

Chad Lembke
Research Faculty, Project Engineer

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SPECIALIZATION

Design of mechanics of sensors, vehicles, and platforms, including but not limited to pressure housing design, static and dynamic seals, high and low pressure fluid transfer, vacuum systems, fixturing (optical, electrical, mechanical), cable splicing, power and data transmission, and overall system layout. Design process contributions from mechanical and system level design to full project management involving the operation and enhancement of autonomous platforms. This includes engineering support on multiple AUV, ROV, Buoy, and towed platform deployments and operations locally and abroad. Current research is focused on managing USF's underwater glider fleet and combining new towed video methods with acoustic biomass technology and mapping sonars for fisheries stock assessment. Prior to work at USF, designed luxury yachts and specialty water craft for theme parks such as Disney World and Universal Studios.

EDUCATION

1995 B.S.M.E., University of South Florida
2007 M.M.E., University of South Florida

PROFESSIONAL EXPERIENCE

August 2017 – Present *Research Faculty*, University of South Florida Center for Ocean Technology, St. Petersburg, Florida
January 1998 – August 2017 *Assistant in Research, Project Engineer*, University of South Florida Center for Ocean Technology, St. Petersburg, Florida
May 1995 - December 1997 *Mechanical Design Engineer, Specialty and Luxury Watercraft*, David Jones and Associates, Pinellas Park, Florida
September 1994 – May 1995 *Mechanical Properties Testing*, Sigma Laboratories, Pinellas Park, Florida

AWARDS

David K. Costello Award for Interdisciplinary Engineering (2013)

COMMITTEE APPOINTMENTS

IOOS National Underwater Glider Plan Steering Committee (2012 - 2014)
GCOOS Gulf Glider Task Team (Chair) (2014 -)

PUBLICATIONS

- Weisberg, R. Y. Liu, C. Lembke, C. Hu, K. Hubbard, M. Garrett, (2019), “The Coastal Ocean Circulation Influence on the 2018 West Florida Shelf *K. brevis* Red Tide Bloom”, *Journal of Geophysical Research*, Accepted.
- Lembke, C, S. Lowerre-Barbierri, D. Mann, C. Taylor (2018) “Using Three Acoustic Technologies on Underwater Gliders to Survey Fish”, *Marine Technology Society Journal*, V52/N6, pp 39-52, DOI: 10.4031.
- Milligan, R., A. Bernard, K. Boswell, H. Bracken-Grissom, M. D’Elia, S. deRada, C. Easson, D. English, R. Eytan, K. Finnegan, C. Hu, C. Lembke, J. Lopez, B. Penta, T. Richards, I Romero, M. Shivji, L. Timm, J. Warren, M. Webber, D. Wells, T. Sutton, (2018) “The Application of Novel Research Technologies by the Deep Pelagic Nekton Dynamics of the Gulf of Mexico (DEEPEND) Consortium”, *Marine Technology Society Journal*, V52/N6, pp 81-90.
- Lembke, C., D. Mann, C. Taylor, J. Gray, E Hughes, A. Silverman (2018) “Utilizing Gliders and Acoustics to Identify Fish Habitat Hotspots” *Oceans 2018 MTS/IEEE*, DOI: 10.1109
- Silverman, A., C. Lembke, S. Butcher, M. Lindemuth, S. Murawski (2018) “Enabling a Platform for Habitat and Marine Assessment with Real Time Monitoring and Synchronous Databasing” *Oceans 2018 MTS/IEEE*, DOI: 10.1109
- Cheve, R., J. Buermans, D. Lemon, C. Taylor, C. Lembke, C. DeCollibus, G. Saba, C. Reiss, (2018) “Adapting Multi-Frequency Echo-Sounders for Operation on Autonomous Vehicles” *Oceans 2018 MTS/IEEE*, DOI: 10.1109
- Todd A., He, R., C. Lembke, T. Kellison, C. Taylor, D. Mann, (2018) “Cross-shelf exchange associated with the Gulf Stream in the South Atlantic Bight: Direct observations using an autonomous underwater glider”, *Marine Technology Society Journal*, V52, N3, pp 19-27, DOI: 10.4031/MTSJ.52.3.5
- Lembke, C., Grasty, S., Silverman, A., Broadbent, H., Butcher, S., Murawski, S., (2017) “The Camera-Based Assessment Survey System (CBASS): A Towed Camera Platform for Reef Fish Abundance Surveys and Benthic Habitat Characterization in the Gulf of Mexico”, *Continental Shelf Research*, DOI: 10.1016
- Taylor, J. C., Lembke, C., (2017) “Echosounder for Biological Surveys Using Ocean Gliders”, *Sea Technology*, July 2017, pp 35-38.
- Wall, C. C., D. Mann, C. Lembke, C. Taylor, R. He, and T. Kellison (2017) “Mapping the Soundscape Off the Southeastern USA by Using Passive Acoustic Glider Technology”, *Marine and Coastal Fisheries*, DOI: 10.1080.
- Churnside, J. H., R. Marchbanks, C. Lembke, and J. Beckler (2017) “Optical Backscattering Measured by Airborne Lidar and Underwater Glider”, *Remote Sensing*, DOI:10.3390/rs9040379.
- Hu, C., B.B. Barnes, Q. Li, C. Lembke, and D. English (2016) “Vertical migration of *Karenia brevis* in the northeastern Gulf of Mexico observed from glider measurements.” *Harmful Algae*, V58, September 2016, pp 59–65.
- Weisberg, R., L. Zheng, Y. Liu, A. Corcoran, C. Lembke, C. Hu, J. Lenes, and J. Walsh (2016) “*Karenia brevis* blooms on the West Florida Shelf: A comparative study of the robust 2012 bloom and the nearly null 2013 event.” *Continental Shelf Research*, 120, 106-121, <http://dx.doi.org/10.1016/j.csr.2016.03.011>.

