

## Clinton E. Hare, Ph.D., M.S., B.A.

*Mid-Atlantic Regional Manager/Oceanographer*

### EXPERTISE

Broad background in biological, chemical, geological, and physical oceanography. Experienced with oceanographic data collection programs, including equipment configuration and installation, as well as operation and maintenance of real-time monitoring systems in ports and harbors, coastal, and offshore environments. Academic credentials include a Ph.D. in Oceanography, M.S. in Marine Studies, and B.A. in Biological Sciences. Primary task is the oversight of twelve NOAA Physical Oceanographic Real-Time System (PORTS) programs for Woods Hole Group. In this capacity is responsible for the day-to-day management, planning, client communication, reporting, and overall maintenance and operation of the programs. Expertise covers the installation and maintenance of current meters systems, tidal gauges, meteorological sensors, visibility sensors, and air gap systems.

### QUALIFICATION SUMMARY

- 22+ years of experience with data collection, processing and interpretation for projects in marine environments
- 12+ years of experience with real-time oceanographic and meteorological measurement system design and operation
- 12+ years Project Management of real-time oceanographic and meteorological measurement systems
- Broad background in biological, chemical, and physical oceanographic processes
- Installation of NOAA approved water level, currents, air gap, visibility, and meteorological stations
- Extensive field work and project management experience in marine environments
- Excellent communication, technical writing, public speaking and organizational skills

### WORK EXPERIENCE

2007-Present Mid-Atlantic Operations Manager/Oceanographer, Woods Hole Group  
1998-2007 Research Assistant, University of Delaware  
1998 Field Scientist, Woodward-Clyde International-Americas



### Education

2006 – Ph.D.  
Oceanography  
College of Marine & Earth  
Studies University of  
Delaware Ph.D.,  
Oceanography-College of  
Marine & Earth Studies  
University of Delaware  
2003 - M.S.  
Marine Studies  
College of Marine Studies -  
University of Delaware  
1997 - B.A.  
Biological Studies  
University of Delaware

### Licenses and Registrations

Valid Transportation Workers  
Identification Credential  
(TWIC)  
Certified for Adult First  
Aid/CPR/AED by American  
Red Cross  
Basic Hazwoper Certified

### Professional Affiliations

-Mid-Atlantic Regional  
Association Coastal Ocean  
Observing System  
(MARACOOS)

### Publications & Presentations

20

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## KEY PROJECTS

### **Delaware Memorial Bridge Air Gap, WSP/Delaware River and Bay Authority, New Castle DE – Project Manager**

Serves as Project Manager for Delaware Memorial Bridge Air Gap project. Responsible for installation, maintenance, and unscheduled service for the design, purchase, and installation of both a temporary air gap station and a permanent Air Gap station designed to NOAA standards on the Delaware Memorial Bridge. Responsible for overseeing all aspects of the systems design, testing, report, and installation, including coordination of design and installation activities and communications with the client and NOAA.

### **National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Physical Oceanographic Real-Time Systems (PORTS), Delaware River & Bay – Project Manager**

Serves as Project Manager for Delaware River and Bay PORTS program (total of 13 stations). Responsible for routine and unscheduled service to real-time oceanographic and meteorological instruments throughout the Delaware Bay and River. Responsible for overseeing all aspects of system operations including coordination of routine and emergency service maintenance activities, annual inspections, daily communications with NOAA Task Managers, and monthly reporting.

### **National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Physical Oceanographic Real-Time Systems (PORTS), Upper and Lower Chesapeake Bay – Project Manager**

Serves as Project Manager for Chesapeake Bay PORTS program (total of 39 stations). Responsible for routine and unscheduled service to real-time oceanographic and meteorological instruments throughout the Chesapeake Bay. Responsible for overseeing all aspects of system operations including coordination of routine and emergency service maintenance activities, daily communications with NOAA Task Managers, and monthly reporting.

