Robert H. Weisberg

Distinguished University Professor
Physical Oceanography
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Date of Birth:

May 20th 1947

Education:

1969	B.S.	Cornell University, Materials Science and Engineering
1972	M.S.	University of Rhode Island, Physical Oceanography
1976	Ph.D.	University of Rhode Island, Physical Oceanography

Professional Experience:

2007-present	Distinguished University Professor, University of South Florida
1988-present	Professor, University of South Florida
1984-1988	Associate Professor, University of South Florida
1981-1986	Associate Professor, North Carolina State University
1976-1981	Assistant Professor, North Carolina State University
1976-1982	Adjunct Professor, University of Rhode Island
1969-1976	Graduate Assistant, University of Rhode Island
1969-1977	U.S. Army Reserve (Rank 03)

Honors/Awards:

USF Distinguished University Professor, 2007
USF President's Award for Excellence, 2003
USF Professorial Excellence Award, 1998
Editor's citation for excellence in refereeing, Geophys. Res. Lett., 1995
Sigma Xi

Professional Service Highlights

Editor, JGR-Oceans
NAE-NRC Committee on New Orleans Regional Hurricane Protection Projects
AMS Coastal Environments Committee

Member:

AGU, AMS, TOS

Advisors:

Ph.D., Dr. J. Knauss
M.S., Dr. W. Sturges

Narrative:

Dr. Weisberg is an experimental physical oceanographer engaged in ocean circulation and ocean-atmosphere interaction studies in the tropics, on continental shelves, and in estuaries. His research presently emphasizes the West Florida Continental Shelf (WFS) and the interactions that occur between the shelf and the deep-ocean and between the shelf and the estuaries. Through his Ocean Circulation Group he maintains a

coordinated program of real-time, *in-situ* measurements, analyses, and numerical circulation models aimed at describing and understanding the processes that determine WFS water properties. Applications include harmful algal blooms, fisheries, hurricane storm surge and other topics of societal concern. Observations consist of moorings (some with real time telemetry) for surface meteorology, water column currents and temperature/salinity, and waves; HF-radar for surface currents; profilers and gliders (in collaboration with the CMS-COT) for 3D water properties; analyses of satellite data for SST, SSH, and geostrophic currents; and surface drifters. Models consist of WFS regional applications of ROMS nested in HYCOM (to include WFS/deep-ocean interactions) and FVCOM nested in HYCOM (to include WFS/deep-ocean and WFS/estuary interactions) and sub-regional FVCOM applications to individual estuaries. Additional FVCOM applications, making use of the model's high resolution and flooding/drying capabilities, are for coastal inundation by hurricane storm surge inclusive of coupled wave effects.

Graduate Advisees:

M.S. (NCSU): R. Chao, M. Purba, C.K. Wu
M.S. (USF): Zhen Li, M.R. Zhang, B. Black, E. Siegel
Ph.D. (URI): A. Horigan
Ph.D. (NCSU):T.Y. Tang, C.K. Wu, T.J. Weingartner
Ph.D. (USF): C. Wang, L. Qiao, Zhenjiang Li, R. He, R. Helber, J. Virmani, Y. Liu

Present Graduate Students:

Yu-Ying Huang

Present Post-doctoral associates:

Yong Huang

Teaching:

Ocean Circulation Dynamics I & II
Readings in Ocean Circulation
Introductory Physical Oceanography
Gravity Waves
Long Waves
Analysis of Oceanographic Time Series
Equatorial Dynamics
Readings in Descriptive Physical Oceanography
Environmental Fluid Mechanics
Readings in Climate Modeling
Ocean Mixed Layer
Seminar
Introduction to Oceanography

Refereed Publications (partial listing since 2005):

Virmani, J.I. and R.H. Weisberg (2005). Relative humidity over the west Florida continental shelf. *Mon. Weather Rev.*, 133, 1671–1686.

Liu, Y. and R.H. Weisberg (2005). Momentum balance diagnoses for the west Florida Shelf. *Cont. Shelf Res*., 25, 2054-2074.

Katsaros, K.B., A.V. Soloviev, R.H. Weisberg, and M.E. Luther (2005). Reduced horizontal sea surface temperature gradients under conditions of clear sky and weak winds. *Boundary-Layer Meteorology*, 116, 175-185, doi:10.1007/s10546-004-2421-4.

