



## PMEL Research Selected Highlighted Publications FY2014-2019

This is a compilation of selected highlighted publications from each of the research theme and groups at PMEL.

### Climate-Weather Theme

#### *Arctic*

Overland, J.E., K. Dethloff, J.A. Francis, R.J. Hall, E. Hanna, S.-J. Kim, J.A. Screen, T.G. Shepherd, and T. Vihma (2016): Nonlinear response of mid-latitude weather to the changing Arctic. *Nature Clim. Change*, 6, 992–999. <https://doi.org/10.1038/nclimate3121> (Copyright Restricted) **[Highly Cited Paper]**

Overland, J.E., E. Dunlea, J.E. Box, R. Corell, M. Forsius, V. Kattsov, M. Skovgård Olsen, J. Pawlak, L.-O. Reiersen, and M. Wang (2019): The urgency of Arctic change. *Polar Sci.*, 21, 6–13. <https://doi.org/10.1016/j.polar.2018.11.008> (Open Access)

#### *Atmospheric Chemistry*

Quinn, P.K., D.B. Collins, V.H. Grassian, K.A. Prather, and T.S. Bates (2015): Chemistry and related properties of freshly emitted sea spray aerosol. *Chem. Rev.*, 115(10), 4383–4399. <https://doi.org/10.1021/cr500713g>

Quinn, P.K., D.J. Coffman, J.E. Johnson, L.M. Upchurch, and T.S. Bates (2017): Small fraction of marine cloud condensation nuclei made up of sea spray aerosol. *Nature Geosci.*, 10, 674–679. <https://doi.org/10.1038/ngeo3003> (Copyright Restricted)

#### *Climate-Weather Interface*

Chiodi, A.M., and D.E. Harrison (2015): Global seasonal precipitation anomalies robustly associated with El Niño and La Niña events—an OLR perspective. *J. Climate*, 28(15), 6133–6159. <https://doi.org/10.1175/JCLI-D-14-00387.1> (Open Access)

Zhang, C., and J. Ling (2017): Barrier effect of the Indo-Pacific maritime continent on the MJO: Perspectives from tracking MJO precipitation. *J. Climate*, 30(9), 3439–3459. <https://doi.org/10.1175/JCLI-D-16-0614.1> (Open Access)



### *Global Tropical Moored Buoy Array (GT MBA)*

Levine, A.F.Z., and M.J. McPhaden (2016): How the July 2014 easterly wind burst gave the 2015-6 El Niño a head start. *Geophys. Res. Lett.*, 43(12), 6503–6510.

<https://doi.org/10.1002/2016GL069204> (Free Access) [Highly Cited Paper]

McPhaden, M.J., Y. Wang, and M. Ravichandran (2015): Volume transport of the Wyrki jets and their relationship to the Indian Ocean dipole. *J. Geophys. Res.*, 120(8), 5302–5317.

<https://doi.org/10.1002/2015JC010901> (Free Access)

### *Large Scale Ocean Physics*

Johnson, G.C., and A.N. Birnbaum (2017): As El Niño builds, Pacific Warm Pool expands, ocean gains more heat. *Geophys. Res. Lett.*, 44(1), 438–445.

<https://doi.org/10.1002/2016GL071767> (Free Access)

Johnson, G.C., J.M. Lyman, and N.G. Loeb (2016): Improving estimates of Earth's energy imbalance. *Nature Clim. Change*, 6, 639–640. <https://doi.org/10.1038/nclimate3043> (Copyright Restricted)

Johnson, G.C., K.E. McTaggart, and R. Wanninkhof (2014): Antarctic Bottom Water temperature changes in the western South Atlantic from 1989–2014. *J. Geophys. Res.*, 119(12), 8567–8577. <https://doi.org/10.1002/2014JC010367> (Free Access)

