

FRANK EDGAR MULLER-KARGER
CURRICULUM VITAE

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I. Personal Information:

Ancestry: Hispanic
Employer: University of South Florida, College of Marine Science
140 7th Ave. South, St. Petersburg, FL 33701

II. Education:

Primary and High School:

1974 *Colegio "Humboldt", Caracas, Venezuela.*

Undergraduate:

1974 Universidad Simón Bolívar, Caracas, Venezuela. Chemical Engineering. (1976, transferred to Florida Institute of Technology).

1979 Bachelor in Biological Oceanography. Florida Institute of Technology. Melbourne, FL.

Graduate:

1984 Master of Science in Oceanography. Institute of Marine Science. University of Alaska, Fairbanks, AK. Thesis: Lower trophic level studies in the marginal sea-ice zone. Advisor: Dr. Vera Alexander.

1988 Ph.D. in Marine and Estuarine Sciences. University of Maryland, Center for Environmental and Estuarine Studies (UMCEES). College Park, MD and Horn Point Environmental Laboratories, Cambridge, MD. Dissertation: Variation in the seasonal distribution of phytoplankton in the Caribbean Sea as observed in a series of Coastal Zone Color Scanner images (1978-1986). Advisors: Thomas R. Fisher (U. Maryland), and Charles R. McClain (NASA, Goddard Space Flight Center).

2001 Master of Science in Management. University of South Florida. College of Business Administration. Tampa, FL. Organizational design, leadership, human resources and modern management principles and techniques.

III. Employment:

2000/- Full Professor. Tenured. University of South Florida
Employer: University of South Florida
140 7th Ave. S., St. Petersburg, FL 33701

2007/2009 Dean, School for Marine Science and Technology, Univ. Massachusetts Dartmouth
Full Professor. Tenured. Univ. Massachusetts Dartmouth
Employer: University of Massachusetts Dartmouth
706 South Rodney French Boulevard
New Bedford, MA 02744-1221
Supervisor: Dr. Anthony Garro, Provost
agarro@umassd.edu; (508) 999-8024

2003/05 College of Marine Science Dean's Advisory Council/Biological Oceanography

2001/04 Commissioner, U.S. Commission on Ocean Policy
Voluntary, serving as nominee of and by appointment of the President of the United States. USCOP Chair: Adm. (USN/Retired) James D. Watkins

1994/00 Associate Professor. Tenured 1994. University of South Florida
 1992/94 Program Scientist, Ocean Biogeochemistry Program: National Aeronautics and Space Administration / NASA Headquarters / NASA Jet Propulsion Lab-California Institute of Technology.
 Program Scientist, NASA Sea-viewing Wide-Field-of-view Sensor (SeaWiFS) Program.
 Program Scientist, NASA Moderate Resolution Imaging Spectrometer Sensor (MODIS) Program.
Employer: CA Institute of Technology, NASA JPL and NASA HQ
Supervisors:
Dr. Diane Wickland
Diane.Wickland@hq.nasa.gov; (202) 358-0245
Dr. Robert Murphy

1989/94 Assistant Professor. Department of Marine Science, USF
 1988/89 Research Associate, Department of Marine Science, USF
Supervisor: Dr. John J. Walsh
jwalsh@marine.usf.edu; (727) 553-1164

1985/87 Consultant to Skidaway Institute of Oceanography.
 1985/87 Consultant to NASA Goddard Space Flight Center.
 1984/88 Research Assistant, CEES Program, University of Maryland.
 1984/87 Teaching Assistant, Dept. of Botany, University of Maryland.
 1979/84 Research Assistant, Institute of Marine Science, U. of Alaska.