Hu, C., J.R. Nelson, E. Johns, Z. Chen, R.H. Weisberg, and F. Muller-Karger (2005). Mississippi water in the Florida Straits and in the Gulf Stream off the coast of Georgia in summer 2004. *Geophys. Res. Lett*., 32 L14606, doi:10.1029/2005GL022942

Weisberg, R.H., R. He, Y. Liu, and J.I. Virmani (2005). West Florida shelf circulation on synoptic, seasonal, and inter-annual time scales, in Circulation in the Gulf of Mexico, W. Sturges and A. Lugo-Fernandez, eds., AGU monograph series, *Geophysical Monograph* 161, 325-347.

Liu, Y. and R.H. Weisberg (2005). Patterns of ocean current variability on the West Florida Shelf using the self-organizing map . *J. Geophys. Res.*, 110, C6, C06003

Weisberg, R.H. and L. Zheng (2006). Circulation of Tampa Bay driven by buoyancy, tides, and winds, as simulated using a finite volume coastal ocean model. *J. Geophys. Res*., 111, C01005, doi:10.1029/2005JC003067.

Liu, Y., R.H. Weisberg, and R. He (2006). Sea surface temperature patterns on the WestFlorida Shelf using growing hierarchical self-organizing maps. *J. Atm. Ocean. Tech*., 23, 2, 325–338.

Virmani, J. I., and R. H. Weisberg (2006), The 2005 hurricane season: An echo of the past or a harbinger of the future?, *Geophys. Res. Lett*., 33, L05707, doi:10.1029/2005GL025517.

Liu, Y, R.H. Weisberg, and C.N.K. Mooers (2006). Performance evaluation of the self organizing map for feature extraction. *J. Geophys. Res*., 111, C05018, doi:10.1029/2005JC003117.

Walsh, J.J., J.K. Jolliff, B.P. Darrow, J.M. Lenes, S.P Milroy, D.A. Dieterle, K.L. Carder, F.R. Chen, G.A.Vargo, R.H. Weisberg, K.A. Fanning, F. Muller-Karger, K.A.Steidinger, C.A. Heil, J.S. Prospero, T.N. Lee, G.J. Kirkpatrick, T.E. Witledge, D.A. Stockwell, C.R. Tomas, T.A. Villareal, A.E. Jochens, and P.S. Bontempi (2006). Red tides in the Gulf of Mexico: where, when, and why? *J. Geophys. Res*., 111, C11003, doi:10.1029/2004JC002813.

Weisberg, R.H. and L. Zheng (2006). A simulation of the hurricane Charley storm surge and its breach of North Captiva Island, *Florida Scientist*, 69, 152-165.

Aretxabaleta, A., J.R. Nelson, J.O. Blanton, H.E. Seim, F.E. Werner, J.M. Bane, and R.H. Weisberg (2006). Cold event in the South Atlantic Bight during summer of 2003: anomalous hydrographic and atmospheric conditions, *J. Geophys. Res*., 111, C06007, doi:10.1029/2005JC003105.

Weisberg, R.H. and L. Zheng (2006). Hurricane storm surge simulations for Tampa Bay. *Estuaries and Coasts*, 29, 6A, 899-913.

Shay, L.K., J. Martinez-Pedrala, T.M. Cook, B.K. Haus, and R.H. Weisberg (2007). High-frequency radar mapping of surface currents using WERA. *J. Atmos. and Oceanic Technol.*, 24, 484-503.

Helber, R.W., R.H. Weisberg, F. Bonjean, and G.S.E. Lagerloef (2007). Satellite derived surface current divergence in relation to tropical Atlantic SST and wind. *J. Phys. Oceanogr*., 37, 1357–1375.

Liu, Y., and R.H. Weisberg (2007). Ocean currents and sea surface heights estimated across the West Florida Shelf, *J. Phys. Oceanogr.*, 37, 1697-1713.

Liu, Y., R.H. Weisberg, and L.K. Shay (2007). Current patterns on the West Florida Shelf from joint Self-Organizing Map analyses of HF radar and ADCP Data, *J. Atmos. Oceanic Technol.*, 24, 702-712.

Mayer, D.A., J.I. Virmani, and R.H. Weisberg (2007), Velocity comparisons from upward and downward acoustic Doppler current profilers on the West Florida Shelf, *J. Atm. Ocean Tech*., 24, 1950-1960.

