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EDUCATION:

B.S., The Ocean University of China, 1985 (Meteorology)
Master Program in Meteorology, The Ocean University of China, 1985-1987
M.S., Florida State University, 1990 (Physical Oceanography)
Ph.D., Florida State University, 1992 (Physical Oceanography)

PROFESSIONAL EXPERIENCE:

Senior Scientist, 2011 - present
Associate Scientist w/tenure, 2007-2011
Associate Scientist, April 2003–2007
Assistant Scientist, 1999–April 2003, Woods Hole Oceanographic Institution
Assistant Research Scientist, Joint Center for Earth System Sciences/Department of Meteorology, University of Maryland, 1996–1999
Postdoctoral Research Associate, Massachusetts Institute of Technology, 1993–1996
Graduate Research Assistant, Department of Physical Oceanography, Florida State University Tallahassee, FL., 1987–1992
Graduate Research Assistant, Department of Meteorology, The Ocean University of China, Qingdao, P. R. China, 1985 – 1987.

RESEARCH INTERESTS:

- Climate record of global air-sea momentum, heat, and moisture fluxes.
- Remote sensing of ocean surface winds, temperature, salinity, and atmospheric sounding profiles.
- The global water and energy cycle variability and near-surface atmospheric circulation.
- High latitude air-sea fluxes from ship, buoy, and satellite.
- Ocean-atmosphere interaction at both short (synoptic to interannual) and long (decadal to climate trend) temporal scales and from meso to basin scales.

AWARDS:**Fellowships:**

June 1991: NSF Graduate Student Fellowship for the summer workshop on Physics of Equatorial Oceans, The University of Rhode Island, Narragansett, RI.
February 1992: NATO Advanced Study Graduate Student Fellowship for the workshop on Modeling Oceanic Climate Interactions, the Centre of Physics, Les Houches, France.
June 1992: Awarded Postdoctoral Fellowship from NOAA Climate and Global Postdoctoral Program (Declined).
August 1992: NCAR Graduate Student Fellowship for the first workshop on Adjoint Applications in Dynamic Meteorology, Pacific Grove, CA.

1991-92: Graduate Student Fellowship for the Supercomputer Computations Research Institute, Florida State University.

May 1994: NCAR Postdoctoral Fellowship for the second workshop on Adjoint Applications in Dynamic Meteorology, Visegrad, Hungary.

March 1995: NSF Postdoctoral Fellowship for the Second International Symposium on Assimilation of Observations in Meteorology and Oceanic Assimilations. Tokyo, Japan

PAPERS IN REFEREED JOURNALS AND BOOKS:

Yu, L., and J. J. O'Brien, 1991. Variational estimation of the wind stress drag coefficient and the oceanic eddy viscosity profile. *Journal of Physical Oceanography*, **21**, 709–719. [https://doi.org/10.1175/1520-0485\(1991\)021<0709:VEOTWS>2.0.CO;2](https://doi.org/10.1175/1520-0485(1991)021<0709:VEOTWS>2.0.CO;2)

Yu, L., J. J. O'Brien, and J. Yang, 1991. On the remote forcing to the circulations in the Bay of Bengal. *Journal of Geophysical Research*, **96**, 20,449–20,454, doi: 10.1029/91JC02424.

Yang, J., and L. Yu, 1992. Propagation of equatorially trapped waves on a sloping thermocline. *Journal of Physical Oceanography*, **22**, 573–582, [https://doi.org/10.1175/1520-0485\(1992\)022<0573:POETWO>2.0.CO;2](https://doi.org/10.1175/1520-0485(1992)022<0573:POETWO>2.0.CO;2)

Yu, L., and J. J. O'Brien, 1992. On the initial condition in parameter estimation. *Journal of Physical Oceanography*, **22**, 1361–1364, [https://doi.org/10.1175/1520-0485\(1992\)022<1361:OTICIP>2.0.CO;2](https://doi.org/10.1175/1520-0485(1992)022<1361:OTICIP>2.0.CO;2)

Yu, L., and J. J. O'Brien, 1995. Variational data assimilation for determining the seasonal net surface heat flux using a tropical Pacific Ocean model. *Journal of Physical Oceanography*, **25**, 2319–2343, [https://doi.org/10.1175/1520-0485\(1995\)025<2319:VDAFDT>2.0.CO;2](https://doi.org/10.1175/1520-0485(1995)025<2319:VDAFDT>2.0.CO;2).

