

Curriculum Vitae

Brian B Barnes

Address

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Professional Preparation

Ph.D., Marine Science, 2013, College of Marine Science (CMS), University of South Florida (USF), St. Petersburg, FL
M.S., Marine Science, 2009, Virginia Institute of Marine Science (VIMS), College of William and Mary, Gloucester Point, VA
B.S., Zoology & Psychology, 2004, University of Florida, Gainesville, FL

Professional Appointments

2015-present, Research Associate, University of South Florida
2016-2016, Adjunct Professor, University of South Florida St. Petersburg (USFSP)
2013-2015, Postdoctoral Research Associate, University of South Florida
2006-2006, Field & Laboratory Technician, Old Dominion University

Awards and Fellowships

2016 USF Global Achievement Group Award
2014 USF Outstanding Dissertation Award (one of two recipients among >3000 MS & PhD graduates)
2013 USF CMS William and Elsie Knight Endowed Fellowship for Marine Science
2012 USF CMS William and Elsie Knight Endowed Fellowship for Marine Science
2011 USF CMS Jack and Katharine Ann Lake Fellowship in Marine Science
2009 USF CMS Anne and Werner Von Rosenstiel Fellowship
2007 VIMS Kelley Watson Fellowship

Current & Recent Service

Member, NASA PACE Science Applications Team
Associate Editor, *Estuaries and Coasts*
Committee Member (M.S., Marine Science), Chih-Wei Huang, USF
2 NASA review panels
Volunteer moderator, National Ocean Sciences Bowl
Volunteer presenter, Great American Teach-In

Publications

GoogleScholar statistics (acquired 10/30/20): Citations: 1067; h-index: 19
<https://scholar.google.com/citations?user=pzudCYcAAAAJ&hl=en&oi=ao>

RA Garcia, Z Lee, **BB Barnes**, C Hu, HM Dierssen, EJ Hochberg (2020) Benthic classification and IOP retrievals in shallow water environments using MERIS imagery. *Remote Sens Environ* **249**:112015
CC Lee, **BB Barnes**, SC Sheridan, ET Smith, C Hu, DE Pirhalla, V Ransibrahmanakul, RE Adams (2020) Using Machine Learning to Model Water Clarity in the Great Lakes. *J Great Lakes Res*

- TA Courtney, **BB Barnes**, I Cholett, R Elahi, K Gross, JR Guest, IB Kuffner, EA Lenz, CS Rogers, LT Toth, AJ Anderson (2020) Disturbances drive changes in coral community assemblages and coral calcification capacity. *Ecosphere* **11**:e03066
- ET Smith, CC Lee, **BB Barnes**, RE Adams, DE Pirhalla, V Ransibrahmanakul, C Hu, SC Sheridan (2020) A synoptic climatological analysis of the atmospheric drivers of water clarity variability in the Great Lakes. *J Appl Meteorol Climatol* **59**:915-935
- BB Barnes**, C Hu, SW Bailey, BA Franz (2020) Sensitivity of Satellite Ocean Color Data to System Vicarious Calibration of the Long Near Infrared Band. *IEEE Trans. Geosci. Remote Sens.*
- C Hu, **BB Barnes**, L Feng, M Wang, L Jiang (2019) On the interplay between ocean color data quality and data quantity: Impacts of quality control flags. *IEEE Geosci. Remote Sens. Lett.* **17**:745-749
- L Qi, C Hu, K Mikelsons, M Wang, V Lance, S Sun, **BB Barnes**, J Zhao, and D Van der Zande (2020). In search of floating algae and other organisms in global oceans and lakes. *Remote Sens. Environ.*, **239**: 111659
- M Wang, C Hu, **BB Barnes**, G Mitchum, B Lapointe (2019) The Great Atlantic *Sargassum* Belt. *Science* **365**: 83-87.
- R Cunning, RN Silverstein, **BB Barnes**, AC Baker (2019) Extensive coral mortality and critical habitat loss following dredging associated with remotely-sensed sediment plumes. *Mar. Pollut. Bull.* **145**: 185-199
- J Cannizzaro, **BB Barnes**, C Hu, AA Corcoran, KA Hubbard, E Muhlbach, WC Sharp, LE Brand, CR Kelble (2019) Remote detection of cyanobacterial harmful algal blooms of *Synechococcus* in Florida Bay using MODIS data. *Remote Sens. Environ.* **231**: 111227
- S Chen, C Hu, **BB Barnes**, R Wanninkhof, W-J Cai, L Barbero, D Pierrot (2019) A machine learning approach to estimate surface ocean pCO₂ from satellite measurements. *Remote Sens. Environ.* **228**: 203-226
- M Zhang, C Hu, **BB Barnes** (2019) Performance of POLYMER atmospheric correction of ocean color imagery in the presence of absorbing aerosols. *IEEE Trans. Geosci. Remote Sens.* **57**: 6666-6674.
- S Chen, C Hu, **BB Barnes**, Y Xie, G Lin, and Z Qiu (2019) Improving ocean color data coverage through machine learning. *Remote Sens. Environ.* **222**: 286-302.
- BB Barnes**, JP Cannizzaro, D English, C Hu (2019) Validation of VIIRS and MODIS reflectance data in coastal and oceanic waters: An assessment of methods. *Remote Sens. Environ.* **220**: 110-123.
- M Zhang, C Hu, J Cannizzaro, D English, **BB Barnes**, P Carlson, L Yarbro (2018) Comparison of two atmospheric correction approaches applied to MODIS measurements over North American Waters. *Remote Sens. Environ.* **216**: 442-455.
- JR Guest, PJ Edmunds, RD Gates, IB Kuffner, AJ Andersson, **BB Barnes**, I Chollett, TA Courtney, R Elahi, K Gross, EA Lenz, S Mitarai, PJ Mumby, HR Nelson, BA Parker, HM Putnam, CS Rogers, LT Toth (2018) A framework for identifying and characterising coral reef “oases” against a backdrop of degradation. *J Appl. Ecol.* **55**: 2865-2875.

