Inundation Data Analysis Techniques (G)
  - Tsunami Inundation Modeling with Matlab (G)
- Introduction to Oceanography (U)
- Introduction to Oceanography Laboratory(U)
- Introduction to Climate Change (U)
- Introduction to Climate Change Laboratory (U)

Courses (cont.)
Oceanographic Mathematics with Applications (U)
Mechanical Engineering
Special Topics - Design of Oceanographic Instrumentation (U)

Professional Affiliations
American Geophysical Union
American Meteorological Society
Geological Society of America
Marine Technology Society
Association for the Sciences of Limnology and Oceanography

Professional Service
United States Representative – **UN World Ocean Assessment** Pool of Experts (Caribbean)
Proposal Reviewer – **NOAA Office of Ocean Exploration and Research**
Reviewer - Journal of Atmospheric and Oceanographic Technology
Reviewer - Journal of Geophysical Research - Oceans
Reviewer - Caribbean Journal of Science
Reviewer – Limnology and Oceanography: Methods
Chair - UPRM DMS Marine Operations Committee
- UPRM DMS Curriculum Committee
- UPRM DMS Evaluation Committee
Member - UPRM DMS Personnel Committee
- UPRM DMS Graduate Policy Committee
- UPRM DMS Applied Ocean Science Committee

Graduate/Undergraduate Advisees and Lab members
Haibo Xu, DMS, Ph.D., Graduate committee Chair and advisor
Zamara Fuentes, DMS Ph.D., Graduate committee Chair and advisor
Rolf Veiten DMS Ph.D. Graduate committee member
Oscar Ramos, M.Sc., Graduate committee Chair and advisor
Myrna Santiago, DMS M.Sc., Graduate committee member
Danilo Rojas, EE Ph.D. M.Sc., Graduate committee member
Jesus Torrado, EE M.Sc., Graduate committee member
Margarita Blandon Salazar, EE M.Sc., Lab member
Roberto Hernández Martinez, EE BSc., Lab member
Grabiel Cantres Rosario, EE BSc., Lab member
Carlos N. Abreu Takemura, EE BSc., Lab member
Luis Escobar Reyes, EE B.Sc., Lab member
Fabian Zapata, EE B.Sc., Lab member
Armando Vega, Ortiz, EE B.Sc., Lab member
Leonardo Ortiz, EE B.Sc., Lab member
Juan Santos, GEO MSc., Lab member

Publications
Fuentes Z, M Tuttle, and **W Schmidt**, **in revision**. Ecological changes and overwash events at three coastal ponds on St. Thomas, U.S. Virgin Islands. *Geosphere.*
Schmidt W, D Rojas, H Xu, R Veiten, Z Fuentes, and M Jimenez, **in revision**. An untethered free vehicle for oceanographic research. *IEEE Journal of Oceanic Engineering.*
Cheriton O, C Storlazzi, K Rosenberger, C Sherman, and **W Schmidt**, **2021.** Rapid observations of ocean dynamics and stratification along a steep island coast during Hurricane María. *Science Advances,* doi: 10.1126/sciadv.abf1552

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Publications (cont.)

Schizas N, C Sherman, J Cruz-Motta, **W Schmidt**, E Weil, **2021.** Organism counts from photo-transects collected during quantitative benthic surveys in Southwest Puerto Rico at 20m during 2013-2014 and 2018-2019. DOI:10.26008/1912/bco-dmo.847866.1

Jimenez M, **W Schmidt**, and D Rojas, **2020.** A Fault-tolerant Free-vehicle Architecture for Hadal Zone Exploration. IEEE Global OCEANS 2020: Singapore - U.S. Gulf Coast. DOI: 10.1109/IEEECONF38699.2020.9389345

Schmidt W, D Rojas, R Smith, and M Jimenez, **2019.** Comparison of Free Vehicle and Conventional CTD. In: Raineault, N.A, and J. Flanders, eds. 2019. New frontiers in ocean exploration: The E/V Nautilus, **NOAA Ship Okeanos Explorer, NOAA Ship Nancy Foster** and R/V Falkor 2018 field season. *Oceanography 32(1)*.