IV. Professional Interests and Expertise:

Interdisciplinary Earth science and Earth observation,
 Oceanography, coastal and estuarine science,
 Satellite oceanography and remote sensing,
 Science education and strategic planning for formal/informal public education,
 Integration of science, management and education,
 Ocean Policy

V. Professional Awards, Honors, and Scholarships:

2013 Group Achievement Honor Award, NASA Ames Research Center
 2013 Secondary Business Partner of the Year, Hillsborough County Public Schools
 2013 Feature article USF Magazine/Spring 2013: Turning the Tide; A. Carney and K. Henning
 2011 Gulf Guardian Award, EPA Gulf of Mexico Program.
 2011/12 NASA Pre-Aerosol/Clouds/Ecosystem (PACE) Science Definition Team
 2011 Feature article in The Scientist ("Mapping Coral Reefs"; February 2012; p. 51)
 2010/ Silhouettes, La Gaceta (Tampa, FL; September 13, 2010); featured community figure.
 2009/- Director, International Ocean Institute – USA (IOI-USA)
 2008/- Chair (2011), Science Advisory Council, InterAmerican Institute for Climate Change Research (IAI)
 2008/2009 Member, Science Advisory Council to the Massachusetts Ocean Planning Commission
 2008/2010 Board Trustee, The Ocean Explorium, New Bedford, Massachusetts
 2008/- Board Trustee, The Northstar Learning Center, New Bedford, Massachusetts
 2008/2010 Member, NRC committee "Committee on the Review of NOAA's Education Programs"
 2008 "Most cited paper" mention, Continental Shelf Research, for 2005 Astor et al. paper
 2006 USF Million Dollar Researcher President's award
 2006/2007 Member, University of South Florida, President's Strategic Planning Committee
 2006/2007 Member, NRC committee "Extending Observations and Research Results to Practical Applications: A Review of NASA's Approach"
 2006 Member, NRC committee "An Assessment of Balance in NASA's Science Programs"
 2005 Julius A. Stratton Award for Leadership, awarded to members of the U.S. Commission on Ocean Policy (Coastal Zone 2005 meeting)

- 2005/- Editorial Board, Caribbean Marine Science, Journal of the Institute for Marine Affairs (IMA), Trinidad and Tobago
- 2005/2008 Member, National Research Council Ocean Studies Board, National Academies
- 2005/2008 U.S. Representative to the ICSU SCOR, appointed by the NRC
- 2005/2008 Member and elected vice-chair, University of South Florida Research Council
- 2004/- Editorial Board, Memoria, Journal, Fundación La Salle de Ciencias Naturales de Venezuela
- 2004 Acknowledgement for service on the U.S. Commission on Ocean Policy by Senator E. Hollings. Congressional Record. Proceedings and Debates of the 108th Congress, Second Session. Vol 150. No. 89.
- 2004 Admiral James D. Watkins Award for Contributions to Ocean Research and Education, Consortium for Oceanographic Research and Education (CORE)
- 2004 Gulf Guardian Award (EPA Gulf of Mexico Program)
- 2003 University of South Florida President's Award for Faculty Excellence
- 2003/2005 USF College of Marine Science Dean's Advisory Council / faculty elected representative
- 2001/2004 Commissioner, U.S. Commission on Ocean Policy, nominated and appointed by President George W. Bush

VI. Member:

American Geophysical Union (AGU)
 American Society of Limnology and Oceanography (ASLO)
 Fundación La Salle de Ciencias Naturales de Venezuela (FLASA; Founding Member)

VII. Grants and Contracts:

Grants/contracts received from NSF, NASA, NOAA, EPA, ONR, USGS, MMS, The State of Florida, The Ocean Conservancy, others.

2004-2015 Funded Projects: (Prior projects and funding level available on request)