Yu, L., and P. Malanotte-Rizzoli, 1996. Analysis of the North Atlantic climatologies using the combined OGCM/adjoint approach. *Journal of Marine Research*, **54**, 867–913, doi: <https://doi.org/10.1357/0022240963213592>

Yang, J., L. Yu, C. J. Koblinsky, and D. Adamec, 1998. Dynamics of the seasonal variation in the Indian Ocean from TOPEX/POSEIDON sea surface height and an ocean model. *Geophysical Research Letters*, **25** (11), 1915–1918, doi: 10.1029/98GL01401.

Yu, L., and P. Malanotte-Rizzoli, 1998. Inverse modeling of the seasonal variations in the North Atlantic Ocean. *Journal of Physical Oceanography*, **28**, 902–922, [https://doi.org/10.1175/1520-0485\(1998\)028<0902:IMOSVI>2.0.CO;2](https://doi.org/10.1175/1520-0485(1998)028<0902:IMOSVI>2.0.CO;2)

Yu, L., and M. Rienecker, 1998. Evidence of extratropical atmospheric influence during the onset of the 1997–98 El Niño. *Geophysical Research Letters*, **25**(18), 3537–3540, doi: 10.1029/98GL02628.

Yu, L., and M. Rienecker, 1999. Mechanisms for the Indian Ocean warming during the 1997–1998 El Niño. *Geophysical Research Letters*, **26**(6), 735–738, doi: 10.1029/1999GL900072.

Yu, L., and M. M. Rienecker, 2000. The Indian Ocean warming of 1997–1998. *Journal of Geophysical Research*, **105** (C7), 16,923–16,939, doi: 10.1029/2000JC900068

Yu, L., 2003. Variability of the depth of the 20°C isotherm along 6°N in the Bay of Bengal: Its response to remote and local forcing and its relation to satellite SSH variability. *Deep-Sea Research II*, **50**, 2285–2304, [https://doi.org/10.1016/S0967-0645\(03\)00057-2](https://doi.org/10.1016/S0967-0645(03)00057-2).

- Yu, L., R. A. Weller, and W. T. Liu, 2003. Case analysis of a role of ENSO in regulating the generation of westerly wind bursts in the Western Equatorial Pacific. *Journal of Geophysical Research*, **108**(C4), 3128, doi: 10.1029/2002JC001498.
- Sun, B., L. Yu, and R. A. Weller, 2003. Comparisons of surface meteorology and turbulent heat fluxes over the Atlantic: NWP model analyses versus moored buoy observations. *Journal of Climate*, **16**, 679–695, [https://doi.org/10.1175/1520-0442\(2003\)016<0679:COSMAT>2.0.CO;2](https://doi.org/10.1175/1520-0442(2003)016<0679:COSMAT>2.0.CO;2).
- Yu, L., R. A. Weller, and B. Sun, 2004. Improving latent and sensible heat flux estimates for the Atlantic Ocean (1988–1999) by a synthesis approach. *Journal of Climate*, **17**, 373–393, [https://doi.org/10.1175/1520-0442\(2004\)017<0373:ILASHF>2.0.CO;2](https://doi.org/10.1175/1520-0442(2004)017<0373:ILASHF>2.0.CO;2).
- Yu, L., R. A. Weller, and B. Sun, 2004. Mean and variability of the WHOI daily latent and sensible heat fluxes at in situ flux measurement sites in the Atlantic Ocean. *Journal of Climate*, **17**, 2096–2118, [https://doi.org/10.1175/1520-0442\(2004\)017<2096:MAVOTW>2.0.CO;2](https://doi.org/10.1175/1520-0442(2004)017<2096:MAVOTW>2.0.CO;2).
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- Yu, L., and R. A. Weller, 2006. Oceanic heat fluxes in 2005. In: State of the Climate in 2005. K. A. Shein, Ed. *Bulletin of the American Meteorological Society*, **87**(6), 24–25, <https://doi.org/10.1175/BAMS-87-6-shein>.
- Yu, L., X. Jin, and R. A. Weller, 2006. Role of net surface heat flux in the seasonal evolution of sea surface temperature in the Atlantic Ocean. *Journal of Climate*, **9**(23), 6153–6169, <https://doi.org/10.1175/JCLI3970.1>.
- Yu, L., X. Jin, and R. A. Weller, 2007. Annual, seasonal, and interannual variability of air-sea heat fluxes in the Indian Ocean. *Journal of Climate*, **20**(13), 3190–3209, <https://doi.org/10.1175/JCLI4163.1>.
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- Yu, L., 2007. Global variations in oceanic evaporation (1958–2005): The role of the changing wind speed. *Journal of Climate*, **20**(21), 5376–5390, <https://doi.org/10.1175/2007JCLI1714.1>.
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- Levinson, D. H., J. H. Lawrimore, et al., 2008. State of the climate in 2007. *Bulletin of the American Meteorological Society*, **89**, S1–S179, <https://doi.org/10.1175/BAMS-89-7-StateoftheClimate>