Appeldoorn R, N Schizas, **W Schmidt**, C Sherman, and E Weil, **2019.** How MCEs vary geographically (Atlantic Ocean, Puerto Rico). In: B Riegel, K Puglise, and R Dodge (Editors), Mesophotic Coral Ecosystems (Coral Reefs of the World) 1st ed. Springer International Publishing AG.

Fuentes Z, M Tuttle, and **W Schmidt**, **2017.** Sand scripts of past tsunamis on the coast of St. Thomas, USVI. *Seismic Research Letters*.

Sherman C, **W Schmidt**, R Appeldoorn, Y Hutchinson, H Ruiz, M Nemeth, I Bejarano, and H Xu, **2016**. Sediment Transport and its Potential Influence on Insular-Slope Mesophotic Coral Ecosystems. *Continental Shelf Research,* http://dx.doi.org/10.1016/j.csr.2016.09.012

Appeldoorn R, D Ballantine, I Bejarano, H Ruiz, N Schizas, **W Schmidt**, C Sherman, and E Weil, **2016.** Mesophotic coral ecosystems examined - La Parguera, Puerto Rico, USA. In: E.K. Baker, K.A. Puglise and P.T. Harris (Editors), Mesophotic coral ecosystems - A lifeboat for coral reefs? The **United Nations Environment Programme** and GRID-Arendal, Nairobi and Arendal, pp. 45-49.

Kennedy B, A Quatrini, M Cheadle, G Garcia-Moliner, J Chaytor, M Ford, E Lobecker, D Sowers, K Cantwell, L McKenna, **W Schmidt**, J Torrado, D Rojas, R Veiten, Z Fuentes, H Xu, and M Jimenez, **2016**. Océano Profundo 2015: Exploring Puerto Rico's Seamounts, Trenches, and Troughs. New frontiers in ocean exploration: The E/V Nautilus and **NOAA Ship Okeanos Explorer** 2015 field season. *Oceanography* 29(1), supplement, 84 pp.

Lobecker E, E Rose, **W Schmidt**, M Ovard, S Allen, J Meyer, C Wegner, K Mello, J Millan, **2015.** Mapping Data Acquisition and Processing Summary Report: EX-15-02 Leg 2, Caribbean Exploration (Mapping). United States. National Oceanic and Atmospheric Administration. Office of Ocean Exploration and Research. DOI:10.25923/s84t-1959.

Reyna J, A Bera, H Cho, W Douglas, R Folorunsho, F Hall, S Kim, T Komatsu, R Mosetti, K Sabir, **W Schmidt**, H Tõnisson, **2015**. **United Nations World Ocean Assessment for the Wider Caribbean Region**, Chapter 26 – Land/Sea Physical Interaction.

Schmidt W and E Siegel, **2011**. Free descent and on bottom ADCM measurements in the Puerto Rico Trench, 19.75 N, 66.40 W. *Deep-Sea Research I* 58 (2011) 970–977, doi:10.1016/j.dsr.2011.06.005.

Eloe E, F Malfatti, J Gutierrez, K Hardy, **W Schmidt,** K Pogliano, J Pogliano, F Azam, and D Bartlett, **2011**. Isolation and characterization of the first psychropiezophilic Alphaproteobacterium. *Applied and Environmental Microbiology*. 77(22): 8145-53. doi: 10.1128/AEM.05204-11

Schmidt W, **2008**. A Tsunami Forecast Model for Ponce, Puerto Rico. **NOAA OAR** Special Report, PMEL Tsunami Forecast Series.

Schmidt W, **2008**. A Tsunami Forecast Model for Montauk, New York. **NOAA OAR** Special Report, PMEL Tsunami Forecast Series.

Mercado A and **W Schmidt**, **2007**. A Tsunami Forecast Model for Mayagüez, Puerto Rico. **NOAA OAR** Special Report, PMEL Tsunami Forecast Series.

Mercado A and **W Schmidt**, **2007**. A Tsunami Forecast Model for San Juan, Puerto Rico. **NOAA OAR** Special Report, PMEL Tsunami Forecast Series.