- NSF (2014 - 2016) The Cariaco basin oceanographic time series program. FMK PI, Co-Is: Y Astor, M. Scranton, G. Taylor, R. Thunell, and K. Fanning.
- NSF (2013-2015) Belmont Forum Grant: METROPOLE: An Integrated Framework to Analyze Local Decision Making and Adaptive Capacity to Live With Large-Scale Environmental Change: Community Case Studies in Brazil, UK and the US. FMK PI, Co-I's: Mark Pelling (UK), Jose Marengo (Brazil), Sam Merrill (USA).
- NSF (1995 - 2013) The Cariaco basin oceanographic time series program. FMK PI, present Co-Is: R. Varela, Y Astor, M. Scranton, G. Taylor, R. Thunell, and K. Fanning.
- NSF (2010-2012) EAR-1043323 CCEP: Coastal Areas Climate Change Education (CACCE) Partnership. PI: Jeff Ryan (USF Geology). FMK co-I.
- NASA (Via ROFFS, Inc./PI; 2011-2015) Management and conservation of Atlantic bluefin tuna (*Thunnus thynnus*) and other highly migratory fish in the Gulf of Mexico under IPCC climate change scenarios: A study using regional climate and habitat models.
- NASA (11/1/2009-10/31/2014). Decision Support System for Ecosystem-Based Management of Tropical Coral Reef Environments.
- NASA (2014-2016). Florida Space Grant Consortium: Unlocking Earth's Secrets from Space; Education collaboration with Stewart Middle School, Tampa.
- NASA An assessment of global organic carbon flux along continental margins. Co-I with C. Hu
- NASA The mapping and monitoring of change in the Florida Keys reef tract from space using L7 and MODIS. Co-I with D. Palandro.
- NASA A millennium global scale coral reef ecosystem assessment using high resolution remote sensing data. Co-I with S. Andrefouet and C. Hu
- NASA Impact of large and small rivers on adjacent oceanic environments. Co-I with C. Hu

NASA EAGLE-EYE: Ecological Assessments of Generalized Littoral Environments – an Integrated EOS DB/Real-time MODIS Science Applications Project. Co-I with C. Hu

NASA: Collaborative Research with the NASA Marshall Space Flight Center.

NASA Collaborative effort with ROFFS, Inc. Study of Bluefin Tuna larvae distribution in the Gulf of Mexico. (Through 2011)

NASA Collaborative effort with Roff's, Inc. Study of ocean environmental parameters to forecast the effects of climate variability on pelagic fish.

NASA Phytoplankton hyperspectral signatures from aerial and undersea high temporal and spectral resolution measurements: GeoCape Science Program Requirements.

NASA Environmental Assessments of Coral Reef Ecosystems: Interdisciplinary Research; Co-I with S. Andrefouet (IRD, New Caledonia, France)

NOAA (2013-2016.) Clean Community-Clean Coast Proposal. Marine Debris Program.

NOPP (2014-2018.) National Marine Sanctuaries as Sentinel Sites for a Demonstration Marine Biodiversity Observation Network (MBON). NOAA/NASA/BOEM.

EPA US-Mexico Binational Red Tide Program. Gulf of Mexico Program Office.

EPA Ecological Assessment of Generalized Littoral Environments Decision-Support System (EAGLE/DS). Extreme Event Impacts on Air Quality and Water Quality with a Changing Global Climate; EPA-G2011-STAR-D1.

Exxon Gulf of Mexico Environmental Change Assessment

I-4 Corridor Tech Support for Improving the NOAA NMFS and ICCAT Atlantic Bluefin Tuna Fisheries Management Decision Support System.

BP/FIO Gulf Oil Spill Prevention, Response, and Recovery Grant. Early Warning 4-D Remote Sensing System to Assess Synoptic Threats to Coastal Ecosystems of Florida and of Adjacent States and Nations.

FSRI Florida Space Research Institute; Coastal remote sensing with the Space Station; Co-I with C. Hu

NOPP Influence of Oceanographic and Biological Processes on the Distribution of Cetaceans (D. Mann, PI; FMK co-I)

ONR University of North Carolina; SEA-COOS remote sensing component. Co-I with C. Hu and R. Weisberg.

ONR Construction and Deployment of an Underwater Optical Micrometer

State of FL Geospatial Assessment of Marine Environments (GAME); Defining coastal bioregions of Florida. Co-I with J. Ogden and H. Norris.

Texas A&M GCOOS RA.