- BB Barnes**, R Garcia, C Hu, Z Lee (2018) Multi-band spectral matching inversion algorithm to derive water column properties in optically shallow waters: An optimization of parameterization. *Remote Sens. Environ.* **204**: 424-438
- J Li, C Hu, Q Shen, **BB Barnes**, B Murch, L Feng, M Zhang (2017) Recovering low quality MODIS-Terra data over highly turbid waters through noise reduction and vicarious calibration: A case study in Taihu Lake. *Remote Sens. Environ.* **197**: 72-84.
- L Qi, C Hu, **BB Barnes**, Z Lee (2017) VIIRS captures phytoplankton vertical migration in the NE Gulf of Mexico. *Harmful Algae* **66**: 40-46.
- DE Pirhalla, SC Sheridan, CC Lee, **BB Barnes**, V Ransibrahmanakul, C Hu (2017) Water clarity patterns in South Florida coastal waters and their linkages to synoptic-scale wind forcing. *Sat. Oceanog. Meteorolog.* **1**: 1-15.
- L Feng, C Hu, **BB Barnes**, A Mannino, AK Heidinger, K Strabala, LT Iraci (2017) Cloud and sun glint statistics derived from GOES and MODIS observations over the Intra-Americas Seas for GEO-CAPE mission planning. *J Geophys. Res. Atmospheres.* **122**: 1725-1745.
- CC Lee, SC Sheridan, **BB Barnes**, C Hu, DE Pirhalla, V Ransibrahmanakul, K Shein (2017) The development of a non-linear auto-regressive model with exogenous input (NARX) to model climate-water clarity relationships: reconstructing an historical water clarity index for the coastal waters of the southeastern US. *Theor. Appl. Climatol.*, **130**: 557-569
- C Hu, B Murch, **BB Barnes**, M Wang, J-P Maréchal, J Franks, D Johnson, B Lapointe, DS Goodwin, JM Schell, ANS Suida (2016) *Sargassum* watch warns of incoming seaweed. *EOS.* **97**:10-15
- BB Barnes** and C Hu (2016) Island building in the South China Sea: detection of turbidity plumes and artificial islands using Landsat and MODIS data. *Sci. Rep.* **6**:33194
- C Hu, **BB Barnes**, L Qi, C Lembke, D English (2016) Vertical migration of *Karenia brevis* in the northeastern Gulf of Mexico observed from glider measurements. *Harmful Algae.* **58**:59-65
- BB Barnes** and C Hu (2016) Dependence of satellite ocean color data products on viewing angles: A comparison between SeaWiFS, MODIS, and VIIRS. *Remote Sens. Environ.* **175**:120-129
- C Hu, B Murch, AA Corcoran, L Zheng, **BB Barnes***, RH Weisberg, K Atwood, JM Lenés (2016) Developing a smart semantic web with linked data and models for near real-time monitoring of red tides in the eastern Gulf of Mexico. *IEEE Systems J.* **10**:1282-1290
- BB Barnes**, C Hu, C Kovach, R Silverstein (2015) Sediment plumes induced by the Port of Miami dredging: Analysis and interpretation using Landsat and MODIS data. *Remote Sens. Environ.* **170**:328-339
- JJ Walsh, JM Lenés, BP Darrow, AA Parks, RH Weisberg, L Zheng, C Hu, **BB Barnes**, KL Daly, GR Brooks, WH Jeffrey, RA Snyder, D Hollander (2015) A simulation analysis of the plankton fate of the Deepwater Horizon oil spills. *Cont. Shelf. Res.* **107**:50-68