Barth, A., J.-M. Beckers, A. Alvera-Azcárate, and R. H. Weisberg (2007), Filtering inertia-gravity waves from the initial conditions of the linear shallow water equations, *Ocean Modelling*, 19, 204–218.

Liu, Y., X.S. Liang, and R.H. Weisberg (2007). A note on the wavelet power spectrum. *J. Atmos. Oceanic Technol.* 24, 2093-2102.

Liu, Y., R.H. Weisberg, and Y. Yuan, (2008). Patterns of upper layer circulation variability in the South China Sea from satellite altimetry using the Self-Organizing Map, *Acta Oceanologica Sinica*., 27(Supp.), 129-144.

Alvera-Azcárate, A., A. Barth, J.M. Beckers, and R.H. Weisberg. (2008). Multivariate reconstruction of missing data in sea surface temperature, chlorophyll and wind satellite fields. *Journal of Geophysical Research*, 112, C03008, doi:10.1029/2006JC003660.

Milroy, S.P., D.A. Dieterle, R. He, G.J. Kirkpatrick, K.M. Lester, K.A. Steidinger, G.A. Vargo, J.J. Walsh, and R.H. Weisberg (2008). A three-dimensional biophysical model of Karenia brevis dynamics on the west Florida shelf: A look at physical transport and zooplankton grazing controls. *Cont. Shelf Res*., 28, 112-136.

Barth, A., A. Alvera-Azcárate, and R. H. Weisberg (2008), Benefit of nesting a regional model into a large-scale ocean model instead of climatology. Application to the West Florida Shelf, *Cont. Shelf Res*., 28, 561–573.

Barth, A., A. Alvera-Azcárate, and R. H. Weisberg (2008). A Nested Model Study of the Loop Current Generated Variability and its Impact on the West Florida Shelf, *Jour. Geophys. Res*., 113, C05009, doi:10.1029/2007JC004492.

Lenes, J.M., B.A Darrow, J.J. Walsh, J.M. Prospero, R. He, R.H. Weisberg, G.A. Vargo, and C.A Heil (2008). Saharan dust and phosphatic fidelity: A three-dimensional biogeochemical model of *Trichodesmium* as a nutrient source for red tides on the West Florida Shelf, *Cont. Shelf Res.*, 28, 1091-1115.

Barth, A., A. Alvera-Azcárate, and R.H. Weisberg (2008). Assimilation of High-Frequency Radar Currents in a Nested Model of the West Florida Shelf, *Jour. Geophys. Res*., 113, C08033, doi:101029/2007JC004585.

Seim, H.E., J. Nelson, M. Fletcher, C.N.K Mooers, L. Spence, R.H. Weisberg, C. Werner, S. Smith, and R. Lea (2008), SEACOOS Program Management, *MTS Journal*, 42(3), 17-27.

Nelson, J. and R.H. Weisberg (2008), In situ observations and satellite remote sensing in SEACOOS: Program development and lessons learned, *MTS Journal*, 42(3), 41-54.

Shay, L.K., H.E. Seim, D. Savidge, R. Styles, and R.H. Weisberg (2008), High frequency radar observing systems in SEACOOS, *MTS Journal*, 42(3), 55-67.

Voulgaris, G., B.K. Haus, P. Work, L.K. Shay, H.E. Seim, J.R. Nelson, and R.H. Weisberg (2008), Waves initiative within SEACOOS, *MTS Journal*, 42(3), 58-80.

Weisberg, R.H. (2008). Epilogue to SEACOOS, *MTS Journal*, 42(3), 21-23.

Weisberg, R. H., and L. Zheng (2008), Hurricane storm surge simulations comparing three-dimensional with two-dimensional formulations based on an Ivan-like storm over the Tampa Bay, Florida region, *J. Geophys. Res*., 113, C12001, doi:10.1029/2008JC005115.

Alvera-Azcárate, A., A. Barth, and R.H. Weisberg (2009). A nested model of the Cariaco Basin (Venezuela): description of the basin's interior hydrography and interactions with the open ocean. *Ocean Dynamics* (special issue GODAE Coastal and Shelf Seas Working Group), doi10.1007/s10236-008-0169-y, 59, 97-120.