USGS Use of remote sensing satellites to monitor sediment plumes in the Mississippi bight; Co-I with C. Hu

USGS Use of remote sensing to monitor water clarity and sediment dynamics in the Chesapeake Bay. Co-I with C. Hu

VIII. Professional Activity: (last ten years; not exhaustive list)

University of South Florida

- Strategic Planning Committee
- Research Council (2005-2007, elected vice-chair)
- Internet-2 Committee
- Search Committee: Director, School for Global Sustainability
- Search Committee: Vice President for Research
- President's Task Force: Values, Vision, Mission and Goals

College of Marine Science:

- Computer Committee
- Library Committee
- Marine Biology faculty recruitment committee
- Biological Oceanography curriculum review
- Student recruiting Committee
- Tenure and Promotion
- Seminar Committee
- Annual Faculty Review (2011, 2012)

Interamerican Institute for Global Change Research – Chair, Science Advisory Committee

University of Massachusetts Dartmouth

- School for Marine Science and Technology: Strategic Planning Lead
- UMass Dartmouth NEASC Planning Committee

Editorial Board, Institute of Marine Affairs Journal: Caribbean Marine Science, Trinidad and Tobago
Editorial Board, Memoria, Fundacion La Salle de Ciencias Naturales, Venezuela
Ocean Studies Board, NRC
U.S. Commission on Ocean Policy
Organizer: Ocean Biogeochemistry Scoping Workshop, Hawaii (September 2010)
Organizer, NASA Small Satellite Technology Initiative, NASA Remotely-Piloted Vehicle workshop.
Member, SeaWiFS Science Team and SeaWiFS Science Team
Reviewer of scientific manuscripts for the AGU Global Biogeochemical Cycles.
Reviewer of scientific manuscripts for the AGU Journal of Geophysical Research.
Reviewer of scientific manuscripts for the AGU Geophysical Research Letters.
Reviewer of scientific manuscripts for the Journal of Remote Sensing of the Environment.
Reviewer of scientific manuscripts for the Journal of Continental Shelf Research.
Reviewer of scientific manuscripts for the Boletin Oceanografico de la Universidad de Oriente.
Reviewer of scientific manuscripts for the Journal of the Institute of Marine Affairs, Trinidad & Tobago.
Reviewer of scientific manuscripts for the magazine Oceanography (Oceanography Society).
Reviewer of scientific manuscripts for the Marine Technology Society.
Reviewer of scientific proposals for NASA.
Reviewer of scientific proposals for NOAA.
Reviewer of scientific proposals for NSF (Biological Oceanography, Chemical Oceanography, OSTI).
Reviewer of scientific proposals for the Interamerican Institute for Global Change.
Reviewer of scientific proposals for the Florida Space Grant Consortium.
Reviewer of scientific proposals for the Environmental Protection Agency.
Reviewer of proposals for NASA, NSF, NOAA, EPA, ONR, NOPP, IAI

IX. Research and sea-going experience:

Extensive experience using a wide variety of remote sensing, as well as field biological, geological, chemical, and physical oceanographic equipment. Familiar with stable (nitrogen) and radioactive (carbon) isotope techniques in phytoplankton work. Participated in upwards of 40 cruises in tropical to high latitude environments.

X. Special skills:

Team leadership
Languages: Spanish, German, English
SCUBA (Advanced Open Water, Rescue training, DAN O2)
Methods for wet nutrient chemistry
Methods for autoanalyzer nutrient chemistry
Productivity assays (^{14}C and ^{15}N isotopes)
Computer systems and basic network management
Satellite and ground-based remote sensing (VIS, IR)

