

CURRICULUM VITAE

JOHN M. LYMAN
PMEL/JIMAR Assistant Researcher

Mailing Address

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Education

B.S. Worcester Polytechnic Institute (Physics, with distinction) 1992
Ph. D. College of Oceanic and Atmospheric Science, Oregon State University 2002
(Oceanography). Thesis Advisor: Dudley B. Chelton
Thesis title: *The Cross-Equatorial Structure of Tropical Instability Waves*

Professional Experience

Peace Corps Volunteers, teaching mathematics in Zimbabwe, Africa 1992-95
Graduate Research Assistant, Oregon State University 1995-2002
National Research Council Research Associate, NOAA/Pacific Marine
Environmental Laboratory 2002-2005
Pacific Marine Environmental Laboratory/Joint Institute for Marine and
Atmospheric Research, Assistant Researcher 2005-present

Honors and Awards

Tau Beta Pi, Worcester Polytechnic Institute 1992
Dr. Robert H. Goddard Award, Department of Physics W.P.I 1992

Invited Talks

Invited Speaker, American Geophysical Union Ocean Science Meeting 2004
Invited Speaker, XBT workshop Hamburg Germany 2010
Invited ISSI workshop "Observing and modeling Earth's energy flows" in Bern, Switzerland 2011

Professional Societies

American Geophysical Union
Sigma Pi Sigma

Areas of Expertise

The physical oceanography of the Equatorial Pacific; descriptive, statistical and dynamical analyses of mesoscale variability; satellite microwave remote sensing of the ocean (primarily radar altimetry); linearized modeling of instabilities; interpretation of global circulation model output; analysis of moored time series (primarily temperature and velocity); analysis of profiling drifters; analysis of global heat and fresh water content; quality control of data.

Present Research Interests

Investigation of mesoscale variability from satellite altimeter data and moored bouys in the Eastern Equatorial Pacific; development of linearized models to explain instabilities in the equatorial oceans; estimating global heat and fresh water

content from in situ observation and satellite altimeter data. Geographical areas of interest include Equatorial Pacific Ocean, Bering Sea, Equatorial Indian Ocean, and Equatorial Atlantic Ocean.

Refereed Publications

- 1993 Lyman, J. M. and P. K. Aravind, 1993: Deducing the Lenz vector of the hydrogen atom from supersymmetry. *Journal of Physics A: Mathematical and General*, **26**, 3307–3311.
- 2003 Chelton, D. B., M. G. Schlax, J. M. Lyman and G. C. Johnson, 2003: Equatorially trapped Rossby waves in the presence of meridionally sheared baroclinic flow in the Pacific Ocean. *Progress in Oceanography*, **56**, 323–380.
- 2005 Lyman, J. M., D. B. Chelton, R. A. de Szoeke and R. M. Samelson, 2005: Tropical Instability Waves as a resonance between Rossby waves. *Journal of Physical Oceanography*, **35**, 232-254.
- 2006 Johnson, G. C., J. M. Lyman, and J. K. Willis, 2006: Global Oceans: Heat Content. In State of the Climate in 2005, K.A. Shein, Ed., *Bulletin of the American Meteorological Society*, **87**, 6, S23-S24.
- 2006 Lyman, J. M., J. K. Willis and G. C. Johnson, 2006: Recent cooling of the upper ocean, *Geophysical Research Letters*, **33**, L18604, doi:10.1029/2006GL027033.
- 2007 Lyman, J.M., G. C. Johnson and W. S. Kessler, 2007: Distinct 17-day and 33-day Tropical Instability Waves in subsurface observations, *Journal of Physical Oceanography*, Vol. **37**, No. 4, pages 855-872.
- 2007 Johnson, G. C., and J. M. Lyman, 2007: Global Oceans: Sea Surface Salinity. In State of the Climate in 2006, A. Arguez, Ed., *Bulletin of the American Meteorological Society*, **88**, 6, S34-S35.
- 2007 Johnson, G. C., J. M. Lyman, and J. K. Willis, 2007: Global Oceans: Heat Content. In State of the Climate in 2006, A. Arguez, Ed., *Bulletin of the American Meteorological Society*, **88**, 6, S31-S33.
- 2007 Willis, J. K., J. M. Lyman, G. C. Johnson, and J. Gilson, 2007: Correction to "Recent cooling of the upper ocean". *Geophysical Research Letters*, **34**, L16601, doi:10.1029/2007GL030323.
- 2008 Lyman, J.M. and G. C. Johnson, 2008: Estimating Annual Global Upper Ocean Heat Content Anomalies Despite Irregular In Situ Ocean Sampling, *Journal of Climate*, **21**, 5629-5641, doi:10.1175/2008JCLI2259.1.
- 2008 Johnson, G. C., and J. M. Lyman. 2008. Global Oceans: Sea Surface Salinity. In State of the Climate in 2007, D. H. Levinson and J. H. Lawrimore, Eds., *Bulletin of the American Meteorological Society*, **89**, 7, S45-S47, doi:10.1175/BAMS-89-7-StateoftheClimate.
- 2008 Johnson, G. C., J. M. Lyman, and J. K. Willis. 2008. Global Oceans: Heat Content. In State of the Climate in 2007, D. H. Levinson and J. H. Lawrimore, Eds., *Bulletin of the American Meteorological Society*, **89**, 7, S45-S47, doi:10.1175/BAMS-89-7-StateoftheClimate.
- 2008 Lyman, J. M. and G. C. Johnson: Equatorial Kelvin Wave Influences May Reach the Bering Sea During 2002 to 2005, *Geophysical Research Letters*, **35**, L14607, doi:10.1029/2008GL034761.
- 2008 Willis, J. K., J. M. Lyman, G. C. Johnson, and J. Gilson, 2008: In situ data biases and recent ocean heat content variability. *Journal of Atmospheric and Oceanic Technology*, **26**, 846-852, doi:10.1175/2008JTECHO608.1.