Kourafalou, V.H., G. Peng, H. Kang, P.J. Hogan, O.M Smedstad, and R.H Weisberg (2009). Evaluation of global ocean data assimilation experiment products on South Florida nested simulations with the Hybrid Coordinate Ocean Model. *Ocean Dynamics* (special issue GODAE Coastal and Shelf Seas Working Group), doi:10.1007/s10236-008-0160-7, 59(1), 47-66.

Halliwell, G.R.., A. Barth, R.H. Weisberg, P. Hogan, O.M. Smedstad, J. Cummings (2009). Impact of GODAE Products on Nested HYCOM Simulations of the West Florida Shelf, *Ocean Dynamics* (special issue GODAE Coastal and Shelf Seas Working Group doi:10.1007/s10236-008-0173-2, 59(1).

Weisberg, R.H., A. Barth, A. Alvera-Azcárate, and L. Zheng (2009). A coordinated coastal ocean observing and modeling system for the West Florida Shelf, *Harmful Algae*., 8, 585-598.

Walsh, J.J, R.H. Weisberg, J.M. Lenes F.R. Chen D.A. Dieterle, L. Zheng, K.L. Carder, G.A. Vargo, J.A. Havens, E. Peebles, D.J. Hollander, R. He, C.A. Heil, B. Mahmoudi, and J.H. Landsberg, (2009). Isotopic evidence for dead fish maintenance of Florida red tides, with implications for coastal fisheries over both source regions of the West Florida Shelf and within downstream waters of the South Atlantic Bight., *Progr. in Oceanogr*., 80, 51-73.

Alvera-Azcárate, A., A. Barth, and R.H. Weisberg. (2009). The surface circulation of the Caribbean Sea and the Gulf of Mexico as inferred from satellite altimetry. *Jour. Phys. Oceanogr*., 39, 640-657.

Barth, A., A. Alvera-Azcárate, J.M. Beckers, R.H. Weisberg, L. Vandenbulcke, F. Lenartz, and M. Rixen (2009). Dynamically constrained ensemble perturbations – applications to tides on the West Florida Shelf, *Ocean Science*, 5, 259-270.

Virmani, J.I., and R.H. Weisberg (2009), Fish effects on ocean current observations in the Cariaco basin, *Jour. Geophys. Res*., 114, C03028, doi:10.1029/2008JC004889.

Seim, H.E., M. Fletcher, C.N.K Mooers, J. Nelson, R.H. Weisberg (2009), Towards a Regional Coastal Ocean Observing System: an initial design for the Southeast Coastal Ocean Observing *Journal of Marine Systems* doi:10.1016/j.jmarsys.2007.12.016

Chassignet, E.P, H.E. Hurlburt, E.J. Metzger, O.M. Smedstad, J.Cummings, G.R. Halliwell, R. Bleck, R. Baraille, A.J. Wallcraft, C. Lozano, H. Tolman, A. Srinivasan, S. Hankin, P. Cornillon, R. Weisberg, A. Barth, R. He, C. Werner, and J. Wilkin (2009), U.S. GODAE: Global Ocean Prediction with the HYbrid Coordinate Ocean Model (HYCOM), *Oceanography*, 22, 48-59.

Weisberg, R.H., Y. Liu and D. Mayer (2009): West Florida Shelf mean circulation observed with long-term moorings. *Geophys. Res. Lett.*, 36, L19610, doi:10.1029/2009GL040028.

Zheng, L. and R.H. Weisberg (2009). Rookery Bay and Naples Bay circulation simulations: applications to tides and fresh water inflow regulation, *Ecological Modelling*, 221, 986-996, doi:10.1016/j.ecolmodel.2009.01.024

Liu, Y., R.H. Weisberg, C.R. Merz, S. Lichtenwalner, and G.J. Kirkpatrick, (2010). HF radar performance in a low energy environment: CODAR SeaSonde experience on the West Florida Shelf. *Jour of Atmos and Oceanic Tech*, 27(10), 1689-1710.

Huang, Y., R. H. Weisberg, and L. Zheng (2010). The coupling of surge and waves for an Ivan-like hurricane impacting the Tampa Bay, Florida region, *J. Geophys. Res.*, doi:10.1029/2009JC006090, (in press).

Liu, Y. and R.H. Weisberg (2010) A review of Self-Organizing Map applications in meteorology and oceanography. In *Self-Organizing Maps: New Achievements*, InTech, Vienna, Austria, ISBN 978-953-7619-X-X (in press).