Dr. Sutara (Ata) Suanda

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Education

Oregon State University, Corvallis, OR

Ph.D., Oceanography, Feb. 2014

- Thesis: *Tidal-band and high-frequency internal variability on the Central Oregon inner shelf*
- Advisor: Dr. John A. Barth

M.S., Oceanography, Dec. 2009

- Thesis: *Diurnal wind-driven processes on the northern Monterey Bay inner shelf*
- Advisor: Dr. John A. Barth

Wesleyan University, Middletown, CT

B.A., Physics, 2003

Professional Experience

Associate Professor — August 2025 - present
Department of Physics and Physical Oceanography,
University of North Carolina, Wilmington, NC

Assistant Professor — January 2021 - August 2025
Department of Physics and Physical Oceanography,
University of North Carolina, Wilmington, NC

Lecturer — May 2018 to November 2020
Department of Marine Science,
University of Otago, NZ

Postdoctoral Research — March 2014 to May 2018
Scripps Institution of Oceanography,
University of California, San Diego
Scientific Advisor: Falk Feddersen, Ph.D

Recent Refereed Journal Publications

1. Valcarcel, A. F., Stevens, C. L., O'Callaghan, J. M., **Suanda, S. H.** (2025). Overlapping turbulent boundary layers in an energetic coastal sea. *Ocean Science*, 21(3), 965–987. 10.5194/os-21-965-2025
2. Marques, O. B., Feddersen, F., MacMahan, J., Acevedo-Ramirez, C. A., **Suanda, S. H.** (2025). Observations of Wave Energy Dissipation by Bottom Friction on Rocky Shores. *Journal of Physical Oceanography*, 10.1175/JPO-D-24-0144.1
3. Quinn, K. J., Feddersen, F., Marques, O. B., MacMahan, J. H., **Suanda, S. H.** (2025). Depth-Averaged Subtidal and Tidal Circulation off of a Rocky Shore. Journal of Geophysical Research: Oceans, 130(4), e2024JC022047.
4. Santana, R., O'Callaghan, J., Macdonald, **Suanda, S. H.**, Wakes, S. (2025). Eddy-Driven Cross-Shelf Exchange and Variability in the East Auckland Current. *Journal of Geophysical Research: Oceans*, 130(3), e2024JC021601
5. Nuss, E. S., Moulton, M., **Suanda, S.H.**, Baker, C. M. (2025) Modeled surf-zone eddies on a laboratory scale barred beach with varying wave conditions. *Journal of Geophysical Research: Oceans* 130(1), e2023JC020549.

6. **Suanda, S.H.**, Smith, R. O. (2024) Spring stratification and internal temperature oscillations near a coastal inlet. *New Zealand Journal of Marine and Freshwater Research*, doi.org/10.1080/00288330.2024.2439088

7. Vance, J., Currie, K. I, **Suanda, S. H.**, Law, C.S. (2024) Drivers of seasonal to decadal mixed layer carbon cycle variability in subantarctic water using the Munida Time Series. *Frontiers in Marine Science*, 11. 10.3389/fmars.2024.1309560

8. Johnson, E. E., Collins, C., **Suanda, S. H.**, Wing, S. R., Currie, K. I., Vance, J., Smith, R. O. (2024). Drivers of neritic water intrusions at the subtropical front along a narrow shelf. *Continental Shelf Research*, 277, 105248. 10.1016/j.csr.2024.105248

9. Johnson, E. E., **Suanda, S.H.**, Wing, S. R., Currie, K. I., Smith, R. O. (2023) Episodic Summer Chlorophyll-a Blooms Driven by Along-Front Winds at Aotearoa's Southeast Shelf Break Front. *Journal of Geophysical Research: Oceans* 128, no. 7. 10.1029/2022JC019609.

10. Santana, R., Macdonald, H., O'Callaghan, J., Powell, B., Wakes, S., **Suanda, S.H.**. (2023) Data assimilation sensitivity experiments in the East Auckland Current system using 4D-Var. *Geoscientific Model Development* 16, 13: 3675–98. 10.5194/gmd-16-3675-2023.