### *Ocean Carbon*

Carter, B.R., R.A. Feely, R. Wanninkhof, S. Kouketsu, R.E. Sonnerup, P.C. Pardo, C.L. Sabine, G.C. Johnson, B.M. Sloyan, A. Murata, S. Mecking, B. Tillbrook, K. Speer, L.D. Talley, F.J. Millero, S.E. Wijffels, A.M. Macdonald, N. Gruber, and J.L. Bullister (2019): Pacific anthropogenic carbon between 1991 and 2017. *Global Biogeochem. Cycles*, 33(5), 597–617. <https://doi.org/10.1029/2018GB006154> (Open Access)

Sutton, A.J., R.A. Feely, S. Maenner-Jones, S. Musielewicz, J. Osborne, C. Dietrich, N. Monacci, J. Cross, R. Bott, A. Kozyr, A.J. Andersson, N.R. Bates, W.-J. Cai, M.F. Cronin, E.H. De Carlo, B. Hales, S.D. Howden, C.M. Lee, D.P. Manzello, M.J. McPhaden, M. Meléndez, J.B. Mickett, J.A. Newton, S.E. Noakes, J.H. Noh, S.R. Olafsdottir, J.E. Salisbury, U. Send, T.W. Trull, D.C. Vandemark, and R.A. Weller (2019): Autonomous seawater pCO<sub>2</sub> and pH time series from 40 surface buoys and the emergence of anthropogenic trends. *Earth Syst. Sci. Data*, 11, 421–439, [doi: 10.5194/essd-11-421-2019](https://doi.org/10.5194/essd-11-421-2019)

### *Ocean Climate Stations*

Cronin, M.F., N.A. Pelland, S.R. Emerson, and W.R. Crawford (2015): Estimating diffusivity from the mixed layer heat and salt balances in the North Pacific. *J. Geophys. Res.*, 120(11), 7346–7362. <https://doi.org/10.1002/2015JC011010>

Zhang, D., M.F. Cronin, C. Wen, Y. Xue, A. Kumar, and D. McClurg (2016): Assessing surface heat fluxes in atmospheric reanalyses with a decade of data from the NOAA Kuroshio Extension Observatory. *J. Geophys. Res.*, 121(9), 6874–6890. <https://doi.org/10.1002/2016JC011905>

### *Pacific Western Boundary Current*

Gourdeau, L., J. Verron, A. Chaigneau, S. Cravatte, and W.S. Kessler (2017): Complementary use of glider data, altimetry, and model for exploring mesoscale eddies in the tropical Pacific Solomon Sea. *J. Geophys. Res.*, 122(11), 9209–9229. <https://doi.org/10.1002/2017JC013116>

Kessler, W.S., H.G. Hristova, R.E. Davis, and J.T. Sherman (2019): Equatorward western boundary transport from the South Pacific: Glider observations, dynamics and consequences. *Prog. Oceanogr.*, 175, 208–225. <https://doi.org/10.1016/j.pocean.2019.04.005>

Kessler, W.S., S.E. Wijffels, S. Cravatte, N. Smith, and Coauthors (2019): *Second Report of TPOS 2020*. GOOS-234, TPOS 2020. <http://tpos2020.org/project-reports/second-report/>

## Marine Ecosystems Theme

### *Acoustics*

Dziak, R.P., W.S. Lee, J.H. Haxel, H. Matsumoto, G. Tepp, T.-K. Lau, L. Roche, S. Yun, C.-K. Lee, J. Lee, and S.-T. Yoon (2019): Hydroacoustic, meteorologic and seismic observations of the 2016 Nansen ice shelf calving event and iceberg formation. *Front. Earth Sci.*, 7, 183. <https://doi.org/10.3389/feart.2019.00183> (Open Access)

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. <https://doi.org/10.1016/j.marpol.2018.01.023> (Open Access)