- 2009 Johnson, G. C., and J. M. Lyman. 2009. Global Oceans: Sea Surface Salinity. In *State of the Climate in 2008*, T. C. Peterson and M. O. Baringer, Eds., *Bulletin of the American Meteorological Society*, **90**, 8, S56-S57, doi:10.1175/BAMS-90-8-StateoftheClimate.
- 2009 Johnson, G. C., J. M. Lyman, J. K. Willis, S. Levitus, T. Boyer, J. Antonov, C. Schmid, and G. J. Goni. 2009. Global Oceans: Ocean Heat Content. In *State of the Climate in 2008*, T. C. Peterson and M. O. Baringer, Eds., *Bulletin of the American Meteorological Society*, **90**, 8, S49-S52, doi:10.1175/BAMS-90-8-StateoftheClimate.
- 2009 Palmer, M. D., J. Antonov, P. Barker, N. Bindoff, T. Boyer, M. Carson, C. M. Domingues, S. Gille, P. Gleckler, S. Good, V. Gouretski, S. Guinehut, K. Haines, D. E. Harrison, M. Ishii, G. C. Johnson, S. Levitus, M. S. Lozier, J. M. Lyman, A. Meijers, K. von Shuckmann, D. Smith, S. Wijffels, and J. Willis. 2009. Future Observations for Monitoring Global Ocean Heat Content. A Community White Paper for OceanObs09, Venice, Italy, 21-25 Sept. 2009.
- 2010 Johnson, G. C., and J. M. Lyman. 2010. Global Oceans: Sea Surface Salinity. In *State of the Climate in 2009*, D. S. Arndt, M. O. Baringer, and M. R. Johnson, Eds., *Bulletin of the American Meteorological Society*, **91**, 7, S63-S64, doi:10.1175/BAMS-91-7-StateoftheClimate.
- 2010 Johnson, G. C., J. M. Lyman, J. K. Willis, S. Levitus, T. Boyer, J. Antonov, M. D. Palmer, and S. A. Good. 2010. Global Oceans: Ocean Heat Content. In *State of the Climate in 2009*, D. S. Arndt, M. O. Baringer, and M. R. Johnson, Eds., *Bulletin of the American Meteorological Society*, **91**, 7, S56-S59, doi:10.1175/BAMS-91-7-StateoftheClimate.
- 2010 Lyman, J. M., S. A. Good, V. V. Gouretski, M. Ishii, G. C. Johnson, M. D. Palmer, D. A. Smith, and J. K. Willis. 2010. Robust warming of the global upper ocean. *Nature*, **465**, 334-337, doi:10.1038/nature09043.
- 2010 Palmer, M.D., K. Haines and J. M. Lyman. 2010. Global Oceans: Recent advances in our understanding of Global ocean heat. In *State of the Climate in 2009*, D. S. Arndt, M. O. Baringer, and M. R. Johnson, Eds., *Bulletin of the American Meteorological Society*, **91**, 7, S59-S60, doi:10.1175/BAMS-91-7-StateoftheClimate.
- 2011 Johnson, G. C., and J. M. Lyman. 2011. Global Oceans: Sea Surface Salinity. In *State of the Climate in 2010*, Blunden, J., D. S. Arndt, and M. O. Baringer, Eds., *Bulletin of the American Meteorological Society*, **92**, 6, S86-S88, doi:10.1175/1520-0477-92.6.S1
- 2011 Johnson, G. C., J. M. Lyman, J. K. Willis, S. Levitus, T. Boyer, J. Antonov, M. D. Palmer, and S. A. Good. 2011. Global Oceans: Ocean Heat Content. In *State of the Climate in 2010*, Blunden, J., D. S. Arndt, and M. O. Baringer, Eds., *Bulletin of the American Meteorological Society*, **92**, 6, S81-S84, doi:10.1175/1520-0477-92.6.S1.
- 2011 Lyman, J. M., 2011: Estimating global energy flow from the global upper ocean. *Surv. Geophys.*, doi:10.1007/s10712-011-9167-6.
- 2012 Loeb, N. G., J. M. Lyman, G. C. Johnson, D. R. Doelling, T. Wong, R. P. Allan, B. J. Soden, and G. L. Stephens. 2012. Observed changes in top-of-the-atmosphere radiation and upper-ocean heating consistent within uncertainty. *Nature Geoscience*, **5**, 110-113, doi:10.1038/ngeo1375.
- 2012 Johnson, G. C., S. Schmidtke, and J. M. Lyman. 2012. Relative contributions of temperature and salinity to seasonal mixed layer density changes and horizontal density gradients. *Journal of Geophysical Research*, in press, doi:10.1029/2011JC007651.
- 2012 Johnson, G. C., and J. M. Lyman. 2012. Global Oceans: Sea Surface Salinity. In *State of the Climate in 2011*, Blunden, J., and D. S. Arndt, Eds., *Bulletin of the American Meteorological Society*, **93**, 7, S68-S69, S72, doi:10.1175/2012BAMSSStateoftheClimate.1.