Spydell M, F Feddersen, R Guza, and **W Schmidt**, **2007.** Observing surfzone dispersion with drifters. *J. Phys. Ocean*. **37**, doi:10.1175/2007/JPO3580.1

Schmidt W, R Guza, and D Slinn, **2005**. Surfzone currents over irregular bathymetry: Drifter observations and numerical simulations. *J. Geophys. Res., **110***, C12015, doi:10.1029/2004JC002421.

Schmidt W, B Woodward, K Millikan, R Guza, B Raubenheimer, and S Elgar, **2003**. A GPS-tracked surfzone drifter. *J. Atmos. Oceanic Technol.*, ***20***, 1069-1075.

Recent Presentations (presenter underlined)

Rubin K, F Klein, A Soule, A Burkett, **W Schmidt,** Jason Almeida, Sabrina Douglas, David Davis, **2022.** Classic Oceanic Crustal Section Recovered by Alvin Submersible Divers from the Puerto Rico Trench North Wall. 2022 American Geophysical Union Fall Meeting, Chicago, IL, Dec 6, 2022.

Schmidt W, M Jimenez, and D Rojas **2022.** 15 years of untethered free vehicle research in the Puerto Rico Trench and NE Caribbean. OSM 2022 Ocean Sciences Meeting. Honolulu, HI, March 2, 2022.

Schmidt W, M Jimenez, and D Rojas **2022. Keynote address.** Soundings, free vehicles, and Alvin: The past, present and future of Puerto Rico Trench research. 5th Marine Science AeCiMa Symposium, Mayaguez, PR, February 26, 2022

Schmidt W, M Jimenez, and D Rojas **2021. Webinar "**Deep Science in the Puerto Rico Trench". OTR International School, Luxembourg. March 13, 2021.

Schmidt W, M Jimenez, and D Rojas **2020. Webinar** "Puerto Rico Trench exploration with free vehicles". Planeta Oceano, La Serie, Sociedad Ambiental Marino. August 23, 2020.

Schmidt W, M Jimenez, D Rojas and R Smith **2019**. Free Vehicles. An oceanographic analog to weather balloons? 2019 American Society of Limnology and Oceanography Ocean Sciences Meeting. San Juan, PR.

Schmidt W and M Jimenez **2019**. Build it and they will come: Introducing engineering students to oceanography. Part 2, 2019 American Society of Limnology and Oceanography Ocean Sciences Meeting. San Juan, PR.

Rojas D, M Jimenez and **W Schmidt, 2018**. A Modular Approach to the Development of Fault Tolerant Free-Vehicle. Latin American and Caribbean Consortium of Engineering Institutions (LACCEI) 16th International Multi-Conference for Engineering, Education, and Technology. Lima, Peru. July 2018.

Schmidt W, D Rojas, J Torrado, H Xu, and M Jimenez, **2017**. Free vehicles: An oceanographic analog to weather balloons? Invited Speaker, John D. Weaver Seminar Series. Mayaguez, PR, Nov. 2017

Torrado J, M Jimenez, and **W Schmidt, 2016**. A Navigation System for Free Descent-Ascent Autonomous Underwater Vehicles. HENAAC Conference - Great Minds in STEM. Anaheim CA, 9 Oct. 2016.

Rojas, D, M Jimenez, and **W Schmidt, 2014**. Physical Design For Free a Decent-Ascent Deep Sea Vehicle. Conferencia del Caribe Innovación y Tecnología Bioprocess Development & Training Complex, Mayaguez, PR, USA. 10 Oct. 2014.

Torrado, J, M Jimenez, and **W Schmidt, 2014.** Inertial Navigation System for Free Descent Deep Sea Vehicle. Conferencia del Caribede Innovación y Tecnología Bioprocess Development & Training Complex, Mayaguez, PR, USA. 10 Oct. 2014.

Cruz, L, C Díaz, R Cruz, M Jimenez, and **W Schmidt, 2014.** Deep Sea Imaging System. Conferencia del Caribede Innovación y Tecnología Bioprocess Development & Training Complex, Mayaguez, PR, USA. 10 Oct. 2014.