11. Montaño, M. M., **Suanda, S.H.**, DeSouza, J., (2023) Modelled coastal circulation and Lagrangian statistics from a large coastal embayment: The case of Bay of Plenty, Aotearoa New Zealand. *Estuarine, Coastal and Shelf Science* 281, 10.1016/j.ecss.2023.108212

12. DeSouza, J., **Suanda, S.H.**, Couto, P. P., Smith, R. O., Kerry, C., Roughan, M. (2023) Moana Ocean Hindcast - a 25+ years simulation for New Zealand Waters using the ROMS v3.9 model. *Geoscientific Model Development* 16, 1, https://doi.org/10.5194/gmd-16-211-2023

13. Moulton, M., **Suanda, S.H.**, Garwood, J. C., Kumar, N., Fewings, M. R., Pringle, J. (2022) Exchange of plankton, pollutants, and particles across the nearshore region *Annual Reviews of Marine Science* 15. https://doi.org/10.1146/annurev-marine-032122-115057

14. Spydell, M. S., **Suanda, S. H.**, Grimes, D. J., Becherer, J., Mcsweeney, J. M., Chickadel, C., Moulton, M., et al. (2021) Internal Bore Evolution across the Shelf near Pt. Sal, California, Interpreted as a Gravity Current. *Journal of Physical Oceanography* 51, no. 12, 3629–50. doi:10.1175/JPO-D-21-0095.1.

15. Santana, R. , **Suanda, S.H.**, Macdonald, H., O'Callaghan, J. (2021) Mesoscale and wind-driven intra-annual variability in the East Auckland current *Scientific Reports*, doi.org/10.1038/s41598-021-89222-3

16. Kumar,N., Lerczak, J., Xu, T., Waterhouse, A. F., Thomson, T., Terrill, E.J., Swann, C., **Suanda, S.H.**, et al., (2020) The Inner Shelf Dynamics Experiment *Bulletin of the American Meteorological Society*,doi:10.1175/BAMS-D-19-0281.1

DATASETS

1. **Suanda, S. H.**; Di Lorenzo, E.; Miller, A. J.; Haas, K.; Edwards, C. A.; Moore, A. M.; Kumar, N.; Xu, T.; Cai, D. (2022) Inner Shelf Dynamics Experiment ROMS Hindcast model simulations. doi.org/10.6075/J0930T97

2. **Suanda, S. H.**; DeSouza, J.; Smith, R. O. (2022) New Zealand coastal station sea temperature time series. doi.org/10.5281/zenodo.6399921

Current Funded Research

1. Co-PI on UNC System Research Opportunities Initiative: Transect Expedition to Assess Land-to-Sea Habitats via Interdisciplinary Process Studies (TEAL-SHIPS) $1.5M (2024 - 2027)
2. Co-PI on Bureau of Ocean Energy Management collaborative project: Coupled physical-biological processes at Frying Pan Shoals $1.8M (2022 - 2026)
3. Co-PI on Office of Naval Research Multi-University Research Initiative: Rocky Shorelines Experiments and Simulations (ROXSI): $524,138 (2021 - 2025)

Invited Presentations

1. Waves on the rocks: Modeling hydrodynamics on rocky shorelines. East Carolina University Coastal Studies Institute, Wanchese, NC. October, 2024.
2. Unresolved tidal effects in coastal circulation models. Duke Marine Laboratory. March, 2022.
3. Unresolved tidal effects in coastal circulation models. Center for Coastal Physical Oceanography, Old Dominion University. November, 2021.
4. The effects of barotropic and baroclinic tides on vertical and horizontal mixing in the coastal ocean. National Institute of Water and Atmospheric Research, Wellington, New Zealand. February, 2019.
5. Nested modeling of the Coastal Ocean. *Workshop presenter* International Workshop on Oceanography of the Indonesian Seas. Mulawarman University, Indonesia. November, 2017.
6. Modeling high frequency processes on the inner shelf of a coastal upwelling system. University of California, Santa Cruz, U. S. A. March, 2017.
7. Multiple scales of physical processes in the coastal ocean: Examples from the North American West Coast. Nanyang Technological University, Singapore. November, 2016.
8. Special Course on Coastal Oceanography. Institut Teknologi Bandung, Indonesia. November, 2016.
9. Modeling multi-scale interactions on the inner shelf. Gordon Research Seminar on Coastal Ocean Modeling, U. S. A. June, 2015.