- BB Barnes**, 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*. **34**:491-503.
- C Hu, **BB Barnes**, L Qi, AA Corcoran (2015) A harmful algal bloom of *Karenia brevis* in the Northeastern Gulf of Mexico as revealed by MODIS and VIIRS: A comparison. *Sensors*. **15**:2873-2887
- BB Barnes** and C Hu (2015) Cross-sensor continuity of satellite derived water clarity in the Gulf of Mexico: insights into temporal aliasing and implications for long-term water clarity assessment. *IEEE Trans. Geosci. Remote Sens.* **53**:1761-1772
- D Sun, C Hu, Z Qiu, JP Cannizzaro, **BB Barnes** (2014) Influence of a red band-based water classification approach on chlorophyll algorithms for optically complex estuaries. *Remote Sens. Environ.* **155**:289-302
- L Qi, C Hu, H Duan, **BB Barnes**, R Ma (2014) An EOF-based algorithm to estimate chlorophyll a concentrations in Taihu Lake from MODIS land-band measurements: Implications for near real-time applications and forecasting models. *Remote Sens.* **6**:10694-10715
- CC Wall, P Simard, M Lindemuth, C Lembke, DF Naar, C Hu, **BB Barnes**, FE Muller-Karger, DA Mann (2014) Temporal and spatial mapping of red grouper *Epinephelus morio* sound production. *J. Fish Biol.* **85**:1469-1487
- BB Barnes**, C Hu, J Cannizzaro, S Craig, P Hallock, D Jones, N Melo, R Zepp (2014) Estimation of diffuse attenuation of ultraviolet light in optically shallow Florida Keys waters from MODIS measurements. *Remote Sens. Environ.* **140**:519-532.
- BB Barnes**, C Hu, K Holecamp, S Blonski, BA Speiring, DA Palandro, BE Lapointe (2014) Use of Landsat data to track historical water quality changes in Florida Keys marine environments. *Remote Sens. Environ.* **140**:485-496.
- C Hu, **BB Barnes**, B Murch, P Carlson (2014) Satellite-based virtual buoy system (VBS) to monitor coastal water quality. *Opt Eng.* **53**:051402.
- BB Barnes**, C Hu, BA Schaeffer, Z Lee, DA Palandro, JC Lehrter (2013) MODIS-derived spatiotemporal water clarity patterns in optically shallow Florida Keys waters: a new approach to remove bottom contamination. *Remote Sens. Environ.* **134**:377-391.
- BB Barnes** and C Hu (2013) A hybrid cloud detection algorithm to improve MODIS sea surface temperature data quality and coverage over the Eastern Gulf of Mexico. *IEEE Trans. Geosci. Remote Sens.* **51**:3273-3285.
- J Zhao, **BB Barnes**, N Melo, D English, B Lapointe, F Muller-Karger, B Schaeffer, C Hu (2013) Assessment of satellite-derived diffuse attenuation coefficients and euphotic depths in south Florida coastal waters. *Remote Sens Environ.*, **131**:38-50.
- D Lirman, S Schopmeyer, D Manzello, LJ Gramer, W Precht, F Muller-Karger, K Banks, **BB Barnes**, *et al.* (2011) Severe 2010 cold-water event caused unprecedented mortality to corals of the Florida Reef Tract and reversed previous survivorship patterns. *PLOS ONE*, **6**: e23047. doi:10.1371/journal.pone.0023047.
- BB Barnes**, C Hu, F Muller-Karger (2011) An Improved High-Resolution SST Climatology to Assess Cold Water Events off Florida, *IEEE Geosci. Remote Sens. Lett.* **8**:769-773.

