Matthew D. Grossi, Ph.D. | Data Scientist

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Education

2021 **Doctor of Philosophy**, Meteorology and Physical Oceanography, University of Miami, Coral Gables, FL
Award of academic merit

2010 **Master of Science**, Oceanography, University of Delaware, Newark, DE

2008 **Bachelor of Science**, Physical Oceanography, Florida Institute of Technology, Melbourne, FL
Minor in Meteorology | *cum laude*

Additional Higher Education (no degree)

2014-2016 Climate Science (6 graduate credit hours), University of Massachusetts Dartmouth, New Bedford, MA

2012-2014 Theology (69 graduate credit hours), Saint John's Seminary College, Brighton, MA

2010-2012 Philosophy (48 undergraduate credit hours), Providence College, Providence, RI

Professional Experience

Jan 2023–present **Data Scientist** | Southeast Fisheries Science Center (SEFSC)
National Oceanic and Atmospheric Administration

Aug 2021–Jan 2023 **Uncrewed Systems Data Coordinator** | National Centers for Environmental Information (NCEI)
National Oceanic and Atmospheric Administration

Aug 2016–Jul 2021 **Research Assistant**
University of Miami, Coral Gables, FL

Aug 2018–Dec 2019 **Graduate Teaching Assistant** | two undergraduate courses
University of Miami, Coral Gables, FL

Sep 2014–Jul 2016 **Research Assistant** | Ocean Observation Laboratory
University of Massachusetts Dartmouth, New Bedford, MA

Jul 2008–Aug 2010 **Graduate Research Assistant** | Ocean Exploration, Remote Sensing, and Biogeography Lab
University of Delaware, Lewes, DE

Awards

2022-24 Three annual performance awards (top 30% in 2024), three impromptu performance awards, and six "shout out" recognitions of appreciation (NOAA)

2019 Rosenstiel School of Marine and Atmospheric Science TA Excellence Award (University of Miami)

2019 Gulf of Mexico Research Initiative Scholar (University of Miami)

2018 University of Miami Center for Computational Science Graduate Fellow (University of Miami)

2008 Oceanography Fellow (University of Delaware)

2004 Eagle Scout (Boy Scouts of America)

Professional Memberships

Marine Technology Society

The Oceanography Society

Funding Procurement

2025 NOAA Fisheries Information System Program ($80,000) "Advancing innovative deep learning models for red snapper otolith ageing towards operational use"

2024-27 NOAA Fisheries Information System Program Inflation Reduction Act ($768,237) "Building a Better Data Ecosystem: Database integration and data warehousing"

Cruise and Field Research Experience

(*>160 days in the field, >90 sea days*)

2018 Measuring surface currents from drones, Biscayne Bay, FL

2017 Performance comparison of Lagrangian drifter designs under wind stress, Gulf Stream (1 cruise, chartered small boat)

2017 Submesoscale Processes and Lagrangian Analysis on the Shelf (SPLASH) experiment: 3-week multi-platform field campaign investigating the movement of material across the shelf, into coastal waters, and onto the shore in the Louisiana Bight (several cruises, R/V *Argus*, UM)

2016 Miami Bay Drift experiment: deployment of GPS-tracked surface Lagrangian drifters, floating bamboo plates, and wooden drift cards in Biscayne Bay (1 cruise, chartered small boat)

2014-16 Maintenance and repair of high-frequency coastal ocean dynamics applications radar (CODAR) sites in Cape Cod, MA; Martha's Vineyard, MA; Nantucket, MA; Block Island, RI

2014-16 Deployment and recovery of Slocum glider (several cruises, R/V *Lucky Lady*, UMD)

2015 Offshore deployment of Satlantic hyperspectral and multispectral radiometers at the Martha's Vineyard Coastal Observatory Air-Sea Interaction Tower (1 cruise, R/V *Tioga*, Woods Hole Oceanographic Institution)

2014 Citizens Science Baywatcher, Buzzards Bay Coalition: regular testing and monitoring water temperature, salinity, and dissolved oxygen in Eel Pond estuary, Mattapoisett, MA

2011 Satellite-tagging sand tiger sharks with acoustic and Pop-off Archival Satellite Tag (PSAT) transmitters in Delaware Bay (1 cruise, R/V *Stanley*, Delaware State University)

2009-10 Deployment and recovery of Slocum glider (several cruises, R/V *Hugh R. Sharp*, UNOLS/UD; R/V *Donna M.*, UD; and R/V *Caleta*, Rutgers University)

