

CURRICULUM VITAE

Christopher J. Zappa

Doherty Associate Research Scientist
Ocean and Climate Physics Division
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RESEARCH INTERESTS

Air-sea interaction, wave dynamics and wave breaking, effect of near-surface turbulence on heat, gas, and momentum transport, infrared remote sensing, upper-ocean processes, coastal and estuarine processes.

EDUCATION

- 1999 Ph.D. in Civil and Environmental Engineering, *University of Washington*, Seattle, WA.
- 1994 M.S. in Engineering, *University of Washington*, Seattle, WA.
- 1992 B.S. in Mechanical Engineering, *Columbia University*, New York, NY.

PROFESSIONAL EXPERIENCE

- 2003-Date Doherty Associate Research Scientist, Ocean and Climate Physics Division, Lamont Doherty Earth Observatory (LDEO), Columbia University, Palisades, NY
- 2003 Instructor, International SOLAS Summer School, Institut d'Études Scientifiques de Cargèse, Université de Corse, France
- 2001-2003 Postdoctoral Investigator, Applied Ocean Physics and Engineering Department, Woods Hole Oceanographic Institution (WHOI), Woods Hole, MA
- 1999-2001 Postdoctoral Scholar, Applied Ocean Physics and Engineering Department, Woods Hole Oceanographic Institution, Woods Hole, MA
- 1992-1999 Research Associate, Applied Physics Laboratory, University of Washington, Seattle, WA
- 1991-1992 Physics Instructor, Science and Technology Entry Program (STEP), Barnard College, New York, NY.

AWARDS

- 2004 Office of Naval Research Young Investigator Award
- 2001 34th Lorenz G. Straub International Award.
- 1999 Woods Hole Oceanographic Institution Postdoctoral Scholar Fellowship.
- 1996 DAMTP Geophysical and Environmental Fluid Dynamics Fellowship.
- 1992 Community Service Award from the Trustees of Columbia University.

COMMITTEE INVOLVEMENT

- 2004-Date LDEO Mentoring Committee Chair.
2004-Date Ocean Research Interactive Observatory Networks (ORION) Working Group Member.
2000-Date Surface Ocean Lower Atmosphere Study (SOLAS) Working Group Member.

PROFESSIONAL AFFILIATIONS

- 2002-Date IEEE Oceanic Engineering/Remote Sensing.
1997-Date The Oceanography Society.
1993-Date American Geophysical Union.
1992-Date American Society of Civil Engineers.
1990-Date American Society of Mechanical Engineers.

REFEREED JOURNAL PUBLICATIONS

- Zappa, C.J., and A.T. Jessup (2005), High resolution airborne infrared measurements of ocean skin temperature, *Geoscience and Remote Sensing Letters*, 2 (2), doi:10.1109/LGRS.2004.841629.
- Zappa, C.J., W.E. Asher, A.T. Jessup, J. Klinke, and S.R. Long (2004), Microbreaking and the enhancement of air-water transfer velocity, *Journal of Geophysical Research*, 109 (C08S16), doi:10.1029/2003JC001897.
- Edson, J.B., C.J. Zappa, J. Ware, W.R. McGillis, and J.E. Hare (2004), Scalar flux profile relationships over the open ocean, *J Geophys. Res.*, 109 (C08S09), doi:10.1029/2003JC001960.
- McGillis, W.R., J.B. Edson, C.J. Zappa, J.D. Ware, S.P. McKenna, E.A. Terray, J.E. Hare, C.W. Fairall, William Drennan, Mark Donelan, M.D. DeGrandpre, R. Wanninkhof, and R.A. Feely (2004), Air-sea CO₂ exchange in the equatorial Pacific, *J. Geophys. Res.*, 109 (C08S02), doi:10.1029/2003JC002256.
- Ho, D.T., C.J. Zappa, W.R. McGillis, L.F. Bliven, B. Ward, J.W.H. Dacey, P. Schlosser, and M.B. Hendricks (2004), Influence of rain on air-sea gas exchange: Lessons from a model ocean, *Journal of Geophysical Research*, 109 (C08S18), doi:10.1029/2003JC001806.
- Hints, E. J., J. W. H. Dacey, W. R. McGillis, J. B. Edson, C. J. Zappa, and H. J. Zemmeling (2004), Sea-to-air fluxes from measurements of the atmospheric gradient of dimethylsulfide and comparison with simultaneous relaxed eddy accumulation measurements, *J. Geophys. Res.*, 109, C01026, doi:10.1029/2002JC001617.
- Zappa, C.J., P.A. Raymond, E. Terray, and W.R. McGillis (2003), Variation in surface turbulence and the gas transfer velocity over a tidal cycle in a macro-tidal estuary, *Estuaries*, 26 (6), 1401-1415.
- Zappa, C.J., W.E. Asher, and A.T. Jessup (2001a), Microscale wave breaking and air-water gas transfer, *Journal of Geophysical Research*, 106 (5), 9385-9391.
- Zappa, C.J., A.T. Jessup, and H.H. Yeh (1998), Skin-layer recovery of free-surface wakes: Relationship to surface renewal and dependence on heat flux and background turbulence, *Journal of Geophysical Research*, 103 (C10), 21711-21722.