### **National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Physical Oceanographic Real-Time Systems (PORTS), New York and New Jersey Harbor – Project Manager**

Serves as Project Manager for the New York/New Jersey Harbor PORTS program (total of 10 stations). Responsible for routine and unscheduled service to real-time oceanographic and meteorological instruments throughout the New York/New Jersey Harbor. Responsible for overseeing all aspects of system operations including coordination of routine and emergency service maintenance activities, daily communications with NOAA Task Managers, and monthly reporting.

### **National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Physical Oceanographic Real-Time Systems (PORTS), Charleston – Project Manager**

Serves as Project Manager for the Charleston Harbor PORTS program (total of 2 station). Responsible for routine and unscheduled service to real-time air gap station for this network. Responsible for overseeing all aspects of system operations including coordination of routine and emergency service maintenance activities, daily communications with NOAA Task Managers, and monthly reporting.

## KEY PROJECTS (CONTINUED)

**National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Physical Oceanographic Real-Time Systems (PORTS), Narragansett Bay, New London, and New Haven – Project Manager**

Serves as Project Manager for the Narragansett Bay PORTS program (total of 14 stations). Provide technical and management oversight to the Local Operator, James Spilsbury. Assist with operation & maintenance, coordination and monthly reporting tasks, including reporting and field support for routine operation & maintenance activities, emergency services, annual inspections and monthly reporting.

**National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Physical Oceanographic Real-Time Systems (PORTS), Western Gulf Coast – Project Manager**

Serves as Project Manager for the Western Gulf Coast contract including Houston/Galveston PORTS, Lake Charles PORTS, and the Texas NWLON programs (total of 19 stations) since 2014. Provides technical and management oversight to our partner and the Local Operator, Conrad Blucher Institute. Assist on an as-needed basis with operation & maintenance, coordination and monthly reporting tasks, including reporting and support for routine operation & maintenance activities, emergency services, annual inspections, and reporting.

**National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Texas Coastal Ocean Observation Network (TCOON) – Project Manager**

Serves as Project Manager for the Texas Coastal Ocean Observations Network program (total of 29 stations) since 2016. Provides technical and management oversight to our partner and the Local Operator, Conrad Blucher Institute. Assist on an as-needed basis with operation & maintenance, coordination and monthly reporting tasks, including reporting and support for routine operation & maintenance activities, emergency services, annual inspections, and reporting.

**National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Physical Oceanographic Real-Time Systems (PORTS), Houston/Galveston – Project Manager**

Serves as Project Manager for the Houston/Galveston PORTS program (total of 7 stations) since 2014. Provides technical and management oversight to our partner and the Local Operator, Conrad Blucher Institute. Assist on an as-needed basis with operation & maintenance, coordination and monthly reporting tasks, including reporting and support for routine operation & maintenance activities, emergency services, annual inspections, and reporting.

## KEY PROJECTS (CONTINUED)

### **National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Physical Oceanographic Real-Time Systems (PORTS), Texas NWLON stations – Project Manager**

Serves as Project Manager for five NWLON station located in Texas as part of PORTS program contract since 2014. Provides technical and management oversight to our partner and the Local Operator, Conrad Blucher Institute. Assist on an as-needed basis with tasks, including annual inspections, emergency service visits, annual inspections, and reporting.

### **National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Great Lakes VDatum Water Level Stations – Project Manager**

Serves as Project Manager for reconnaissance, installation, and removal of thirty-six seasonal water level stations in the Great Lakes region in support of hydrographic and shoreline mapping and new release of the International Great Lakes Vertical Datum 2020. Oversight of field crews for station reconnaissance, installations, and removals. In charge of management level correspondence with the NOAA COR, contracting, and team leads. Oversee budgeting, documentation, resource estimates, and invoicing for the project. Provide technical and field support for installations, removals, and emergency maintenance visits as needed.