Select Conference Presentations

Oral Presentations

1. Suanda, S.H. Headland wave focusing effects on nearshore momentum balances. AGU Fall Meeting, Washington DC, 2024
2. Suanda, S.H., Kumar, N, Spydell, M, Feddersen F. Barotropic and baroclinic tidal effects on coastal mixing and dispersion. Ocean Sciences, Portland, OR February, 2018
3. Suanda, S.H., Kumar, N, and others. Tidal effects in a realistic model of a thermally buoyant plume north of Pt. Conception. VIIIth International Symposium on Stratified Flows, San Diego, CA, August, 2016
4. Suanda, S.H., Kumar, N, and others. Modeling multi-scale interactions on the inner shelf. Ocean Sciences, New Orleans, LA, February, 2016
5. Suanda, S.H., Kumar, N, and others. Modeling multi-scale interactions on the inner shelf. Gordon Research Seminar on Coastal Ocean Modeling, 2015 (*invited*)

6. Suanda, S.H. Tidal-band and high-frequency internal waves on the Central Oregon inner shelf. Physical Oceanography Dissertation Symposium, Kauai, HI, October, 2014.

7. Suanda, S.H. and Barth, J.A. Understanding the timing and transports of high-frequency internal waves on the Oregon inner shelf. Ocean Sciences, Honolulu, HI, February, 2014.

8. Suanda, S.H. and Barth, J.A. Internal tides on the Oregon inner shelf. Eastern Pacific Oceans Conference, Stanford Sierra Camp, CA, September, 2013.

9. Suanda, S.H. and Barth, J.A. Contrasting regimes of internal wave activity on the Central Oregon inner shelf. Eastern Pacific Oceans Conference, Stanford Sierra Camp, CA, September, 2012.

10. Suanda, S.H. and Barth, J.A. Long-term observations of internal waves with shore-based video cameras. North Pacific Marine Science Organization (PICES), Hiroshima, Japan, October, 2012.

Poster Presentations

1. Suanda, S. H., Ramirez, C. A., Marques, O., Hesford, T., Feddersen, F., MacMahan, J. Flow on the rocks: Observations and modeling hydrodynamics on rocky shorelines. Gordon Research Conference on Coastal)cean Dynamics, 2025.

2. Suanda, S. H., Waterhouse, A. F., Becherer, J., Moum, J. N., McSweeney, J. M. The Internal Surfzone in Regional Ocean Models. Asia-Oceania Geosciences Society, 2023.

3. Suanda, S. H., Ramirez, C. A., Marques, O., Hesford, T., Feddersen, F., MacMahan, J. Numerical modeling of waves and currents across rocky shores. Gordon Research Conference on Coastal)cean Dynamics, 2023.

4. Suanda, S.H., Smith, R. O., Russell, P. Inner shelf circulation and retention downstream of Otago Peninsula, New Zealand. Ocean Sciences Meeting, 2020

5. Suanda, S.H., Kumar, N, and Feddersen, F. Barotropic and baroclinic tidal effects on coastal stratification. Gordon Research Conference on Coastal Ocean Dynamics, 2017

6. Suanda, S.H. and Feddersen F. Vortex interactions between mean longshore currents and transient rip currents. AGU Fall Meeting, San Francisco, CA, December, 2016.

7. Suanda, S.H., Kumar, N, and others. Got Tides?: Tidal effects in a realistic coastal ocean model. Eastern Pacific Oceans Conference, Timberline, OR, September, 2016

8. Suanda, S.H., Kumar, N, and others. Modeling multi-scale interactions on the inner shelf. Gordon Research Conference on Coastal Ocean Modeling, 2015

9. Suanda, S.H. and Feddersen F. A self-similar scaling for transient rip currents. AGU Fall Meeting, San Francisco, CA, December, 2014.

10. Suanda, S.H. and Feddersen F. The role of transient rip currents in driving exchange between the surfzone and inner shelf. Eastern Pacific Oceans Conference, Timberline, OR, September, 2014.

11. Suanda, S.H. and Barth J.A. Internal tides on the Oregon inner shelf. Gordon Research Conference on Coastal Circulation, New London, NH, June, 2013.

12. Suanda, S.H. and Barth J.A. Streaks and Slicks: Observing the surface manifestation of internal processes in the coastal ocean. Heceta Head Coastal Conference, Florence , OR, October, 2012.