Schmidt W, M Jimenez, A Vega, and J Torrado, **2013**. Exploration of the Puerto Rico Trench and Muertos Trough with Untethered Free-Vehicles. 2013 Geological Society of America Southeastern Section Meeting, San Juan, PR.

Fuentes Z, M Tuttle, and **W Schmidt**, **2013**. St. Thomas, USVI Overwash Deposits From the Last 3,000 Years. 2013 Geological Society of America Southeastern Section Meeting, San Juan, PR.

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Recent Presentations (cont.)

Schmidt W, 2013. Observation and Parameterization of Rip Current Velocity Maxima and Extent. 8th International Multi-purpose Reef and Surfing Science Symposium, Rincón, PR.

Schmidt W, 2011. Evidence of internal waves and mesoscale eddies from mesophotic ADCP and temperature measurements, La Parguera, Puerto Rico. 2011 American Society of Limnology and Oceanography Ocean Sciences Meeting. San Juan, PR.

Jimenez M and **W Schmidt, 2011.** Interfacing Analog Sensors to Low-power MCUs for Cost Effective Oceanographic Instrumentation. Engibous Summit, Dallas, TX

Schmidt, W and E Siegel, **2011.** Voyage to the bottom of the Puerto Rico Trench: Tales from a free fall current meter. IEEE/OES 10th International Current, waves and turbulence measurement workshop. Monterrey, CA.

Colon, B, E Suarez, A Gomez, A Castilla, **W Schmidt,** P Quintero, and M Smith., **2011.** An "Open Source" autonomous archival instrument for aquatic sampling. 2011 American Society of Limnology and Oceanography Ocean Sciences Meeting. San Juan, PR.

Schmidt W, M Smith, F Rodriguez, and P Quintero, **2011**. Build it and they will come: Introducing engineering students to oceanography. 2011 American Society of Limnology and Oceanography Ocean Sciences Meeting. San Juan, PR.

Schmidt W and E Siegel, **2010**. On-bottom and free-fall ADCM measurements in the Puerto Rico Trench, 19.75° N, 66.40° W. Trench Connection, Tokyo, Japan.

Schmidt W, **2010**. Mesophotic ADCP and temperature measurements from the El Hoyo transect, La Parguera, Puerto Rico. American Geophysical Union Ocean Sciences Meeting. Portland, OR.

Eloe E, **W Schmidt**, and D Bartlett, **2009**. Isolation of a novel Puerto Rico Trench psychropiezophile.. Second Symposium: Frontiers in Environmental Microbiology: A Caribbean Perspective. Univ. of Turabo, Puerto Rico.

Eloe, E, **W Schmidt**, and D Bartlett, **2009**. Characterization of the hadal microbial community in the Puerto Rico Trench and cultivation of a novel obligate psychropiezophile. ASLO Ocean Sciences Meeting. Nice, France.

Schmidt W and D Slinn, **2008**. Rip current velocity structure in drifter trajectories and numerical simulations. 2008 American Geophysical Union Fall Meeting, San Francisco, CA.

Holland T, N Plant, J Calantoni, **W Schmidt**, T. Kooney, and A. Reed, **2006.** A field study of coastal dynamics on a muddy coast offshore of **Cassino Beach, Brazil**. 2006 American Geophysical Union Fall Meeting, San Francisco, CA.

Spydell M, F Feddersen, R Guza, and **W Schmidt**, **2006**. Drifter-based estimates of surfzone dispersion. 2006 American Geophysical Union Fall Meeting, San Francisco, CA.

Schmidt W, R Guza, and T Holland, **2005**. Surfzone drifters: Applications and observations. IEEE 8th Working Congress on Current Measurement, Southampton, U.K.

Schmidt W, 2004. Surfzone currents: Recent advances in measurement and modeling. United States Lifesaving Association Board of Directors Meeting, San Francisco, CA.

Schmidt W, R Guza, and D Slinn, **2004**. Observations of large, bathymetrically-controlled eddies in the surfzone. 2004 American Geophysical Union Fall Meeting, San Francisco, CA.

