

Christian Meinig

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Education:

M.S., Mechanical Engineering, University of Washington, 1998

B.S., Mechanical Engineering, University of Maryland, 1987

Research Interests:

He leads a diversified team of engineers and technicians specializing in the research, development and deployment of ocean and atmospheric instruments and observing platforms. Supported programs are global in scope and include moorings, ships, ROVs, UASs, underwater gliders and wave gliders.

Positions:

- Director of Engineering, NOAA-PMEL, 2000–present
- Project Engineer, 1998-2000
- Mechanical Engineer, NOAA-PMEL, 1994–1998
- Commissioned Officer, NOAA Corps, 1988–1994

Field Experience:

Thirty major research cruises totaling over 550 days at sea, in polar, equatorial and coastal waters. Roles as ship's officer, project engineer and chief scientist. 12 cruises involved submersibles, ROVs, AUVs, USV and underwater gliders.

Professional Activities:

- ITU-WMO-UNESCO IOC Joint Task Force, Engineer Chair, 2012-2014
- Journal of Operational Oceanography, Editorial Staff, 2007–2012
- Intergovernmental Oceanographic Commission (IOC), International Tsunameter Partnership Group, 2007–present
- National Sea Grant Technology Advisory Board, 2000–2002

Patents:

US Patent 7,244,155; Nye, Milburn, Meinig; *Mooring line for an oceanographic buoy system*, issued August 21, 2006

US Patent 7,289,907; Meinig, Stalin, Nakamura, Milburn; *System for reporting high resolution ocean pressures in near realtime for the purpose of tsunami monitoring*, issued October 30, 2007

Honors and Awards:

- **U.S. Department of Commerce Silver Medal (Group):** *For the successful deployment and recovery of acoustic mooring and first long term record of ambient sound at Challenger Deep, 2017*
- **U.S. Department of Commerce Silver Medal:** *For developing a multi-platform observing array to collect data on ocean acidification in the Gulf of Alaska, 2015*
- **NOAA Technology Transfer Award:** *For developing a sensor to measure CO2 and transferring the design to industry, 2011*
- **NOAA Technology Transfer Award:** *For the invention of DART tsunami technology, which allows NOAA to produce accurate forecasts through a patent license and generate new US jobs, 2008*
- **U.S. Department of Commerce Bronze Medal:** *For personal and professional excellence as the Nation's experts and spokespersons on tsunamis following the December 26, 2004 Indian Ocean tsunami, 2007*
- **U.S. Department of Commerce Gold Medal:** *For research and development leading to the creation of a tsunami forecasting capability, 2005*
- **U.S. Department of Commerce Gold Medal:** *For the creation and use of a new moored buoy system to provide accurate and timely warning information on tsunamis, 2004*
- **NOAA Administrator's Award:** "New Millennium Observatory Network", 2003

Relevant Media Coverage:

Science Daily, [Seven miles deep, ocean still a noisy place](#), Mar 2016

Newsweek, "[Scientists Find Ocean Floor Noisier Than Expected](#)", Mar 2016

New York Times, "[No Sailors Needed: Robot Sailboats Scour the Oceans for Data](#)", Sept 2016

Government Computer News, "[NOAA Aquatic Bots Break the Ice on Climate Research](#)", Nov 2012

NPR-Earthfix, "[The Five Coolest things about Ocean-Exploring Robots](#)", Nov 2011

IEEE Spectrum, Philip E. Ross, "[Waiting and Waiting for the Next Killer Wave](#)", March 2005

American Museum of Natural History, "[Fear the Future Tsunami?](#)", October 2005

Newshour with Jim Lehrer, "[Tsunami Alert](#)", January 11, 2005

Modern Marvels, History Channel, "[Nature Tech:Tsunamis](#)", July 8, 2003

Recent Publications:

Haver, S.M., J. Gedamke, L.T. Hatch, R.P. Dziak, S. Van Parijs, M.F. McKenna, J.P. Barlow, C. Berchok, E. DiDonato, B. Hanson, J. Haxel, M. Holt, D. Lipski, H. Matsumoto, C. Meinig, D.K. Mellinger, S.E. Moore, E.M. Oleson, M.S. Soldevilla, and H. Klinck (2018): Monitoring long-term soundscape trends in U.S. waters: The NOAA/NPS Ocean Noise Reference Station Network. *Mar. Policy*, 90, 6–13, doi: 10.1016/j.marpol.2018.01.023.