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- Yu, L., 2009. Sea surface exchanges of momentum, heat, and freshwater determined by satellite remote sensing. In: *Encyclopedia of Ocean Sciences (Second Edition)*. Editor-in-Chief: John H. Steele, Karl K. Turekian, and Steve A. Thorpe. Elsevier LTD, 202-211, ISBN: 978-0-12-374473-9.
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- Yu, L., 2010. On surface salinity skin effect under evaporation conditions and implications for remote sensing of ocean salinity. *Journal of Physical Oceanography*, **40**, 85-102, <https://doi.org/10.1175/2009JPO4168.1>.
- Yu, L., and R. A. Weller, 2010. Global ocean heat fluxes. In: State of the Climate in 2009. *Bulletin of the American Meteorological Society*, **91**(7), S59-S63,
- Yu, L., 2010. Sea surface exchanges of momentum, heat, and freshwater determined by satellite remote sensing. *Elements of Physical Oceanography: A Derivative of the Encyclopedia of Ocean Sciences*. S. Thorpe (Ed). Academic Press, London, UK. 627 pp. 135-144.
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- Nof, D., S. vanGorder, and L. Yu, 2011. Thoughts on a variable meridional overturning cell and a variable heat-flux to the atmosphere. *Geophysical & Astrophysical Fluid Dynamics*, **104**, doi:10.1080/03091929.2010.481383.
- Yu, L., X. Jin, and R. Weller, 2011. Global Ocean heat fluxes. In: State of the Climate in 2010. *Bulletin of the American Meteorological Society*, **92**(6), S1-S266, <https://doi.org/10.1175/1520-0477-92.6.S1>.
- Yu, L., and M. J. McPhaden, 2011. Ocean preconditioning of Cyclone Nargis in the Bay of Bengal: Interaction between Rossby waves, surface fresh waters, and sea surface temperatures. *Journal of Physical Oceanography*, **41**, 1741-1755, doi:10.1175/2011JPO4437.1.
- Zhang, L-P., L-X. Wu, and L. Yu, 2011. Oceanic origin of recent La-Ninã like warming. *Advances in Atmospheric Sciences*, **28**(5), 1109-1117 doi:10.1007/s00376-010-0129-6.
- Yu, L., 2011. A global relationship between the ocean water cycle and near-surface salinity. *Journal of Geophysical Research – Oceans*, **116**, C10025, 17 pages, doi:10.1029/2010JC006937.
- Yu, L., and P. W. Stackhouse, 2012. Global ocean heat fluxes. In: State of the climate in 2011. *Bulletin of the American Meteorological Society*, **94**(8), S53-S57, <https://doi.org/10.1175/2013BAMSStateoftheClimate.1>.