XI. Students and trainees while at USF:

Doctoral: Matthew McCarthy, Abdiel Laureano-Rosario, Maria Vega-Rodríguez, Sennai Habtes, Laura Lorenzoni, Inia Soto, Digna Rueda, Enrique Montes, David Palandro, Bisman Nababan, Fernando Gilbes, Lisa Vanderbloemen, Zhiqiang Chen. Non-USF: Joe Salisbury (University of New Hampshire), Sergio Cerdeira (Universidad de la Habana).
Masters: Brendan O'Connor, Claudia Baron Aguilar, Juan Carlos Millan, Abbie Harris, Inia Soto, Laura Lorenzoni, Carrie Wall, Enrique Montes, Ana Lucia Odriozola, MingRui Zhang, Wensheng Yao, Jingwei Ke, Herschel T. Hochman, Josh Henson, Haiying Zhang.
Undergraduate: Ana Lucia Odriozola, John Akl (undergr., Eckerd College), Paola Castellanos (undergr., Universidad Simon Bolivar).
Post-doctoral Associates: Laura Lorenzoni, Daniel Otis, Enrique Montes, Gerardo Toro-Farmer, Zhiqiang Chen, Richard Bohrer, Gilberto Gaxiola, Eduardo Santamaría, Guillermo E. Quiros, Serge Andrefouet, Cesar Fuentes-Yaco, Chuanmin Hu, Eurico D'Sa, Christian Schiller.

Trainees (not exhaustive): Ezequiel Cozzolino, Paul W. Bissett, Lingzis D. Tang, Roberto Perez, Sergio Cerdeira, Nelson Melo, Jose Rafael Diaz, Paola Filippi, Denis Nadeau, David Lindo-Atichati.

Technicians: Robert Chen, C. J. Reynolds, Gabriel Quiles, Brock Murch, Judd Taylor, Michelle McIntyre, Richard Bohrer, Remy Luerksen, Christine Kranenburg, Haiying Zhang, Laura Lorenzoni, Christian Schiller, Damaris Torres, Zhiquiang Chen, MingRui Zhang, Wensheng Yao.

XII. Publications:

2016

- Montes, Enrique, Frank Muller-Karger, Michael W. Lomas, Andrés Cianca, Laura Lorenzoni, Sennai Habtes. (In press). Decadal variability in the oxygen inventory of North Atlantic Subtropical Underwater captured by sustained, long-term oceanographic time-series observations. [Paper #2015GB005183RR]. *Global Biogeochemical Cycles*.
- O'Connor, Brendan S., Frank E. Muller-Karger, Redwood W. Nero, Chuanmin Hu, Ernst B. Peebles. 2016. The role of Mississippi River discharge in offshore phytoplankton blooming in the northeastern Gulf of Mexico during August 2010. *Remote Sensing of Environment*. Volume 173. Pages 133–144. doi:10.1016/j.rse.2015.11.004
- Toro-Farmer, Gerardo, Frank E. Muller-Karger, Maria Vega-Rodríguez, Nelson Melo, Kimberly Yates, Sergio Cerdeira-Estrada, and Stanley R. Herwitz. 2016. Characterization of Available Light for Seagrass and Patch Reef Productivity in Sugarloaf Key, Lower Florida Keys. *Remote Sens.* 2016, 8(2), 86; doi:10.3390/rs8020086.
- Liu, Y., S.-K. Lee, D. B. Enfield, B. A. Muhling, J. T. Lamkin, F. E. Muller-Karger, and M. A. Roffer, 2016: Past and future climate variability in the Intra-Americas Sea and its impact on the marine ecosystem and fisheries, *US CLIVAR Variations*, Vol. 14, No. 1, 27-32.