Dziak, R.P., J.H. Haxel, H. Matsumoto, T.-K. Lau, S. Heimlich, S. Nieu Kirk, D.K. Mellinger, J. Osse, C. Meinig, N. Delich, and S. Stalin (2017): Ambient sound at Challenger Deep, Mariana Trench. *Oceanography*, 30(2), 186–197, doi: 10.5670/oceanog.2017.240.

Matsumoto, H., A. Turpin, J. Haxel, C. Meinig, M. Craig, D. Tagawa, H. Klinck, and B. Hanson (2016): A real-time acoustic observing system (RAOS) for killer whales. In *Oceans '16 MTS/IEEE*, Marine Technology Society and Institute of Electrical and Electronics Engineers, IEEE, Monterey, Calif., 19–23 September 2016

Fassbender, A.J., C.L. Sabine, N. Lawrence-Slavas, E.H. De Carlo, C. Meinig, and S. Maenner Jones (2015): Robust sensor for extended autonomous measurements of surface ocean dissolved inorganic carbon. *Environ. Sci. Tech.*, doi: 10.1021/es5047183.

Cross, J.N., C.W. Mordy, H. Tabisola, C. Meinig, E.D. Cokelet, and P.J. Stabeno (2015): Innovative technology development for Arctic exploration. In *Oceans 2015 MTS/IEEE*, Marine Technology Society and Institute of Electrical and Electronics Engineers, Washington, DC, 19–22 October 2015.

Cokelet, E.D., R. Jenkins, C. Meinig, N. Lawrence-Slavas, C.W. Mordy, P.J. Stabeno, H. Tabisola, and J.N. Cross (2015): The use of Saildrones to examine spring conditions in the Bering Sea: Instrument comparisons, sea ice meltwater and Yukon River plume studies. In *Oceans 2015 MTS/IEEE*, Marine Technology Society and Institute of Electrical and Electronics Engineers, Washington, DC, 19–22 October 2015.

Dziak, R.P., J.H. Haxel, H. Matsumoto, C. Meinig, N. Delich, J. Osse, and M. Wetzler (2015): Deployment and recovery of a full-ocean depth mooring at Challenger Deep, Mariana Trench. In *Oceans 2015 MTS/IEEE*, Marine Technology Society and Institute of Electrical and Electronics Engineers, Washington, DC, 19–22 October 2015.

Meinig, C., R. Jenkins, N. Lawrence-Slavas, and H. Tabisola (2015): The use of Saildrones to examine spring conditions in the Bering Sea: Vehicle specification and mission performance. In *Oceans 2015 MTS/IEEE*, Marine Technology Society and Institute of Electrical and Electronics Engineers, Washington, DC, 19–22 October 2015.

Osse, J., S. Stalin, C. Meinig, and H. Milburn (2015): The PRAWLER, a vertical profiler: Powered by wave energy. In *Oceans 2015 MTS/IEEE*, Marine Technology Society and Institute of Electrical and Electronics Engineers, Washington, DC, 19–22 October 2015.

Thomson, J., J. Talbert, A. de Klerk, A. Brown, M. Schwendeman, J. Goldsmith, J. Thomas, C. Olfe, G. Cameron, and C. Meinig (2015): Biofouling effects on the response of a wave measurement buoy in deep water. *J. Atmos. Oceanic Tech.*, 32(6), 1281–1286, doi: 10.1175/JTECH-D-15-0029.1.

Peralta-Ferriz, C., J.H. Morison, S.E. Stalin, and C. Meinig (2014): Measuring ocean bottom pressure at the North Pole. *Mar. Technol. Soc. J.*, 48(5), 52–68, doi: 10.4031/MTSJ.48.5.1.