- 2012 Johnson, G. C., J. M. Lyman, J. K. Willis, S. Levitus, T. Boyer, J. Antonov, and S. A. Good. 2012. Global Oceans: Ocean Heat Content. In *State of the Climate in 2011*, Blunden, J., and D. S. Arndt, Eds., *Bulletin of the American Meteorological Society*, 93, 7, S62-S65, doi:10.1175/2012BAMSStateoftheClimate.1.
- 2012 Lagerloef, G., F. Wentz, S. Yueh, H-Y. Kao, G. C. Johnson, and J. M. Lyman. 2012. Aquarius Satellite Mission Provides New, Detailed View of Sea Surface Salinity. In *State of the Climate in 2011*, Blunden, J., and D. S. Arndt, Eds., *Bulletin of the American Meteorological Society*, 93, 7, S70-S71, doi:10.1175/2012BAMSStateoftheClimate.1.
- 2013 Abraham, J. P., M. Baringer, N. L. Bindoff, T. Boyer, L. J. Cheng, J. A. Church, J. L. Conroy, C. M. Domingues, J. T. Fasullo, J. Gilson, G. Goni, S. A. Good, J. M. Gorman, V. Gouretski, M. Ishii, G. C. Johnson, S. Kizu, J. M. Lyman, A. M. Macdonald, W.J. Minkowycz, S. E. Moffitt, M. D. Palmer, A. R. Piola, F. Reseghetti, K. Schuckmann, K. E. Trenberth, I. Velicogna, and J. K. Willis., 2013. A review of global ocean temperature observations: Implications for ocean heat content estimates and climate change. *Reviews of Geophysics*, **51**, 450-483, doi:10.1002/rog20022.
- 2013 Johnson, G. C., J. M. Lyman, G. S. E. Lagerloef, and H.-Y. Kao. Global Oceans: Sea Surface Salinity. In *State of the Climate in 2012*, Blunden, J., and D. S. Arndt, Eds., *Bulletin of the American Meteorological Society*, **94**, 8, S57-S60, doi:10.1175/2013BAMSStateoftheClimate.1.
- 2013 Johnson, G. C., J. M. Lyman, J. K. Willis, S. Levitus, T. Boyer, J. Antonov, S. A. Good, C. M. Domingues, S. Wijffels, and N. Bindoff.. Global Oceans: Ocean Heat Content. In *State of the Climate in 2012*, Blunden, J., and D. S. Arndt, Eds., *Bulletin of the American Meteorological Society*, **94**, 8, S50-S53, doi:10.1175/2013BAMSStateoftheClimate.1.
- 2013 Schmidtko, S., G. C. Johnson, and J. M. Lyman. 2013. MIMOC: A global monthly isopycnal upper-ocean climatology with mixed layers, *Journal of Geophysical Research*, **118**, 1658-1672, doi:10.1002/jgrc.20122.
- 2014 Kelly, K. K. , L. Thompson, and J. Lyman. The Coherence and Impact of Meridional Heat Transport Anomalies in the Atlantic Ocean Inferred from Observations *Journal of Climate* Volume 27, Issue 4 (February 2014) pp. 1469-1487 doi: <http://dx.doi.org/10.1175/JCLI-D-12-00131.1>
- 2014 Lyman, J. M. and G. C. Johnson. Estimating global ocean heat content changes in the upper 1800 m since 1950 and the influence of climatology choice. *Journal of Climate*, **27**, 1946-1958, doi:10.1175/ JCLI-D-12-00752.1.