2015

- Barnes, BB, P Hallock, C Hu, F Muller-Karger, DA Palandro, C Walter, R Zepp. 2015. Prediction of coral bleaching in the Florida Keys using remotely sensed data. *Coral Reefs*. DOI 10.1007/s00338-015-1258-2
- Goni, Gustavo J., Joaquin A. Trinanes, Amy MacFadyen, Davida Streett, María Josefina Olascoaga, Marc L. Imhoff, Frank Muller-Karger, Mitchell A. Roffer. 2015. Variability of the Deepwater Horizon Surface Oil Spill Extent and Its Relationship to Varying Ocean Currents and Extreme Weather Conditions. In: (Matthias Ehrhardt, Editor) *Mathematical Modelling and Numerical Simulation of Oil Pollution Problems*. The Reacting Atmosphere Volume 2, 2015, pp 1-22.
- Irwin, A.J., Z.V. Finkel, F.E. Muller-Karger, and L. Troccoli. 2015. Phytoplankton adapt to changing ocean environments, *Proceedings of the National Academy of Sciences*. 112:5762-5766. doi:10.1073/pnas.1421475112.
- Liu, Y., S.-K. Lee, D. B. Enfield, B. A. Muhling, J. T. Lamkin, F. E. Muller-Karger, and M. A. Roffer, 2015: Potential impact of climate change on the Intra-Americas Seas: Part-1. A dynamic downscaling of the CMIP5 model projections. *J. Marine Syst.*, 148, 56-69, doi:10.1016/j.jmarsys.2015.01.007.
- MacDonald, I. R., O. Garcia-Pineda, A. Beet, S. Daneshgar Asl, L. Feng, G. Graettinger, D. French-McCay, J. Holmes, C. Hu, F. Huffer, I. Leifer, F. Muller-Karger, A. Solow, M. Silva, and G. Swayze. 2015. Natural and unnatural oil slicks in the Gulf of Mexico. *Journal of Geophysical Research: Oceans*. 120, 8364–8380, doi:10.1002/2015JC011062.
- McCarthy, M., E. Merton, and F. Muller-Karger. 2015 (In Press). Improved coastal wetland mapping using very-high 2-meter spatial resolution imagery. *International Journal of Applied Earth Observation and Geoinformation*.
- Muhling B. A., Y. Liu, S.-K. Lee, J. T. Lamkin, M. A. Roffer, F. Muller-Karger and J. F. Walter, 2015: Potential impact of climate change on the Intra-Americas Seas: Part-2. Implications for Atlantic bluefin tuna and skipjack tuna adult and larval habitats. *J. Marine Syst.*, 148, 1-13, doi:10.1016/j.jmarsys.2015.01.010.
- Muller-Karger, Frank E., Joseph P. Smith, Sandra Werner, Robert Chen, Mitchell Roffer, Yanyun Liu, Barbara Muhling, David Lindo-Atichati, John Lamkin, Sergio Cerdeira-Estrada, and David B.

- Enfield. 2015. Natural Variability of Surface Oceanographic Conditions in the Offshore Gulf of Mexico. *Progress in Oceanography*. 10.1016/j.pocean.2014.12.007.
- Pinckney, James L., Claudia R. Benitez-Nelson, Robert C. Thunell, Frank Muller-Karger, Laura Lorenzoni, Luis Troccoli, and Ramon Varela. 2015. Phytoplankton community structure and depth distribution changes in the Cariaco Basin between 1996 and 2010. *Deep-Sea Research Part I*. Vol. 101. pp. 27-37. DOI: 10.1016/j.dsr.2015.03.004.
- Santamaría-del-Angel, Eduardo, Inia Soto, Roberto Millán-Nuñez, Adriana González-Silvera, Jennifer Wolny, Sergio Cerdeira-Estrada, Ramón Cajal-Medrano, Frank Muller-Karger, Jennifer Cannizzaro, Yolo Xochitl Sarita Padilla-Rosas, Alfredo Mercado-Santana, Maria Fernanda Gracia-Escobar, Porfirio Alvarez-Torres, Mary Carmen Ruiz-de-la-Torre. 2015. Phytoplankton Blooms: New Initiative using Marine Optics as a Basis for Monitoring Programs. *In: Coastal Ecosystems: Experiences and Recommendations for Environmental Monitoring Programs*. Maria-Teresa Sebastiá (Editor). Nova Science Publishers.
- Soto, Inia M. Soto, Jennifer Cannizzaro, Frank E. Muller-Karger, Chuanmin Hu, Jennifer Wolny, Dmitry Goldf. 2015. Evaluation and optimization of remote sensing techniques for detection of *Karenia brevis* blooms on the west Florida shelf. *Remote Sensing of Environment*. (2015), pp. 239-254. DOI: 10.1016/j.rse.2015.09.026
- Torres, Hannah; Frank Muller-Karger, David Keys; Heather Thornton; Mark Luther, and Kamal Alsharif. 2015. Whither the U.S. National Ocean Policy Implementation Plan? *Marine Policy*. Volume 53, March 2015, Pages 198–212.
- Turk, D., K. K. Yates, M. Vega-Rodriguez, G. Toro-Farmer, C. L'Esperance, N. Melo, D. Ramsewak, S. Cerdeira Estrada, F. E. Muller-Karger, S. R. Herwitz, W. R. McGillis. 2015. Community metabolism in shallow coral reef and seagrass ecosystems, Lower Florida Keys. *Marine Ecology Progress Series*. 538, 35-52.
- Vega-Rodriguez M, Müller-Karger FE, Hallock P, Quiles-Perez GA, Eakin CM, et al. 2015. Influence of water-temperature variability on stony coral diversity in Florida Keys patch reefs. *Marine Ecology Progress Series*. 528:173-186. Doi: 10.3354/meps11268.
- Zhang, Minwei, Chuanmin Hu, David English, Paul Carlson, Frank E. Muller-Karger, Gerardo Toro-Farmer, and Stanley R. Herwitz. 2015. Atmospheric Correction of AISA Measurements Over the Florida Keys Optically Shallow Waters: Challenges in Radiometric Calibration and Aerosol Selection *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, VOL. 8, NO. 8, DOI: 10.1109/JSTARS.2015.2437326.