Rudnick, D.L., C. Meinig, K. Ando, S. Riser, U. Send, and T. Suga (2014): TPOS White Paper #12: Emerging technology. In *Proceedings of the Tropical Pacific Observing System 2020 Workshop, A Future Sustained Tropical Pacific Ocean Observing System for Research and Forecasting*, WMO and Intergovernmental Oceanographic Commission, La Jolla, CA, 27–30 January 2014.

Sutton, A.J., C.L. Sabine, S. Maenner-Jones, N. Lawrence-Slavas, C. Meinig, R.A. Feely, J.T. Mathis, S. Musielewicz, R. Bott, P.D. McLain, J. Fought, and A. Kozyr (2014): A high-frequency atmospheric and seawater pCO₂ data set from 14 open ocean sites using a moored autonomous system. *Earth Sys. Sci. Data*, 6, 353–366, doi: 10.5194/essd-6-353-2014,

Bates, T.S., P.K. Quinn, J.E. Johnson, A. Corless, F.J. Brechtel, S.E. Stalin, C. Meinig, and J.F. Burkhart (2013): Measurements of atmospheric aerosol vertical distributions above Svalbard, Norway, using unmanned aerial systems (UAS). *Atmos. Meas. Tech.*, 6, doi: 10.5194/amt-6-2115-2013, 2115–2120.

Meinig, C., M. Steele, and K. Wood (2012): Taking the temperature Of the Arctic with UMVs: Arctic wave gliders gather 900,000 measurements during a two-month mission in the Beaufort Sea. *Sea Technol.*, 53(9).

Paros, J., C. Meinig, M. Spillane, P. Migliacio, L. Tang, W. Chadwick, T. Schaad, and S. Stalin (2012): Nano-resolution technology demonstrates promise for improved local tsunami warnings on the MARS project. In *Oceans 2012 MTS/IEEE*, Yeosu, Korea, 21–24 May 2012.

Bernard, E., and C. Meinig (2011): History and future of deep-ocean tsunami measurements. In *Proceedings of Oceans' 11 MTS/IEEE*, Kona, IEEE, Piscataway, NJ, 19–22 September 2011, No. 6106894, 7 pp.

Paros, J., E. Bernard, J. Delaney, C. Meinig, M. Spillane, P. Migliacio, L. Tang, W. Chadwick, T. Schaad, and S. Stalin (2011): Breakthrough underwater technology holds promise for improved local tsunami warnings. In *Symposium for Underwater Technology (UT), 2011 IEEE - 2011 Workshop on Scientific Use of Submarine Cables and Related Technologies (SSC)*, 5-8 April 2011.

Lawson, R.A., D. Graham, S. Stalin, C. Meinig, D. Tagawa, N. Lawrence-Slavas, R. Hibbins, and B. Ingham (2011): From Research to Commercial Operations: The Next Generation Easy-to-Deploy (ETD) Tsunami Assessment Buoy. In *Proceedings of Oceans' 11 MTS/IEEE*, Kona, IEEE, Piscataway, NJ, 19–22 September 2011, No. 6107114, 8 pp.

Bernard, E.N., C. Meinig, V.V. Titov, K. O'Neil, R. Lawson, K. Jarrott, R. Bailey, F. Nelson, S. Tinti, C. von Hillebrandt, and P. Koltermann (2010): Tsunami resilient communities. In *Proceedings of the "OceanObs'09: Sustained Ocean Observations and Information for Society" Conference (Vol. 1)*, Venice, Italy, 21–25 September 2009, Hall, J., D.E. Harrison, and D. Stammer, Eds., ESA Publication WPP-306, doi: 10.5270/OceanObs09.pp.04.

Matsumoto, H., S.E. Stalin, R.W. Embley, J.H. Haxel, D.R. Bohnenstiehl, R.P. Dziak, C. Meinig, J.A. Resing, and N.M. Delich (2010): Hydroacoustics of a submarine eruption in the northeast Lau Basin using an acoustic glider. In *Oceans 2010 MTS/IEEE Seattle*, Washington State Convention and Trade Center, Seattle, WA, 20–23 September, 2010.