Schmidt W, D Slinn, and R Guza, **2002**. Surfzone currents over irregular bathymetry: Drifter observations and model results. 2002 American Geophysical Union Fall Meeting, San Francisco, CA. **Best Student Paper Award**

Schmidt W and R Guza, **2001**. Observations of surfzone currents with drifters. 2001 American Geophysical Union Fall Meeting, San Francisco, CA.

Schmidt W, B Woodward, K Millikan, R Guza, B Raubenheimer, and S Elgar, **2000**. A GPS-tracked surfzone drifter. 2000 American Geophysical Union Fall Meeting, San Francisco, CA.

Schmidt W, **1996**. Beach profiles along a seawall, North Padre Island, Corpus Christi, Texas. Texas Academy of Sciences 99th Annual Meeting, Galveston, TX.

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Funding History (funded)

2017-2018, Co-PI, The impact of Hurricane Maria on the mesophotic reefs of southwest Puerto Rico, **NSF RAPID**, $200,000

2014-2021, PI, Exploration of the Muertos Trough and Puerto Rico Trench via untethered free vehicles, **NOAA OER**, $349,000

2011-2012, Co-PI, An Ultra-Deep Sea Water Buoy for Ocean Trench Studies, **IAP** $2,500

2011-2012, Co-PI, Surf Zone Drifters Sensing System for the Study of Ocean Currents, **IAP** $2,500

2010-2012, PI, Supplemental funding award, Collaborative Research: Pressure Effects on Microbial Life in the Puerto Rico Trench, **NSF** $20,750.

2009-2011, Co-PI, IDBR: An Auto-sampler for Aquatic Microbial Sampling and Archiving, **NSF**, $223,042.

2009-2011, PI, Collaborative Research: Pressure Effects on Microbial Life in the Puerto Rico Trench, **NSF** $107,831.

2006-2011, Co-PI, CRES 2006: Ecology, Integrity & Status of Deep Caribbean Coral Reefs, **NOAA CSCOR**, $1,499,999.

2006-2007, PI, A Partnership for Deep Sea Research, **UPRM** Research and Development Center Seed Money Program, $4,900.

Other Recently Submitted Proposals/Pre-Proposals (unfunded)

2020-2022, PI, Untethered free-vehicle sampling of abyssal/hadal invertebrate and sediment plastic in the Muertos Trough and Puerto Rico Trench. **NOAA OER**, $601,078.

2017-2019, PI, Development of a free-vehicle to profile the PRT water column biotic community via eDNA. **NOAA OER**, $601,642.

2017-2023, Senior Scientist, LTER: La Parguera Mesophotic Coral Ecosystem (PME). **NSF**, $1,100,000.

2014-2016, PI, Exploration of the Puerto Rico Trench via un-tethered free vehicles. **NOAA OER**, $444,000

2011-2015, Co-PI, The impacts of episodic rainfall events on coral reefs as determined with remote sensing, hydrological and coastal modeling and water quality monitoring, **NASA**, 1,715,411.

2010-2012, PI, Multi-disciplinary Exploration of the Muertos Trough and Puerto Rico Trench via Untethered Free-Descent/Ascent Vehicles, **NOAA OER**, $499,802

2010-2015, Co-PI, Hyperspectral, Radar, and EO/IR Signatures in the Littorals, **ONR**, $7,500,000 ($500,000 to UPRM).

2010-2012, PI, Hydrokinetic Energy Generation Using Vortex induced Vibrations. SRNL Sub- Contract, Environmental Measurements in Coastal Waters Over Prototype VIVACE. **DOE**, $493,612

2010-2012, PI, Lagrangian and Eulerian measurements of surfzone and nearshore currents in an Acropora palmata environment; Tres Palmas Marine Reserve, Rincón, Puerto Rico, PR **Sea Grant**, $218,039.

2009-2011, Co-PI, DURIP - An Autonomous Underwater Vehicle for Physical and Biological Oceanographic Research and Education, **ONR**, $198,831.