2014

- Bates, Nicholas R., Yrene M. Astor, Matthew J. Church, John E. Dore, Melchor Gonzalez-Davila, Laura Lorenzoni, Frank Muller-Karger, Jon Olafsson, Magdalena Santana-Casiano. 2014. Changing Ocean Chemistry: A time-series view of ocean uptake of anthropogenic CO₂ and ocean acidification. *Oceanography*. Vol. 27 (1) 126–141. DOI: 10.5670/oceanog.2014.16.
- Habtes, Sennai, Frank E. Muller-Karger, Mitchell A. Roffer, John T. Lamkin, Barbara A. Muhling. 2014. A comparison of sampling methods for larvae of medium and large epipelagic fish species during spring SEAMAP ichthyoplankton surveys in the Gulf of Mexico. *Limnology and Oceanography: Methods*. 12:86-101. DOI: 10.4319/lom.2014.12.86.
- Johns, E. M., B. A. Muhling, R. C. Perez, F. E. Müller-Karger, N. Melo, R. H. Smith, J. T. Lamkin, T. L. Gerard and E. Malca. 2014. Amazon River water in the northeastern Caribbean Sea and its effect on larval reef fish assemblages during April 2009. *Fisheries Oceanography*. DOI: 10.1111/fog.12082.
- Liu, Gang, Scott F. Heron, C. Mark Eakin, Frank F. Muller-Karger, Maria Vega-Rodriguez, Liane S. Guild, Jacqueline L. De La Cour, Erick F. Geiger, William J. Skirving, Timothy F.R. Burgess, Alan E. Strong, Andy Harris, Eileen Maturi, Alexander Ignatov, John Sapper, Jianke Li, Susan Lynds. 2014. Reef-scale Thermal Stress Monitoring of Coral Ecosystems: New 5-km Global Products from NOAA Coral Reef Watch. *Remote Sensing*. 6, 11579-11606; doi:10.3390/rs6111579.
- Méndez-Lázaro Pablo, Frank E. Muller-Karger, Daniel Otis, Matthew J. McCarthy, and Marisol Peña-Orellana. 2014. Assessing Climate Variability Effects on Dengue Incidence in San Juan, Puerto Rico. *International Journal of Environmental Research and Public Health*. 11(9), 9409-9428; doi:10.3390/ijerph110909409..