*Ecosystems and Fisheries-Oceanography Coordinated Investigations (EcoFOCI)*

Hermann, A., G. Gibson, W. Cheng, I. Ortiz, K. Aydin, M. Wang, A. Hollowed, and K. Holsmann (2019): Projected biophysical conditions of the Bering Sea to 2100 under multiple emission scenarios. *ICES J. Mar. Sci.*, 76(5), 1280–1304. <https://doi.org/10.1093/icesjms/fsz043> (Open Access)

Stabeno, P.J., S.W. Bell, N.A. Bond, D.G. Kimmel, C.W. Mordy, and M.E. Sullivan (2019): Distributed Biological Observatory Region 1: Physics, chemistry and plankton in the northern Bering Sea. *Deep-Sea Res. II*, 162, 8–21. <https://doi.org/10.1016/j.dsr2.2018.11.006> (Copyright Restricted)

Yang, Q., E.D. Cokelet, P.J. Stabeno, L. Li, A.B. Hollowed, W.A. Palsson, N.A. Bond, and S.J. Barbeaux (2019): How "The Blob" affected groundfish distributions in the Gulf of Alaska. *Fish. Oceanogr.*, 28(4), 434–453. <https://doi.org/10.1111/fog.12422> (Copyright Restricted)

*Genetics and Genomics*

Marshall, N.T., and C.A. Stepien (2019): Invasion genetics from eDNA and thousands of larvae: A targeted metabarcoding assay that distinguishes species and population variation of zebra and quagga mussels. *Ecol. Evol.*, 9, 3515–3538. <https://doi.org/10.1002/ece3.4985> (Open Access)

Stepien, C.A., M.R. Snyder, and A.E. Elz (2019): Invasion genetics of the silver carp *Hypophthalmichthys molitrix* across North America: Differentiation of fronts, introgression, and eDNA metabarcoding detection. *PLoS One*, 14(3), e0203012. <https://doi.org/10.1371/journal.pone.0203012> (Open Access)

*Ocean Acidification*

Feely, R.A., R.R. Okazaki, W.-J. Cai, N. Bednaršek, S.R. Alin, R.H. Byrne, and A. Fassbender (2018): The combined effects of acidification and hypoxia on pH and aragonite saturation in the coastal waters of the Californian Current Ecosystem and the northern Gulf of Mexico. *Cont. Shelf Res.*, 152, 50–60. <https://doi.org/10.1016/j.csr.2017.11.002> (Copyright Restricted)



## Ocean and Coastal Processes Theme

### *Earth-Ocean Interactions (EOI)*

Nooner, S.L., and W.W. Chadwick, Jr. (2016): Inflation-predictable behavior and co-eruption deformation at Axial Seamount. *Science*, 354(6318), 1399–1403.

<https://doi.org/10.1126/science.aah4666> (Copyright Restricted)

Resing, J.A., P.N. Sedwick, C.R. German, W.J. Jenkins, J.W. Moffett, B.M. Sohst, and A. Tagliabue (2015): Basin-scale transport of hydrothermal dissolved metals across the South Pacific Ocean. *Nature*, 523, 200–203. <https://doi.org/10.1038/nature14577> (Copyright Restricted) [**Highly Cited Paper**]

### *Ocean Tracer*

Sonnerup, R.E., S. Mecking, J.L. Bullister, and M.J. Warner (2015): Transit time distributions and oxygen utilization rates from chlorofluorocarbons and sulfur hexafluoride in the southeast Pacific Ocean. *J. Geophys. Res.*, 120(5), 3761–3776.

<https://doi.org/10.1002/2015JC010781> (Free Access)

Sonnerup, R.E., B.X. Chang, M.J. Warner, and C.W. Mordy (2019): Timescales of ventilation and consumption of oxygen and fixed nitrogen in the eastern tropical South Pacific oxygen deficient zone from transient tracers. *Deep-Sea Res. I*, 151, 103080.