### **National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Physical Oceanographic Real-Time Systems (PORTS), Houston/Galveston Bay, TX, Galveston Channel, West End Horizontal Acoustic Doppler Current Profiler – Project Manager**

Served as Project Manager for the installation of a new Houston/Galveston PORTS side looking current meter system for the Galveston-Texas City Pilots. Assisted with initial equipment procurement, testing, NOAA design approvals, client communication, and final reporting/documentation tasks.

### **Jacksonville Marine Transportation Exchange, Physical Oceanographic Real-Time Systems (PORTS), Jacksonville – Project Manager**

Serves as Project Manager for Installation and Operations and Maintenance PORTS program (total of 18 stations). Responsible for routine and unscheduled service to real-time oceanographic and meteorological instruments throughout the Jacksonville PORTS network. Responsible for overseeing all aspects of system installation and operations including oversight of station install, station installation documentation, coordination of routine and emergency service maintenance activities, annual inspections, daily communications with JMTX and NOAA Task Managers, and monthly reporting.

### **Kinder Morgan, Money Point Terminal, VA – Project Manager**

Designed and installed a wind monitoring system linked to visual and audial alarms to meet permitting requirements for offloading fine grain products. Primary tasks included oversight of design, testing, and installation of system, along with coordination with site personnel before and during the installation.

## KEY PROJECTS (CONTINUED)

### **Dual Wind Monitoring System on the USCG Mariners Harbor Tower, USACE NY and NY/NJ Port Authority, Staten Island, NY – Project Manager**

Serves as Project Manager for the installation of a dual wind monitoring system for the USACE at the USCG Mariners Harbor facility. The installation will be incorporated into the NOAA NY/NJ PORTS network in 2016. Oversaw the designing, equipment purchase, initial equipment installation onsite, testing, technical support, and reporting tasks. Responsible for technical support and reporting tasks, including field support for routine operation & maintenance activities, annual inspections, and emergency service.

### **National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Physical Oceanographic Real-Time Systems (PORTS), Pascagoula – Project Manager**

Served as Project Manager for the Pascagoula PORTS program (total of 8 stations). Provided technical and management oversight to the Local Operator. Responsible for overseeing all aspects of system operations including coordination of routine and emergency service maintenance activities, daily communications with NOAA Task Managers, and monthly & annual reporting.

### **National Oceanic and Atmospheric Administration, National Ocean Service, Center for Operational-Oceanographic Products and Services (NOAA/NOS/COOPS), Physical Oceanographic Real-Time Systems (PORTS), Lake Charles – Project Manager**

Served as Project Manager for the Lake Charles PORTS program (total of 7 stations) from 2009-2012. Provide technical and management oversight to the Local Operator. Assist on an as-needed basis with operation & maintenance, coordination and monthly reporting tasks, including reporting and field support for routine operation & maintenance activities, emergency services, annual inspections and monthly & annual reporting.

### **The Effects of Climate Change on Phytoplankton Community Structure, University of Delaware – Research Assistant**

Led multiple research projects focused on the effects of predicted global climate variations, including temperature, light, iron, and carbon dioxide on algal community structure in the North Atlantic, Ross Sea, and Bering Sea. Designed and maintained sampling equipment for shipboard research projects.

### **The Effects of Iron and Trace Metal Supply on Phytoplankton Community Structure due to Variations in Iron Supply to Oceanic Euphotic Zone, University of Delaware – Research Assistant**

Multiple research projects focused on the effects of variations iron supply rates to the euphotic zone on algal community composition in the Peru Upwelling Zone and Southern Ocean. Designed and maintained sampling equipment for shipboard research projects.

### **Ecology, Trophic Interactions and Composition of Harmful Algal Species Populations in Delaware Inland Bays, University of Delaware – Research Assistant**

Multiple research projects focused the harmful algal species populations within the Delaware Inland Bays. Projects focused on ecological studies including nutrient requirements, trophic level interactions, and characterization of populations.



## PUBLICATIONS AND PRESENTATIONS

Lee, P.A., S.F. Riseman, C.E. Hare, D.A. Hutchins, K. Leblanc, G.R. DiTullio. 2011. Potential impact of increased temperature and CO<sub>2</sub> on particulate dimethylsulfoniopropionate in the Bering Sea. *Advances in Oceanology and Limnology*, 2: 37-47.