- Lui, Y., R. Weisberg, and C. Lembke (2015) “Glider Salinity Correction for Unpumped CTD Sensors across Sharp Thermocline” *Coastal Ocean Observing Systems*, 305-325.
- Voytenko, D., T. H. Dixon, I. M. Howat, N. Gourmelen, C. Lembke, C. L. Werner, S. de la Peña, and B. Oddsson (2015) Multi-year observations of Breiðamerkurjökull, a marine-terminating glacier in southeastern Iceland, using terrestrial radar interferometry. *Journal of Glaciology*, 61, 42–54.
- Wall, C., C. Lembke, C. Hu, and D. Mann (2014) “Fish Sound Production in the Presence of Harmful Algal Blooms in the Eastern Gulf of Mexico”, *PLoS ONE* 9(12): e114893. DOI:10.1371/journal.pone.0114893.
- Wall, C., P. Simard, M. Lindemuth, C. Lembke, D. Naar, C. Hu, B. Barnes, F. Muller-Karger, and D. Mann (2014) “Temporal and Spatial Mapping of Red Grouper *Epinephelus Morio* Sound Production”, *Journal of Fish Biology*, DOI: 10.1111/jfb.12500.
- Weisberg, R., L. Zheng, Y. Liu, C. Lembke, J. Lenos, and J. Walsh (2014) “Why a Red Tide was not Observed on the West Florida Continental Shelf in 2010”, *Harmful Algae*, DOI: 10.1016/j.hal.2014.04.010.
- Pan, C., L. Zheng, R. Weisberg, Y. Lui, and C. Lembke (2014) “Comparisons of different ensemble schemes for glider data assimilation on West Florida Shelf”, *Ocean Modeling*, DOI: 10.1016/j.ocemod.2014.06.005.
- Lembke, C., X. Shi, A. Silverman, S. Butcher, S. Murawski, and S. Grasty (2013) “Development and Sea Trials of a New Camera-Based Assessment Survey System for Reef Fish Stocks Assessment”, *Oceans 2013 MTS/IEEE*, DOI: 10.23919/OCEANS.2013.6741218.
- Lindemuth, M., and C. Lembke (2013) “Sparse glider datasets: A case study for NoSQL databases”, *Oceans 2013 MTS/IEEE*, DOI: 10.23919/OCEANS.2013.6741198.
- Zhao, J., C. Hu, J. M. Lenos, R. H. Weisberg, C. Lembke, D. English, J. Wolny, L. Zheng, J. J. Walsh, and G. Kirkpatrick (2013) Three-dimensional structure of a *Karenia brevis* bloom: observations from gliders, satellites, and field measurements. *Harmful Algae*, DOI: 10.1016/j.hal.2013.07.004.
- Wall, C., P. Simard, C. Lembke, and D. Mann (2013) “Large-scale Passive Acoustic Monitoring of Fish Sound Production”, *Marine Ecology Progress Series*, Vol. 484: 173-188, DOI: 10.3354/meps10268.
- Dixon, T., D. Voytenko, C. Lembke, S. de la Peña, I. Howat, N. Gourmelen, C. Werner, and B. Oddsson (2012) “Emerging technology monitors ice-sea interface at outlet glaciers”, *Eos Trans. AGU*, Vol. 93, Issue (48), pp.497-8.
- Rudnick, D., M. Crowley, O. Schofield, R. Baltes, C. Lee, and C. Lembke (2012) “A National Glider Network for Sustained Observation of the Coastal Ocean”, *Oceans 2012 MTS/IEEE*, DOI: 10.1109/OCEANS.2012.6404956.
- Jochens, A., M. Howard, L. Campbell, R. Mullins-Perry, G. Kirkpatrick, B. Kirkpatrick, C. Simoniello, C. Hu, R. Weisberg, C. Lembke, A. Corcoran, J. Ivey, and S. Wolf (2012) “Integrating Observing Systems to Benefit Stakeholders: A Case Study in the Gulf of Mexico”, *Oceans 2012 MTS/IEEE*, DOI: 10.1109/OCEANS.2012.6405030.