<https://doi.org/10.1016/j.dsr.2019.103080> (Copyright Restricted)

### *Tsunami*

Bernard, E., and V.V. Titov (2015): Evolution of tsunami warning systems and products. *Philos. Trans. R. Soc. Lond. A*, 373(2053), 20140371. <https://doi.org/10.1098/rsta.2014.0371> (Open Access)

Tang, L., V.V. Titov, C. Moore, and Y. Wei (2016): Real-time assessment and modeling of the 16 September 2015 Chile tsunami. *Pure Appl. Geophys.*, 173(2), 369–387.

<https://doi.org/10.1007/s00024-015-1226-3> (Copyright Restricted)



## Research Innovation and Development Theme

### *Engineering*

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. <https://doi.org/10.23919/OCEANS.2015.7404354>

Meinig, C., E.F. Burger, N. Cohen, E.D. Cokelet, M.F. Cronin, J.N. Cross, S. de Halleux, R. Jenkins, A.T. Jessup, C.W. Mordy, N. Lawrence-Slavas, A.J. Sutton, D. Zhang, and C. Zhang (2019): Public private partnerships to advance regional ocean observing capabilities: A Saildrone and NOAA-PMEL case study and future considerations to expand to global scale observing. *Front. Mar. Sci.*, 6, 448, Oceanobs19: An Ocean of Opportunity. <https://doi.org/10.3389/fmars.2019.00448> (Open Access)

### *Innovative Technologies for Arctic Exploration (ITAE)*

Mordy, C.W., E.D. Cokelet, A. DeRobertis, R. Jenkins, C.E. Kuhn, N. Lawrence-Slavas, C.L. Berchok, J.L. Crance, J.T. Sterling, J.N. Cross, P.J. Stabeno, C. Meinig, H.M. Tabisola, W. Burgess, and I. Wangen (2017): Advances in ecosystem research: Saildrone surveys of oceanography, fish, and marine mammals in the Bering Sea. *Oceanography*, 30(2), 113–115. <https://doi.org/10.5670/oceanog.2017.230> (Open Access)

Wood, K.R., S.R. Jayne, C.W. Mordy, N. Bond, J.E. Overland, C. Ladd, P.J. Stabeno, A.K. Ekholm, P.E. Robbins, M.-B. Schreck, R. Heim, and J. Intrieri (2018): Results of the first Arctic Heat Open Science Experiment. *Bull. Am. Meteorol. Soc.*, 99(3), 513–520. <https://doi.org/10.1175/BAMS-D-16-0323.1> (Open Access)

### *Science Data Integration*

Buck, J.J.H., S.J. Bainbridge, E.F. Burger, A.C. Kraberg, M. Casari, K.S. Casey, L. Darroch, J. Del Rio, K. Metfies, E. Delory, P.F. Fischer, T. Gardner, R. Heffernan, S. Jirka, A. Kokkinaki, M. Loebl, P.L. Buttigieg, J.S. Pearlman, and I. Schewe (2019): Ocean data product integration through innovation—The next level of data interoperability. *Front. Mar. Sci.*, 6, 32, Oceanobs19: An Ocean of Opportunity. <https://doi.org/10.3389/fmars.2019.00032> (Open Access) **[Highly Cited Paper]**

Tanhua, T., S. Pouliquen, J. Hausma, K. O'Brien, P. Bricher, T. de Bruin, J. Buck, E.F. Burger, T. Carval, K.S. Casey, S. Diggs, A. Giorgetti, H. Glaves, V. Harscoat, D. Kinkade, J.H. Muelbert, A. Novellino, B. Pfeil, P.L. Pulsifer, A. Van de Putte, E. Robinson, D. Schaap, A. Smirnov, N. Smith, D. Snowden, T. Spears, S. Stall, M. Tacoma, P. Thijsse, S. Tronstad, T. Vandenberghe, M. Wengren, L. Wyborn, and Z. Zhao (2019): Ocean FAIR Data Services.



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*Front. Mar. Sci.*, 6, 440, *Oceanobs19: An Ocean of Opportunity*.

<https://doi.org/10.3389/fmars.2019.00440> (Open Access) [Highly Cited Paper]