Feng, Y., C.E. Hare, J.M. Rose, S.M. Handy, G.R. DiTullio, P.A. Lee, W. Smith W., J. Peloquin, S. Tozzi, Zhang Y., Sun J., R. Dunbar, M. Long, B. Sohst, D.A. Hutchins. 2010. Interactive effects of iron, irradiance and CO<sub>2</sub> on Ross Sea phytoplankton. *Deep-Sea Research I*, 57: 368-383.

Rose J.M., Y. Feng, G.R. DiTullio, R.B. Dunbar, C.E. Hare, P.A. Lee, M. Lohan, M. Long, W.O. Smith, B. Sohst, S. Tozzi, Y. Zhang, D.A. Hutchins. 2009. Synergistic effects of iron and temperature on Antarctic phytoplankton and microzooplankton assemblages. *Biogeosciences*, 6: 3131-3147.

Leblanc, K., C.E. Hare, Y. Feng, G.M. Berg, G.R. DiTullio, A. Neeley, I. Benner, C. Sprengel, A. Beck, S.A. Sanudo-Wilhelmy, U. Passow, K. Schreiber, J.M. Rowe, S.W. Wilhelm, C.W. Brown, D.A. Hutchins. 2009. Distribution of calcifying and silicifying phytoplankton in relation to environmental and biogeochemical parameters during the late stages of the 2005 North East Atlantic Spring Bloom. *Biogeosciences*, 6: 2155–2179.

Feng, Y., C.E. Hare, K. Leblanc, J.M. Rose, Y. Zhang, G.R. DiTullio, P.A. Lee, S.W. Wilhelm, J.M. Rowe, J. Sun, N. Nemcek, C. Gueguen, U. Passow, I. Benner, D.A. Hutchins. 2009. The effects of increased pCO<sub>2</sub> and temperature on the North Atlantic Spring Bloom. I. The phytoplankton community and biogeochemical response. *Marine Ecology Progress Series*, 388: 13-25.

Rose, J.M., Y. Feng, C.J. Gobler, R. Gutierrez, C.E. Hare, K. Leblanc, D.A. Hutchins. 2009. The effects of increased pCO<sub>2</sub> and temperature on the North Atlantic Spring Bloom. II. Microzooplankton abundance and grazing. *Marine Ecology Progress Series*, 388: 27-40.

Lee, P.A., J.R. Rudisill, A.R. Neely, D.A. Hutchins, Y. Feng, C.E. Hare, K. Leblanc, J.M. Rose, S.W. Wilhelm, J.M. Rowe, G.R. DiTullio. 2009. The effects of increased pCO<sub>2</sub> and temperature on the North Atlantic Spring Bloom. III. Dimethylsulfoniopropionate. *Marine Ecology Progress Series*, 388: 41-49.

Handy, S.M., E. Demir, D.A. Hutchins, K.J. Portune, E.B. Whereat, C.E. Hare, J.M. Rose, M.E. Warner, M. Farestad, S.C. Cary, K.J. Coyne. 2008. Using quantitative real-time PCR to study competition and community dynamics among Delaware Inland Bays harmful algae in field and laboratory studies. *Harmful Algae*, 7: 599-613.

Hare, C.E., K. Leblanc, G.R. DiTullio, R.M. Kudela, Y. Zhang, P.A. Lee, S. Riseman, P.D. Tortell, D.A. Hutchins. 2007. Consequences of increased temperature and CO<sub>2</sub> for algal community structure and biogeochemistry in the Bering Sea. *Marine Ecology Progress Series*, 352: 9-16.

Hare, C.E., G.R. DiTullio, S.F. Riseman, A.C. Crossley, L.C. Popels, P.N. Sedwick, D.A. Hutchins. 2007. Effects of changing continuous iron input rates on a Southern Ocean algal assemblage. *Deep-Sea Research I*, 54: 732-746.