BB Barnes, MW Luckenbach, PR Kingsley-Smith (2010) Oyster Reef Community interactions: the Effect of Resident Fauna on Oyster (*Crassostrea* spp.) Larval Recruitment, *J. Exp. Mar. Biol. Ecol.*, 391:169-177.

Grant Acquisitions

- PI (EPA) Determining long-term water quality trends in Biscayne Bay using satellite and in situ data (\$147,761) 3/1/2021 – 2/28/2023
- PI (NOAA-CARICOOS) Establishing satellite-based virtual buoys to assess water quality in coastal Puerto Rico and the US Virgin Islands (\$50,000) 10/1/2020 – 5/31/2021
- PI (NASA) Spectral matching inversion algorithms for PACE application in optically shallow waters: an assessment using HICO and PRISM data (\$532,509) 8/1/2020 – 7/31/2023
- Co-PI (NASA) Thermal stress in South Florida estuaries: A multi-sensor assessment (\$306,639; BB Barnes's portion: \$52,807) 11/1/2019 – 10/21/2022
- Co-I (NASA) Precipitation, water management, and algae blooms in South Florida estuaries (\$1,174,105; BB Barnes's portion: \$50,338) 4/1/2019 – 3/31/2022
- Co-I (NASA) On the capacity of commercial high-resolution satellite data in mapping and quantifying macroalgae and microalgae in aquatic environments (\$98,329; BB Barnes's portion: \$48,329) 1/1/2019 – 12/31/2019
- Institutional PI/Co-I (NASA) Remote sensing algorithms for water quality and primary production in Apalachee Bay, FL (\$442,204; BB Barnes's portion: \$188,385) 1/1/2018 – 12/21/2020
- Co-I (NOAA) Calibration/Validation support for NPP VIIRS data product continuity (\$451,373; BB Barnes' portion: \$197,368). 7/1/2018 – 6/30/2020
- PI (NASA) Synergistic multi-sensor calibration for global and coastal observations of aquatic environments (\$443,698) 1/1/2017 – 12/31/2109
- PI (EPA) Assessment of baseline turbidity condition in the Port Everglades region from satellite data (\$23,657 + \$8,000 continuation) 10/1/2016 – 9/30/2019
- Institutional PI/Co-I (NASA) The development of a water clarity index for the Great Lakes as a climate indicator (\$565,023; BB Barnes's portion: \$179,443) 5/1/2016 – 4/30/2019
- Participant (USGS) Local-scale ecosystem resilience amid global-scale ocean change: the coral reef example. USGS Powell Center Working Group

Teaching experience

- Spring 2016: Adjunct Professor – BSC2011 Biology 2: Biological Diversity Lecture (undergraduate level). 48 Students, 4.74/5.00 overall instructor rating
- Spring 2012: Teaching Assistant – Marine Resource Remote Sensing (graduate level)
- Fall 2010: Teaching Assistant – Practical IDL Programming (graduate level)
- Spring 2010: Teaching Assistant – Optical Oceanography (graduate level)

Presentations (only as first author / presenter)

- BB Barnes**, C Hu (Invited Lecture) “Re-assessing calibration of the long near infrared band” NASA OBPG Webinar Series. Presented virtually. 16 July 2020
- BB Barnes** (Invited Lecture) “Satellite remote sensing and optical oceanography” NASA Webinar Series. Presented virtually. 30 June 2020.