- Song, X., and L. Yu, 2012. High latitude contribution to global variability of sensible heat flux at the air-sea interface. *Journal of Climate* special collection on “CLIVAR/SeaFlux High Latitude Surface Fluxes,” **25**, 3515-3531, doi: 10.1175/JCLI-D-11-00028.1.
- Yu, L., and X. Jin, 2012. Buoy perspective of a high-resolution global ocean vector wind analysis using passive radiometers and active scatterometers from 1987 to the present. *Journal of Geophysical Research*, **117**, C11013, doi:10.1029/2012JC008069.
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- Song, X., and L. Yu, 2013. How much net surface heat flux should go into the Western Pacific Warm Pool? *Journal of Geophysical Research - Oceans*, **118**, 3569-3585, DOI: 10.1002/jgrc.20246.
- Jin, X., and L. Yu, 2013. Assessing high-resolution analysis of surface heat fluxes in the Gulf Stream region. *Journal of Geophysical Research - Oceans*, **118**, 5353-5375, doi:10.1002/jgrc.20386.
- Yu, L., X. Jin, P.W. Stackhouse Jr., Y. Xue, and A. Kumar, 2014. [Global Oceans] Ocean surface heat and momentum fluxes. In: State of the Climate in 2013. *Bulletin of the American Meteorological Society*, **95**(7), S57-S60.
- Yu, L., and X. Jin, 2014. Insights on the OAFlux ocean surface vector wind analysis merged from scatterometers and passive microwave radiometers (1987 onward). *Journal of Geophysical Research - Oceans*, **119**, doi:10.1002/2013JC009648.
- Josey, S. A., L. Yu, S. Gulev, X. Jin, N. Tilinina, B. Barnier, and L. Brodeau, 2014. Unexpected impacts of the Tropical Pacific array on reanalysis surface meteorology and heat fluxes. *Geophysical Research Letters*, **41**, 6213-6220, doi:10.1002/2014GL061302.
- Yu, L., and X. Jin, 2014. Confidence and sensitivity study of the OAFlux multi-sensor synthesis of the global ocean-surface vector wind from 1987 onward. *Journal of Geophysical Research - Oceans*, **119**, 6842–6862, doi:10.1002/2014JC010194.
- Yu, L., 2014. Coherent evidence from Aquarius and Argo for the existence of a shallow low-salinity convergence zone beneath the Pacific ITCZ. *Journal of Geophysical Research - Oceans*, **119**, 7625–7644, doi:10.1002/2014JC010030.
- Jin, X., L. Yu, D. L. Jackson, and G. A. Wick, 2015. An improved near-surface specific humidity and air temperature climatology for the SSM/I satellite period. *Journal of Atmospheric and Oceanic Technology*, **32**, 412–433, doi: <http://dx.doi.org/10.1175/JTECH-D-14-00080.1>.
- Yu, L., 2015. Sea-surface salinity fronts and associated salinity-minimum zones in the tropical ocean. *Journal of Geophysical Research - Oceans*, **120**, 4205–4225, doi:10.1002/2015JC010790