## PUBLICATIONS AND PRESENTATIONS (CONTINUED)

Coyne, K.J., C.E. Hare, C.E. Popels, D.A. Hutchins, S.C. Cary. 2006. Distribution of *Pfiesteria piscicida* cyst populations in sediments of the Delaware Inland Bays, USA. *Harmful Algae*, 5: 363-373.

Frew, R.D., D.A. Hutchins, S. Nodder, S. Sanudo-Wilhelmy, A. Tovar-Sanchez, K. Leblanc, C.E. Hare, P.W. Boyd. 2006. Particulate iron dynamics during FeCycle in subantarctic waters southeast of New Zealand. *Global Biogeochemical Cycles*, 20: GB1S93, doi: 10.1029/2005GB002558.

Hare, C.E., G.R. DiTullio, C.G. Trick, S.W. Wilhelm, K.W. Bruland, D.A. Hutchins. 2005. Phytoplankton community structure changes following simulated upwelled iron inputs in the Peru Upwelling region. *Aquatic Microbial Ecology*, 38: 269-282.

Hare, C.E., E. Demir, K.J. Coyne, S.C. Cary, D.L. Kirchman, D.A. Hutchins. 2005. A bacterium that inhibits the growth of *Pfiesteria piscicida* and other dinoflagellates. *Harmful Algae*, 4: 221-234.

Leblanc, K, Hare, C.E., P.W. Boyd, K.W. Bruland, B. Sosht, S. Pickmere, M.C. Lohan, K. Buck, M. Ellwood, D.A. Hutchins. 2005. Fe and Zn effects on the Si cycle and diatom community structure in two contrasting high and low-silicate HNLC areas. *Deep-Sea Research I*, 52: 1842-1864.

Boyd, P.W., C.L. Law, D.A. Hutchins, E. Abraham, P.L. Crott, M. Ellwood, R.D. Frew, J. Hall, S. Handy, Hare, C.E., J. Higgins, P. Hill, K.A. Hunter, K. Leblanc, M.T. Maldonado, R.M. McKay, C. Mioni, M. Oliver, S. Pickmere, K. Safi, S. Sander, S.A. Sanudo-Wilhelmy, M. Smith, R. Strzepek, A. Tovar-Sanchez, S.W. Wilhelm. 2005. FeCycle: Attempting an iron biogeochemical budget from a mesoscale SF<sub>6</sub> tracer experiment in unperturbed low iron waters. *Global Biogeochemical Cycles*, 19: GB4S20, doi: 10.1029/2005GB002494.

Handy, S.M., K.J. Coyne, K.J. Portune, E. Demir, M.A. Doblin, Hare, C.E., S.C. Cary, D.A. Hutchins. 2005. Evaluating vertical migration behavior of harmful raphidophytes in the Delaware Inland Bays utilizing quantitative real-time PCR. *Aquatic Microbial Ecology*, 40: 121-132.

Hutchins, D.A., F. Pustizzi, F. C.E. Hare, G.R. DiTullio. 2003. A shipboard natural community continuous culture system for ecologically relevant low-level nutrient enrichment experiments. *Limnology and Oceanography: Methods*, 1: 82-91.

Hutchins, D.A., Hare, C.E., R.S. Weaver, Y. Zhang, G.F. Firme, G.R. DiTullio, M.B. Alm, S.F. Riseman, J.M. Maucher, M.E. Geesey, C.G. Trick, G.J. Smith, E.L. Rue, J. Conn, K.W. Bruland. 2002. Phytoplankton iron limitation in the Humboldt Current and Peru Upwelling. *Limnology and Oceanography*, 47: 997-1011.

Coyne, K.J., D.A. Hutchins, Hare, C.E., S.C. Cary. 2001. Assessing temporal and spatial variability in *Pfiesteria piscicida* distributions using molecular probing techniques. *Aquatic Microbial Ecology*, 24: 275-285.