2008-09 Mapping photosynthetic quantum yield in the mid-Atlantic coastal ocean and Delaware Bay (13 cruises, R/V *Hugh R. Sharp*, UNOLS/UD)

2008 Field data acquisition, database management, and lab work, Marine Benthos Lab, Florida Tech

2007 Florida Tech Marine Field Projects interdisciplinary research cruise in Florida Atlantic coastal waters (1 cruise, R/V *Gulf Stream Eagle*)

Publications

Peer Reviewed

Grossi, M.D., S. Jegelka, P.F.J. Lermusiaux, T.M. Özgökmen (2025) Surface drifter trajectory prediction in the Gulf of Mexico using neural networks, *Ocean Modelling*, 196, 102543.

Grossi, M.D. , T.M. Özgökmen, M. Kubat (2020) Predicting particle trajectories in oceanic flows using artificial neural networks, *Ocean Modelling*, 156, 101707.

Geiger, E.F., **M.D. Grossi**, A.C. Trembanis, J.T. Kohut, M.J. Oliver (2011) Satellite-Derived Coastal Ocean and Estuarine Salinity in the Mid-Atlantic, *Continental Shelf Research*, doi:10.1016/j.csr.2011.12.001.

Conference Proceedings

Shah, C, M.M. Nabi, S.Y. Alaba, M.D. Campbell, R. Caillouet, **M.D. Grossi**, J.E. Ball, and R. Moorhead (2025) YOLOv8-TF: Transformer-Enhanced YOLOv8 for Underwater Fish Species Recognition with Class Imbalance Handling, *Sensors*, 25, 1846, doi:10.3390/s25061846.

Shah, C., M.M. Nabi, S.Y. Alaba, R. Caillouet, J. Prior, M. Campbell, **M.D. Grossi**, F. Wallace, J.E. Ball, and R. Moorhead (2024) Active detection for fish species recognition in underwater environments, Proc. SPIE 13061, Ocean Sensing and Monitoring XVI, 130610D, 6 June 2024, https://doi.org/10.1117/12.3013344.

Alaba, S.Y., J.H. Prior, C. Shah, M.M. Nabi, J.E. Ball, R. Moorhead, M.D. Campbell, F. Wallace, and **M.D. Grossi** (2024) Multifish tracking for marine biodiversity monitoring, Proc. SPIE 13061, Ocean Sensing and Monitoring XVI, 130610E, 6 June 2024, https://doi.org/10.1117/12.3013503.

Technical Reports (not peer reviewed)

Grossi, M.D., M. Monim, A. Gangopadhyay (2017) Global Climate Patterns: An Overview of Arctic Oscillation, Pacific Decadal Oscillation, Pacific/North American Pattern, and El Niño Southern Oscillation, University of Massachusetts Dartmouth School for Marine Science and Technology Technical Report SMAST-17-0401, doi:10.13140/RG.2.2.34586.44480.

W.S. Brown and **M. Grossi** (2016) Pre- and Post-Mission-6 Glider CTD Comparison Measurements: 11 June and 22 July 2015, University of Massachusetts Dartmouth School for Marine Science and Technology Technical Report SMAST-16-0501.

W.S. Brown and **M. Grossi** (2015) Pre- and Post-Mission Glider CTD Comparison Measurements: 19 June 2014 and 6 February 2015, University of Massachusetts Dartmouth School for Marine Science and Technology Technical Report SMAST-15-06-01.

Presentations | Posters | Contributed Abstracts

Grossi, M.D., M. Kubat, T.M. Özgökmen (2020) Can Neural Networks Learn Realistic Ocean Trajectories?, Gulf of Mexico Oil Spill and Ecosystem Science Conference, Tampa, FL.

Grossi, M.D., M. Kubat, T.M. Özgökmen (2020) Predicting particle trajectories using artificial neural networks, Multidisciplinary University Research Initiative (MURI) Machine Learning for Submesoscale Characterization, Ocean Prediction, and Exploration (SCOPE) project kickoff meeting, Massachusetts Institute of Technology, Cambridge, MA.

Grossi, M.D., M. Kubat, T.M. Özgökmen (2019) Predicting particle trajectories using artificial neural networks, Consortium for Advanced Research on Transport of Hydrocarbon in the Environment Fall All-Hands Meeting, University of Miami, Miami, FL.