Teaching

Undergraduate and graduate teaching — June 2018 - present

University of North Carolina Wilmington

PHY101 - Elementary College Physics
PHY480/580 - Coastal and Estuarine Systems
MSC601 - Regional oceanography of the South Atlantic Bight

University of Otago, New Zealand

OCEN321 - Ocean Physics and Modelling (*co-ordinator*)
OCEN301 - Practical and Field Oceanography
OCEN201 - Physical Oceanography
OCEN450 - Data Analysis Methods in Oceanography

Research Supervision

Graduate research

University of North Carolina Wilmington

Tim Hesford — Spring 2023

University of Washington, Seattle, WA

Emma Nuss (*PhD* co-advisor Dr. Melissa Moulton) — Completed Nov 2024
David Fertitta (*MSc*, co-advisor Dr. Nirnimesh Kumar) — Completed Aug 2019

University of Otago, New Zealand

Tim Baxter (*MSc* co-advisor Dr. Robert Smith) — Completed April 2021
Connor Davenport (*MSc* co-advisor Dr. Abby Smith) — Completed Feb 2021
Arnaud Valcarcel (*PhD* co-advisor Dr. Craig Stevens) — Completed April 2022
Rafael Santana (*PhD* co-advisor Dr. Helen MacDonald) — Completed June 2022
Erik Johnson (*PhD* co-advisor Dr. Robert Smith) — Completed 2023
Mireya Montano (*PhD* co-advisor Dr. Joao Souza) — Completed 2023

Undergraduate research advisor

University of North Carolina Wilmington

Noah Clark — Completed 2024
Andrew McLawhorn — Completed Fall 2023
Tim Hesford — Completed Dec 2022
Cody Benton (SECOORA data challenge) — Completed Dec 2021

University of Otago, New Zealand

Felix Cook (*Physics Honours* co-advisor Dr. Michael Jack) — Completed Nov 2019

Scripps Institution of Oceanography

Scripps Undergraduate Research Fellowship — Summer 2014 - 2017

Field Experiments

- Transect Expedition Across the Land-Sea Interface via Interdisciplinary Process Studies RV *Cape Hatteras*; Wilmington, NC — 2024 - present
  Repeat 4-day cruises through the Gulf Stream. ADCP mooring development and deployment. (*Chief Scientist*)
- Interdisciplinary study of Frying Pan Shoals RV *Sea Hawk*; RV *Cape Fear*; Wilmington, NC — 2023 - 2025
  Mooring development, deployment and recovery, shipboard CTD measurements. (*Chief Scientist*)
- ONR ROXSI MURI; Monterey, CA. — July - August 2022
  Shore-based mooring deployment and recovery.
- Student research class cruise, RV *Cape Fear*; Wilmington, NC. — Mar 2022
  Estuarine CTD survey, mooring deployment and recovery. (*Chief Scientist*)
- Otago internal waves, RV *Tuhura*; Otago, New Zealand. — Nov 2018
  Mooring construction, deployment, recovery. (*Chief Scientist*)

- ONR inner-shelf DRI, RV *Sally Ride*; San Diego, CA. Sep 2017
  Mooring deployments, continuous CTD and turbulence profiling, acoustic surveys.
- ONR inner-shelf pilot, RV *Oceanus*; Port Hueneme, CA. September 2015
  Mooring and lander recovery, shipboard CTD measurements.
- CSIDE, RV *Sally Ann*; Imperial Beach, CA. September 2015
  Shipboard CTD and ADCP measurements. Shore-based deployments of surfzone measurements.
- PICES summer course field program, RV *Elakha*; Newport, OR. Summer 2013
  Shipboard CTD and water sampling and ADCP and moored temperature/conductivity measurements. (*Chief Scientist*)
- Coastal internal wave study, RV *Elakha*; Newport, OR. Summer 2010, 2011
  Shipboard CTD and mooring operations. (*Chief Scientist*)
- Dye tracking experiment, RV *Wecoma*; Newport, OR. April 2009
  Mini-bat survey and ARGOS drifter deployments.
- Wave energy baseline study, RV *Elakha*; Reedsport, OR. Fall 2009

Prizes/Honors

- UNCW James F. Merritt Million Dollar Club 2023
- National Science Foundation Postdoctoral Fellowship October 2015
- Heceta Head Coastal Conference Best Poster Award Fall 2012
- Burt Graduate Student Award for Physical Oceanography Fall 2009
- Matthews Memorial Fund Recipient Summer 2009