Jessup, A.T., C.J. Zappa, and H. Yeh (1997b), Defining and quantifying microscale wave breaking with infrared imagery, *Journal of Geophysical Research*, 102 (C10), 23145–23154.

Jessup, A.T., C.J. Zappa, M.R. Loewen, and V. Hesany (1997a), Infrared remote sensing of breaking waves, *Nature*, 385 (6611), 52-55.

REFEREED BOOK PUBLICATIONS

Zappa, C. J., W. E. Asher, A. T. Jessup, J. Klinke, and S. R. Long, Effect of microscale wave breaking on air-water gas transfer, *Gas Transfer at Water Surfaces*, edited by M. A. Donelan, W. M. Drennan, E. S. Saltzman and R. Wanninkhof, AGU Geophysical Monograph Series, Vol. 127, AGU Press, pp. 23-29, 2001b.

Zappa, C. J., W. E. Asher, and A. T. Jessup, Correlating microscale wave breaking with gas transfer for cleaned and surfactant-influenced water surfaces. *The Wind-Driven Air-Sea Interface: Electromagnetic and Acoustic Sensing, Wave Dynamics, and Turbulent Fluxes*, edited by M. L. Banner, pp. 357-358, 1999.

Jessup, A. T., C. J. Zappa, V. Hesany, M. R. Loewen, and M. G. Skafel, Dependence of the skin layer recovery rate on heat flux and turbulence, *Air-Water Gas Transfer*, edited by B. Jähne, and E. C. Monahan, AEON Verlag & Studio, Hanau, pp. 601-610, 1995.

OTHER PUBLICATIONS

Jessup, A. T., W. E. Asher, W. J. Plant, W. R. McGillis, C. J. Zappa, E. J. Hints, J. W. H. Dacey, D. M. Farmer, J. Gemmrich, S. Vagle, S. C. Reising and H. J. Zemmeling, The FAIRS experiment, *IEEE Geosciences and Remote Sensing*, 123, 12-17, 2002.

CONFERENCE PROCEEDINGS

Zappa, C.J., and A.T. Jessup, Variability of ocean skin temperature from airborne infrared imagery during CBLAST-Low, in *16th Symposium on Boundary Layers and Turbulence*, Ref. 8.11, Portland, Maine, USA, 2004.

Edson, J.B., F. Crofoot, W.R. McGillis, and C.J. Zappa, Investigations of flux-profile relationships in the marine atmospheric surface layer during CBLAST, in *16th Symposium on Boundary Layers and Turbulence*, Ref. 8.2, Portland, Maine, USA, 2004.

Farrar, J.T., R.A. Weller, C.J. Zappa, and A.T. Jessup, Subsurface expressions of sea surface temperature variability under low winds, in *16th Symposium on Boundary Layers and Turbulence*, Ref. P8.1, Portland, Maine, USA, 2004.

Edson, J. B., C. J. Zappa, and W. R. McGillis, Scalar flux profile relationships for water vapor over the open ocean, *15th Symposium on Boundary Layers and Turbulence*, Ref. 14.1, Wageningen University, Wageningen, The Netherlands, 2002.