Grossi, M.D., M. Kubat, T.M. Özgökmen (2019) Predicting Oil Transport in Oceanic Flows: Are Neural Networks Up to the Task?, Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, LA.

Grossi, M.D., M. Kubat, T.M. Özgökmen (2018) Predicting particle transport in oceanic flow regimes using artificial neural networks, Consortium for Advanced Research on Transport of Hydrocarbon in the Environment Fall All-Hands Meeting, University of Miami, Miami, FL.

Grossi, M.D., M. Kubat, T.M. Özgökmen (2018) A first glimpse at predicting ocean dispersion using artificial neural networks, Consortium for Advanced Research on Transport of Hydrocarbon in the Environment Spring All-Hands Meeting, University of Miami, Miami, FL.

Grossi, M.D., M. Kubat, T.M. Özgökmen (2018) A first glimpse at predicting ocean dispersion using artificial neural networks, University of Miami Center for Computational Sciences Fellows Symposium, Miami, FL.

Grossi, M.D., T.M. Özgökmen (2018) Can artificial intelligence predict the dispersion of spilled oil?, Gulf of Mexico Oil Spill and Ecosystem Science Conference, New Orleans, LA.

Oliver, M.J., **M.D. Grossi**, E.F. Geiger, A. Irwin, F. Veron (2013) Predicting Ocean Density Profiles Using Satellite Platforms, NASA Biodiversity and Ecological Forecasting Team Meeting, April 23-25,2013, Arlington, VA.

Oliver, M.J., **M.D. Grossi**, E.F. Geiger, A. Irwin, F. Veron (2011) Predicting ocean density profiles using satellite platforms, NASA Joint Carbon and Ecosystems, Washington D.C.

Geiger, E.F., **M.D. Grossi**, A.C. Trembanis, J.T. Kohut, M.J. Oliver (2011) Satellite-Derived Coastal Ocean and Estuarine Salinity in the Mid-Atlantic, NASA Joint Carbon and Ecosystems, Washington D.C.

Grossi, M.D., E.F. Geiger, A.J. Irwin, F. Veron, M.J. Oliver (2010) Predicting Open Ocean Density Profiles from Satellite Observations, Ocean Sciences Meeting, Portland, OR.

Geiger, E.F., **M.D. Grossi**, A.C. Trembanis, J.T. Kohut, M.J. Oliver (2010) Satellite Derived Salinity Predictions of the Mid-Atlantic Coastal Ocean, Ocean Sciences Meeting, Portland, OR.

Treible, L.M., E.F. Geiger, **M.D. Grossi**, M.J. Oliver (2010) The Impact of Wind on Non-Photochemical Quenching in the Mid-Atlantic Coastal Ocean, Ocean Sciences Meeting, Portland, OR.

Geiger, E., **M. Grossi**, M. Oliver (2009) Developing Satellite-Derived Salinity Product for the Mid-Atlantic Coastal Region, Delaware EPSCoR Annual State Meeting, Newark, DE.

Oliver, M., **M. Grossi**, E. Geiger (2009) 3-D Mapping of Ocean Water Masses and Provinces, Joint Carbon/Biodiversity Meeting, New York, NY.

Splitt, M.E., **M.D. Grossi** (2008) Evaluation of the Real-Time Ocean Forecast System in Florida Atlantic Coastal Waters, Ocean Sciences Meeting, Orlando, FL.

Grossi, M.D. (2007) Evaluation of the Real-Time Ocean Forecast System in Florida Atlantic Coastal Waters, Florida Institute of Technology Department of Marine & Environmental Systems Summer Symposium, Melbourne, FL. (Both oral and poster presentation)

Media Publicity

GoMRI Scholar Recognition Writeup (June 11, 2019): "*Grad Student Grossi Uses Artificial Intelligence to Map Ocean Flows*": funding agency highlighting early stages of my dissertation research

UMass Dartmouth News (June 2, 2016): "*SMAST underwater robot on mission to capture valuable ocean data*" ": highlighted our 2016 deployment of glider Blue in preparation for hurricane season

SMAST News (May 24, 2016): "*Underwater robot begins mission to track ocean data*"

SouthCoastToday.com (October 28, 2014): "*SMAST deploys water glider to study ocean temperatures*": local newspaper showcasing our 2014 glider deployment

WPRI (November 25, 2014): "*UMD getting ocean data from Blue glider*": local news outlet showcasing our 2014 glider deployment