- Muller-Karger, F.E., M.T. Kavanaugh, E. Montes, W.M. Balch, M. Breitbart, F.P. Chavez, S.C. Doney, E.M. Johns, R.M. Letelier, M.W. Lomas, H.M. Sosik, and A.E. White. 2014. A framework for a marine biodiversity observing network within changing continental shelf seascapes. *Oceanography* 27(2):18–23, <http://dx.doi.org/10.5670/oceanog.2014.56>.
- Pérez-Santos, Iván, Wolfgang Schneider, Arnoldo Valle-Levinson, José Garcés-Vargas, Inia Soto, Raúl Montoya-Sánchez, Nelson González, and Frank Müller-Karger. 2014. Chlorophyll-a patterns and mixing process in the Yucatan Basin, Caribbean Sea. *Ciencias Marinas*. Mexico. *Ciencias Marinas*. 40(1): 11-31. <http://dx.doi.org/10.7773/cm.v40i1.2320>
- Scranton, Mary I., Gordon T. Taylor, Robert Thunell, Claudia R. Benitez-Nelson, Frank Muller-Karger, Kent Fanning, Laura Lorenzoni, Enrique Montes, Ramon Varela, and Yrene Astor. 2014. Interannual and subdecadal variability in the nutrient geochemistry of the Cariaco Basin. *Oceanography*. Vol. 27 (1):148–159, <http://dx.doi.org/10.5670/oceanog.2014.18>.
- Wall, C.C., P. Simard, M. Lindemuth, C. Lembke, D.F. Naar, C. Hu, B.B. Barnes, F.E. Muller-Karger, and D.A. Mann (2014). Temporal and spatial mapping of red grouper (*Epinephelus morio*) sound production. *Journal of Fish Biology*. 85(5): 1469-1487. doi: 10.1111/jfb.12500

2013

- Astor, Y.M., Lorenzoni, L.b, Thunell, R., Varela, R., Muller-Karger, F., Troccoli, L., Taylor, G.T., Scranton, M.I., Tappa, E., Rueda, D. 2013. Interannual variability in sea surface temperature and fCO₂ changes in the Cariaco Basin. *Deep-Sea Research II, special issue of Ocean Biogeochemistry Time Series Research*. Doi 10.1016/j.dsr2.2013.01.002.
- Barón-Aguilar, C. C., Rhody, N. R., Brennan, N. P., Main, K. L., Peebles, E. B. and Muller-Karger, F. E. 2013, Influence of temperature on yolk resorption in common snook *Centropomus undecimalis* (Bloch, 1792) larvae. *Aquaculture Research*. doi: 10.1111/are.12323
- Bout-Roumazielles, Viviane, Armelle Riboulleau, Eric Armynot du Châtelet, Laura Lorenzoni, Nicolas Tribovillard, Richard W. Murray, Frank Müller-Karger, Yrene M. Astor. 2013. Clay mineralogy of surface sediments as a tool for deciphering river contributions to the Cariaco Basin (Venezuela). *Journal of Geophysical Research*. DOI: 10.1002/jgrc.20079.
- Church, Matthew J., Michael W. Lomas, and Frank Muller-Karger. 2013. Sea Change: Charting the course for biogeochemical ocean time series research in a new millennium. *Deep-Sea Research II, special issue of Ocean Biogeochemistry Time Series Research*. 93:2–15. ISSN 0967-0645, <http://dx.doi.org/10.1016/j.dsr2.2013.01.035>.
- Le, Chengfeng, Chuanmin Hu, Jennifer Cannizzaro, David English, Frank Muller-Karger, Zhongping Lee. 2013. Evaluation of chlorophyll-a remote sensing algorithms for an optically complex estuary. *Remote Sensing of Environment*. 129. 75–89.
- Lorenzoni, Laura, Gordon T. Taylor, Claudia Benitez-Nelson, Dennis Hansell, Robert Masserini, Enrique Montes, Kent Fanning, Ramón Varela, Yrene Astor, Laurencia Guzmán, and Frank E. Muller-Karger. 2013. Spatial and seasonal variability of dissolved organic matter in the Cariaco Basin. *Journal of Geophysical Research – Biogeosciences*. (118:2):951–962. DOI: 10.1002/jgrg.20075
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