- BB Barnes**, C Hu, R Garcia (Oral Presentation) Spectral matching inversion algorithms for PACE application in optically shallow waters: an assessment using HICO and PRISM data NASA PACE Science Team Meeting. Presented virtually. 2 June 2020
- BB Barnes**, C Hu, SW Bailey, N Pahlevan, BA Franz (Oral Presentation) “Cross-calibration of MODIS and VIIRS long near infrared bands” 2020 Ocean Sciences Meeting, San Diego, CA. 17 February 2020.
- BB Barnes** (Invited Lecture) “Turbidity plume monitoring using satellite data” Nanjing University, Nanjing, China. 14 April 2019.
- BB Barnes**, C Hu, SW Bailey, BA Franz (Poster presentation) “Vicarious calibration of the near infrared band for satellite ocean color sensors” International Ocean Colour Science Meeting 2019, Busan, South Korea. 10 April 2019.
- BB Barnes**, RA Garcia, C Hu, Z Lee (Oral presentation) “A novel multi-band spectral matching inversion algorithm to derive water column properties in optically shallow waters” 2018 Ocean Sciences Meeting, Portland, OR. 15 February 2018.
- BB Barnes** (Oral Presentation) “Sediment plume monitoring using satellite data,” US Coral Reef Task Force Meeting, Fort Lauderdale, FL. 8 August 2017
- BB Barnes** (Oral Presentation) “Sediment plumes resulting from the Port of Miami dredging: Analysis and interpretation using satellite data and long term monitoring programs,” National Marine Fisheries Service, Southeast Region, Habitat Conservation Division annual meeting. 14 July 2016.
- BB Barnes** (Oral Presentation) “Observing sediment plumes from satellite data” Southeast Florida Coral Reef Initiative, Technical Advisory Council meeting, Dania Beach, FL. 27 April 2016.
- BB Barnes**, C Hu, C Kovach, R Silverstein (Oral Presentation) “Sediment plumes resulting from the Port of Miami dredging: Analysis and interpretation using satellite data and long term monitoring programs,” 2016 Ocean Sciences Meeting, New Orleans, LA. 24 February 2016.
- BB Barnes** and C Hu (Poster Presentation) “Dependence of satellite ocean color data products on viewing angles: A comparison between SeaWiFS, MODIS, and VIIRS,” International Ocean Colour Science Meeting 2015, San Francisco, CA. 16 June 2015.
- BB Barnes** and C Hu (Poster Presentation) “Cross-sensor continuity of satellite derived water clarity in the Gulf of Mexico: insights into temporal aliasing,” 2014 NASA Ocean Color Research Team Meeting, Washington, DC. 6 May 2014.
- BB Barnes**, C Hu, B Schaeffer, Z Lee, and J Lehrter (Oral and Poster Presentations) “On the challenge of deriving MODIS water clarity products in optically shallow environments: How a new approach can improve coral reef research and monitoring,” 21st Ocean Optics Conference, Glasgow, Scotland, UK. 8 October 2012.
- BB Barnes**, C Ellis, W Fisher, C Hu, J Lehrter, L McEachron, K O’Keife, Blake Schaeffer, Bruce Spiering, and L Underwood (Oral Presentation) “Water Clarity Assessment Along the Florida Keys Reef Tract Using Ocean Color Satellite Data,” Florida Keys National Marine Sanctuary Water Quality Protection Program meeting. Key Colony Beach, FL. 26 September 2012.

- BB Barnes** (Oral Presentation) “Marine Science Research,” Great American Teach-in, Bloomingdale Senior High School, Brandon, FL. 17 November 2011.
- BB Barnes**, C Hu, D Palandro, J Lehrter, N Melo, B Schaeffer, J Cannizzaro, D English (Oral Presentation) “Light attenuation and optics in the Florida Keys,” NASA grant Principal Investigators Meeting. Pensacola, FL. 3 November 2011.
- BB Barnes** (Oral Presentation) “Remote sensing applications in the Florida Keys region,” NASA grant Principal Investigators Meeting. Pensacola, FL. 3 November 2011.
- BB Barnes.** (Oral Presentation) “Synoptic Assessment of Water Quality in the Florida Keys: Improving SST Products During Cold Events,” USF Graduate Student Symposium. January 2011.
- BB Barnes**, C Hu, and F Muller-Karger. (Poster Presentation) “An improved high-resolution sea surface temperature climatology to assess cold events in the Florida Keys,” *Linking Science to Management: A Conference and Workshop on the Florida Keys Marine Ecosystem*. Duck Key, Florida, USA. October 2010.
- BB Barnes**, MW Luckenbach, and PR Kingsley-Smith. (Oral Presentation) “Ecological considerations for oyster restoration: interactions between oyster larvae and reef-associated fauna,” *11th International Conference on Shellfish Restoration*. Charleston, South Carolina, USA. November 2008.
- BB Barnes**, MW Luckenbach, and PR Kingsley-Smith. (Oral Presentation) “Interspecific interactions in oyster reef communities: the effect of established epifauna on oyster larval recruitment,” *100th Annual National Shellfisheries Association Meeting*. Providence, Rhode Island, USA. April 2008.
- BB Barnes.** (Oral Presentation) “The effect of established epifauna on oyster larval recruitment,” VIMS Departmental Seminar. March 2008.
- BB Barnes.** (Oral Presentation) “Fouling organisms and oyster larval settlement,” VIMS Departmental Seminar. April 2007.