Teaching Experience

2019 Teaching Assistant, MSC 112: Introduction to Marine Science Lab (*Topics taught: deep sea sediment, microfossils, and global climate change; surface currents and shoreline erosion; coastal marine environments of South Florida*), University of Miami

2019 Invited Leader, Educational Training for Teaching Assistants, University of Miami

2019 Guest Lecturer (3 lectures), MPO 511/611: Geophysical Fluid Dynamics I, University of Miami

2018 Guest Lecturer (2 lectures), MPO 511/611: Geophysical Fluid Dynamics I, University of Miami

2018 Invited speaker, RSMAS Lunch Bytes Educational Seminar Series (Talk title: Peeking under the hood of an artificial neural network), University of Miami

2018 Teaching Assistant, MSC 301: Introduction to Physical Oceanography (Topics taught: wind-driven circulation, western boundary currents, vorticity, instability, and programming in R) (*RSMAS TA Excellence Award winner*), University of Miami

2015 Guest Lecturer, MAR 110: Natural Hazards and the Oceans (*Topic: Short-term Climate Variability and El Niño/Southern Oscillation*), University of Massachusetts Dartmouth

Service | Outreach | Leadership

2020 New Student Professional Development and Networking Program team member: planned and executed a two-semester orientation/professional development program for approximately 15 incoming RSMAS students, University of Miami

2019-21 Student Led Evaluations and Development (SLED) committee student representative for the RSMAS Meteorology and Physical Oceanography program, University of Miami

2019 Demonstrations of ocean observation techniques and instrumentation, presentations about the Consortium for Advanced Research on Transport of Hydrocarbon in the Environment (CARTHE) and local outreach program BayDrift, and tours of CARTHE lab (*elementary, middle, high school students; local public school teachers*), University of Miami

2019 New Student Professional Development and Networking Program team member: planned and executed a 4-week pilot orientation program for approximately 35 incoming RSMAS students, University of Miami

2019 Identifying gaps in undergraduate preparation and core competencies and outlining strategies for moving forward (*invited panelist*), University of Miami

2018 CARTHE to the Classroom: teaching under-privileged kids about ocean currents, conservation, and BayDrift (*100 students grades 6-8*), Horace Mann Middle School, Miami, FL

2018 Demonstrations of ocean observation techniques and instrumentation, presentations about CARTHE and local outreach program BayDrift, and tours of CARTHE lab (*elementary, middle, high school students; local public school teachers*), University of Miami

2018 Presentation of ocean observation techniques for Frost Science Museum Summer Camp students (*grades 6-8*), University of Miami

2016 Demonstrations of ocean observation, data visualization, and glider operations for Tabor Academy (Marion, MA) ninth grade students, UMass Dartmouth

2016 Demonstration of glider operations, underwater robotics, data visualization, and oceanographic data sampling for Carney Academy (New Bedford, MA) fourth grade students, UMass Dartmouth

2016 Trained and mentored new research assistant in HR radar and AUV glider operations, data management, and public outreach, UMass Dartmouth

2014-16 Created and maintained Facebook outreach page for the Ocean Observation Laboratory reaching over 300 people within the first year, UMass Dartmouth

2015 Showcased glider and ocean observation methods at New Bedford Working Waterfront Festival, UMass Dartmouth

2015 Demonstrations of ocean observation, data visualization, and glider operations for Tabor Academy (Marion, MA) ninth grade students, UMass Dartmouth

2015 Recruited, trained, and supervised student workers and community volunteers for lab and field work, UMass Dartmouth

2010 Mobilized AUV glider in an emergency response to the Deepwater Horizon oil spill in the Gulf of Mexico, University of Delaware

2010 Mentored undergraduate summer interns with data collection, analysis, and presentation of summer research projects, University of Delaware

2010 Collaborated with high school science curriculum development team to integrate NASA products into classroom instruction, University of Delaware and Cape Henlopen High School, Lewes, DE

2010 Demonstrations of state-of-the-art Global Visualization lab, ocean observation, research, and data products to campus visitors (*1200 visitors in 2010*), University of Delaware

2009 Mentored undergraduate summer interns with cruise procedures, data collection, analysis, and presentation of summer research projects, University of Delaware

Certifications

Open Water SCUBA (SDI)

National Weather Service SKYWARN Spotter, Taunton, MA Office

United States Coast Guard Auxiliary Safe Boating Certificate

State of Delaware Boating License

State of Connecticut Safe Boating Certificate with Personal Watercraft Operation endorsement

FCC-licensed (Technician) amateur radio operator