- Yu, L., X. Jin, P. W. Stackhouse, A. C. Wilber, S. A. Josey, Y. Xue, and A. Kumar, 2015. Ocean surface heat and momentum fluxes. In: State of the Climate in 2014. *Bulletin of the American Meteorological Society*, **96**(7), S68-S71, <https://doi.org/10.1175/2015BAMSStateoftheClimate.1>.
- Josey, S. A., J. Grist, D. Kieke, I. Yashayaev, and L. Yu, 2015. Extraordinary ocean cooling and new dense water formation in the North Atlantic. In: State of the Climate in 2014. *Bulletin of the American Meteorological Society*, **96**(7), S67-S68, <https://doi.org/10.1175/2015BAMSStateoftheClimate.1>.
- Liang, X.*, and L. Yu, 2015. Variations of the global net air-sea heat flux during the “hiatus” period (2001-2010). *Journal of Climate*. **29**, 3647–3660, doi: 10.1175/JCLI-D-15-0626.1.
- Boutin, J., Y. Chao, W.E. Asher, T. Delcroix, R. Drucker, K. Drushka, N. Kolodziejczyk, T. Lee, N. Reul, G. Reverdin, J. Schanze, A. Soloviev, L. Yu, J. Anderson, L. Brucker, E. Dinnat, A.S. Garcia, W.L. Jones, C. Maes, T. Meissner, W. Tang, N. Vinogradova, and B. Ward, 2016. Satellite and in situ salinity: Understanding near-surface stratification and sub-footprint variability. *Bulletin of the American Meteorological Society*. **97**, 1391–1407, doi: 10.1175/BAMS-D-15-00032.1.
- Yu, L., R. F. Adler, G. J. Huffman, X. Jin, S. Kato, N. G. Loeb, P. W. Stackhouse, R. A. Weller, and A. C. Wilber, 2016. Global ocean heat, freshwater, and momentum fluxes. In: State of Climate in 2015, *Bulletin of the American Meteorological Society*, **97**(8), S74-S78, <https://doi.org/10.1175/2016BAMSStateoftheClimate.1>.
- Yu, L., X. Jin, S.A. Josey, T. Lee, A. Kumar, C. Wen, and X. Yan, 2017. The global ocean water cycle in atmospheric reanalysis, satellite, and ocean salinity. *Journal of Climate*, doi: <http://dx.doi.org/10.1175/JCLI-D-16-0479.1>
- * Song, X., and L. Yu, 2017. Air-sea heat flux climatologies in the Mediterranean Sea: Surface energy balance and its consistency with ocean heat storage. *Journal of Geophysical Research - Oceans*, **112**, 4068-4087, doi: 10.1002/2016JC012254.
- Yu, L., X. Jin, E. W. Schulz, and S. A. Josey, 2017. Air-sea interaction regimes in the sub-Antarctic Southern Ocean and Antarctic marginal ice zone revealed by icebreaker measurements. *Journal of Geophysical Research*, doi: 10.1002/2016JC012281.
- Evans, D. G., J. Toole, G. Forget, J. D. Zika, A. C. Naveira Garabato, A. J. G. Nurser, and L. Yu, 2017. Recent wind-driven changes in the Atlantic meridional overturning circulation. *Journal of Physical Oceanography*, <https://doi.org/10.1175/JPO-D-16-0089.1>.
- Wen, C., Y. Xue, A. Kumar, D. Behringer, and L. Yu, 2017. How do uncertainties in NCEP R2 and CFSR surface fluxes impact tropical ocean simulations? *Climate Dynamics*, doi:10.1007/s00382-016-3516-6.
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* Visiting Scholar

Book Chapter:

Josey, S.A., S. Gulev, and L. Yu, 2013. Exchanges through the ocean surface. In, Siedler, G., Griffies, S., Gould, J. and Church, J. (eds.) *Ocean Circulation and Climate: A 21st Century Perspective. 2nd Ed.* Oxford, GB, Academic Press, 115-140. (International Geophysics, 103).

OTHER PUBLICATIONS: (Unreviewed media, etc.)**Non-refereed Publications**

Yu, L., B. Sun, and R. A. Weller, 2001. New daily air–sea flux fields for the Atlantic Ocean – Preliminary Results. *Proceedings of the WCRP/SCOR Workshop on Intercomparison and Validation of Ocean–Atmosphere Flux Fields, Potomac, Maryland, May, 2001.*

Yu, L., 2001. SST dynamics in the Indian warm water pool. *Proceedings of the International Symposium on the Ocean-Atmospheric Coupled Dynamics in the Indian Ocean, Tokyo, Japan, December 17–18, 2001.*

Masumoto, Y., W. Yu, N. D’Adamo, L. Beal, W. P M. de Ruijter, M. Dyoulgerov, J. Hermes, T. Lee, Jr., E. Lutjeharms, J. P. McCreary, Jr., M. J. McPhaden, V. S. N. Murty, D. Obura, C. B. Pattiaratchi, M. Ravichandran, C. Reason, F. Syamsudin, G. Vecchi, J. Vialard, L. Yu, 2009. Observing systems in the Indian Ocean. Proceedings of the “OceanObs’09: Sustained Ocean Observations and Information for Society” Conference (Vol. 2), Venice, Italy, 21-25 September 2009, J. Hall, D. E. Harrison, and D. Stammer, Eds.

Schmitt, R. W., T. Boyer, G. Lagerloef, J. Schanze, S. Wijffels, and L. Yu, 2009. Salinity and the global water cycle. Proceedings of the “OceanObs’09: Sustained Ocean Observations and Information for Society: Conference (Vol. 1), Venice, Italy, 21-25 September 2009, J. Hall, D. E. Harrison, and D. Stammer, Eds.