- Fefilyat'ev, S., D. Goldgof, M. Shreve, and C. Lembke (2012) "Detection and Tracking of Ships in Open Sea with Rapidly Moving Buoy-Mounted Camera System", *Ocean Engineering*, OE-D-11-00395R1.
- Wall, C., C. Lembke, and D. Mann (2012) "Shelf-scale mapping of sound production by fishes in the eastern Gulf of Mexico, using autonomous glider technology", *Marine Ecology Progress Series*, Vol. 449: 55-64.
- English, D., C. Hu, C. Lembke, R. Weisberg, D. Edwards, L. Lorenzoni, G. Gonzalez, and F. Muller-Karger (2009) "Observing the 3-dimensional distribution of bio-optical properties of West Florida Shelf waters using gliders and autonomous platforms", *Oceans 2009 MTS/IEEE*, ISBN CD-ROM: 978-0-933957-38-1.
- Fefilyat'ev, S., S., Dmitry, B. Goldgof, and C. Lembke (2009) "Autonomous Buoy Platform for Low-Cost Visual Maritime Surveillance: Design and Initial Deployment", *Proc. SPIE Defense, Security, and Sensing*, V7317-0A.
- Merz, C., R. Weisberg, P. Smith, J. Law, R. Cole, J. Donovan, G. Tilbury, C. Lembke, and D. Myhry (2007) "Development of a Self-Contained, Satellite Based, Moored Surface Buoy Position Tracking Device", *Oceans 2007 MTS/IEEE*, DOI: 10.1109/OCEANS.2007.4449363.
- Langebrake, L. C., C. E. Lembke, R. H. Weisberg, R. H. Byrne, D. R. Russell, G. Tilbury, and R. Carr (2002) "Design and Initial Results of a Bottom Stationing Ocean Profiler," *Oceans 2002 MTS/IEEE*, DOI: 10.1109/OCEANS.2002.1193254.
- Samson, S., L. Langebrake, C. Lembke, and J. Patten (1999) "Design and initial results of high-resolution shadowed image particle profiling and evaluation recorder," *Oceans 1999 MTS/IEEE*, DOI: 10.1109/OCEANS.1999.799707.
- Short, R. T., D. P. Fries, S. K. Toler, C. E. Lembke and R. H. Byrne (1999) "Development of an underwater mass spectrometry system for in-situ chemical analysis", *Measurement Science and Technology*

US COLLABORATORS (last 5 years)

Barbieri, S., Florida Marine Research Institute
 Beckler, J., Mote Marine Laboratory
 Boswell, K., Florida International University
 Broadbent, H., University of South Florida
 Buermans, J., ASL Environmental
 Byrne, R., University of South Florida
 Campbell, M., NOAA National Marine Fisheries Service, SEFSC
 Chave, R., ASL Environmental
 DeCollibus, C., Teledyne Webb Research Corporation
 Dixon, T., University of South Florida
 Edwards, C., Skidaway Institute of Oceanography
 Garrett, M., Florida Wildlife Research Institute
 Grasty, S., University of South Florida
 Gray, J., University of South Florida
 He, R., North Carolina St. University
 Horne, J., University of Washington
 Hu, C., University of South Florida
 Hubbard, K. Florida Wildlife Research Institute

Keenan, S. Florida Marine Research Institute
Kellison, T., NOAA National Marine Fisheries Service, SEFSC
Kirkpatrick, B., NOAA Gulf of Mexico Coastal Ocean Observing System
Law, J., University of South Florida
Liu, Y., University of South Florida
Locker, S., United States Geological Survey
Malservisi, R., University of South Florida
Mann, D., University of South Florida / Loggerhead Instruments
Murawski, S., University of South Florida
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Robbins, L., United States Geological Survey
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Wall, C., NOAA Cooperative Institute for Research in Environmental Studies
Weisberg, R., University of South Florida
Xie, S., University of South Florida
Zhang, F., Georgia Institute of Technology

STUDENT ADVISEES

Surui Xie, University of South Florida, School of Geosciences
Edmund Hughes, University of South Florida, College of Marine Science