Yu, L., K. Haines, M. Bourassa, M. Cronin, S. Gulev, S. Josey, S. Kato, A. Kumar, T. Lee, and D. Roemmich. Towards achieving global closure of ocean heat and freshwater budgets: Recommendations for advancing research in air-sea fluxes through collaborative activities. In Report of the CLIVAR/GSOP/WHOI Workshop on Ocean Syntheses and Surface Flux Evaluation, Woods Hole, Massachusetts, 27-30 November 2012, WCRP Informal/Series Rep. No. 13/2013, ICPO Informal Rep. 189/13, 42 pp., 2013.

Fairall, C.W., M.A. Bourassa, M.F. Cronin, S.R. Smith, R.A. Weller, G. Wick, S. Woodruff, L. Yu, and H.-M. Zhang. Observations to quantify air-sea fluxes and their role in global variability and predictability. In Proceedings of the IOOS Summit, Interagency Ocean Observation Committee (IOOC), Herndon, Virginia, 13-16 November 2012, <http://www.iooc.us/summit/white-paper-submissions/community-white-paper-submissions/>.

Cronin, M. F., Bourassa, M., Clayson, C., Edson, J., Fairall, C., Feely, R., Kumar, K., Large, W., Mathis, J., McPhaden, M., O’Neill, L., Pinker, R., Takahashi, K., Tomita, H., Weller, R., Yu, L., and Zhang, C., 2014: Wind stress and air-sea fluxes observations: status, implementation and gaps. *TPOS 2020 Collection.*

Yu, L., and M.J. McPhaden, 2017. IndOOS review white paper. Chapter on “Improvement of Surface Fluxes.”

Thesis and Technical Reports

- Yu, L., 1990. *Using Ocean Current Data to Determine the Wind Stress*. Master's Thesis, Florida State University.
- Yu, L., 1992. Determining the surface heat flux distribution over the tropical Pacific Ocean by the adjoint method. *Technical Report, Mesoscale Air–Sea Interaction Group, Florida State University*.
- Yu, L., and P. Malanotte-Rizzoli, 1996. Analysis of the North Atlantic climatologies using the combined OGCM/adjoint approach. *Report No. 46, Center for Global Change Science, Massachusetts Institute of Technology*.
- Yu, L., and P. Malanotte-Rizzoli, 1998. *Inverse modeling of seasonal variations in the North Atlantic Ocean. Report No. 61, Center for Global Change Science, Massachusetts Institute of Technology*.
- Yu, L., B. Sun, and R. A. Weller, 2002. Developing daily latent and sensible heat fluxes for the Atlantic Ocean by synthesizing satellite retrievals and outputs of numerical weather prediction models (1988–1999). *Woods Hole Oceanographic Institution Technical Report, 38pp+14figs*.
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- Whelan, S., J. Lord, C. Grados, L. Yu, L. Morales, N. Galbraith, S. P. de Szoeke, M. O’Leary, R. Weller, P. Bouchard, T. Farrar and F. Bradley, 2008. Stratus ocean reference station (20°S, 85°W) mooring recovery and deployment cruise STRATUS 8, R/V Ronald H. Brown Cruise 07-09. October 9, 2007 – November 6, 2007. *Woods Hole Oceanographic Institution Technical Report, WHOI-2008-01, 101 pp*.
- Yu, L., and X. Jin, 2010. Satellite-based global ocean vector wind analysis by the Objectively Analyzed Air-sea Fluxes (OAFlux) Project: Establishing consistent vector wind time series from July 1987 onward through synergizing microwave radiometers and scatterometers. *WHOI OAFlux Technical Report*.
- Yu, L., and X. Jin, 2013. Technical report four-part series on the newly developed OAFlux vector wind analysis under NASA funding support: OAFlux High-Resolution Ocean-Surface Vector Wind Analysis Synergized from Satellite Scatterometers and Radiometers. OAFlux Project Technical Report No. OA-2013-01. All are available at <ftp://oaflux.whoi.edu/OAFlux> wind reports.
- Part I. Methodology, approaches, and challenging technical issues. 81pp.
- Part II. Error estimation. 57pp.
- Part III. Time-mean patterns of wind and error fields. 32 pp.
- Part IV. Evaluation based on buoys and independent scatterometers. 75pp
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