

## Stephen G. Monismith

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**Date of Birth:** 4 August, 1955

**Citizenship:** United States of America

### Academic History

1977 B.S., Civil Engineering, University of California at Berkeley

1979 M.S., Civil Engineering (Hydraulic Eng.), University of California at Berkeley

1983 Ph.D., Civil Engineering (Hydraulic Eng.), University of California at Berkeley

### Professional Experience:

9/16 – 12/16 **Overseas Visiting Fellow**, Churchill College, Cambridge University

10/9 – present **Obayashi Professor in the School of Engineering**

9/09 – 9/16 **Chair**, Dept. of Civil and Env Eng., Stanford University

9/09 – 9/15 **Senior Fellow**, Woods Institute for the Environment, Stanford University

9/08 – 9/09; 9/15 to present

**Senior Fellow** (by courtesy), Woods Institute for the Environment, Stanford University

4/05 – present **AAUS Scientific Diver**

9/99 - present **Professor**, Dept. of Civil and Env Eng., Stanford University.

9/98 - 6/02 **Resident Fellow**, Robinson House, Stanford University.

9/96 - present **Director**, Environmental Fluid Mechanics Laboratory

9/93 - 9/99 **Associate Professor**, Dept. of Civil Eng., Stanford University.

1/87 - 9/93 **Assistant Professor**, Dept. of Civil Eng., Stanford University.

8/83 - 12/86 **Postdoctoral Research Fellow**, Center for Water Res., Univ. of Western Australia. (Supervisor: Prof. J. Imberger)

### Honors, Awards and Professional Societies:

Einstein Memorial Fellowship, academic year 1981-1982

NSF Presidential Young Investigator, 1989

Invited Participant, 1991 International Technical Exchange on Hydraulics and Hydrology, Hokkaido, Japan, July 1991.

Visiting Professor, Dept. of Marine Sciences, Univ. Connecticut, March 1998

Eugene L. Grant teaching award 2002

AGU Hydrology Days – Borland Hydraulics Lecture March 2011

2012 Coastal and Estuarine Research Federation Pritchard Award

Member, Academy of Distinguished Alumni U.C. Berkeley Dept. of Civil Eng. 2014

St. Anthony Falls Straub Award Lecture 2015

Member ASCE, AGU, ERF, ASLO, ASEE

### Professional Service (selected):

Assoc. Editor, Estuaries and Coasts 10/14 – present

Member, Delta Science Advisory Committee 1/14 – present

Member Advisory Council, Dept. of Civil and Environmental Eng., UC Berkeley

Chair, IEP Delta Juvenile Fish Review 6/14

Member, NRC Committee on the Independent Scientific Review of the Everglades Restoration Progress 11/12 – 5/14  
 Member, NRC Committee on Sustainable Water and Environmental Management in the California Bay-Delta 7/10 – 4/12  
 Assoc. Editor Limnology and Oceanography: Fluids & Environments, 1/10 – 12/14  
 Physical Oceanography lead, World Bank Peace Conduit Red Sea Study  
 Chair, CALFED review of Two Gates Project – Aug 2009  
 Member of Interagency Ecological Program (SF Bay/Delta) Science Advisory Group 1995- present, (chair 2002-present)  
 Chair, CALFED Review North Delta Salmon Outmigration Study, 2007-  
 Member, Review Panel for CALFED Environmental Water Account 2001-2007  
 Assoc. Editor, San Francisco Estuary and Watershed Science, 2003- present  
 Member, selection panel, ASLO Hutchinson Award (2007-2009)  
 Associate Editor (hydrodynamics) Limnology and Oceanography, 1997-2002  
 Member, NOAA panel for SFO runway project, 1999.  
 Hydrodynamics group chair – CALFED Comprehensive Management and Research Program (CMARP) 1998-1999  
 Member, Steering Committee, NSF APROPOS workshop to define research directions in Physical Oceanography 1997-1998  
 Member NSF panels for Physical Oceanography Program (multiple times) and Fluid Mechanics Career awards (twice)  
 Member, ASCE Task Committee for research needs in hydraulic engineering (1992-1993)  
 Chair, ASCE Task Committee for an Album of Environmental Transport Processes (ca. 1990)

### **Publications (peer reviewed only)**

1. Monismith, S.G., "Wind forced motions in stratified lakes and their effects on mixed-layer shear," Limnology and Oceanography, **30** (4), pp. 771-783, 1985.
2. Monismith, S.G., "An experimental study of the upwelling response of stratified reservoirs to shear stress," J. Fluid Mech., **171**, pp. 407-439, 1986.
3. Monismith, S.G., "The modal response of reservoirs to wind stress," J. Hydr. Div. ASCE, **110** (HY10), pp 1290-1326, 1987.
4. Maxworthy, T. and Monismith, S.G., "Differential mixing in stratified fluids," J. Fluid Mech. , **189**, pp. 571-598, 1988.
5. Monismith, S.G., Imberger, J. and Billi, G., "Shear-waves and unsteady selective withdrawal," J. Hydr. Div. ASCE, **114** (HY9), pp 1134-1152, 1988.
6. Monismith, S.G. and Maxworthy, T., "Selective withdrawal and spin-up of a rotating, stratified fluid," J. Fluid Mech. , **199**, pp. 377-401, 1989.
7. Monismith, S.G., Koseff, J.R., Thompson, J.K., O'Riordan, C.A., and Nepf, H.M. "A study of model bivalve siphonal currents," Limnology and Oceanography, **35**, pp. 376-392, 1990.
8. Monismith, S.G. and Imberger, J., and Morrissey, T. "Horizontal convection in the sidearm of a small reservoir," Limnology and Oceanography, **35**, pp. 1676-1702, 1990.
9. Nepf, H.M. and Monismith, S.G. "Experimental study of wave-induced longitudinal vortices," J. Hydr. Div. ASCE, **117**(HY12), pp. 1639-1649, 1991.

10. Koseff, J.R., Holen, J.K., Monismith, S.G., and Cloern, J.E., "The effects of vertical mixing and benthic grazing on phytoplankton populations in shallow turbid estuaries," J. Marine Res., **51**(4), pp. 1-26, 1993.
11. Lin, C.L., Ferziger, J.H., Koseff, J.R., and Monismith, S.G., "Simulation and stability of two-dimensional gravity waves in a stratified shear flow," Dynamics of Atmospheres and Oceans **38**(8), pp. 1712-1729, 1993.
12. Monismith, S.G., McDonald, N.R., and Imberger, J. "Axisymmetric selective withdrawal in a rotating stratified fluid," J. Fluid Mech. **249**, pp. 287-305, 1993.
13. O'Riordan, C.A., Monismith, S.G., and Koseff, J.R., " An experimental study of concentration boundary layer formation over bivalve assemblages," Limnology and Oceanography **38**(8), pp. 1712-1729, 1993.
14. Nepf, H.M., and Monismith, S.G., "Wave dispersion on a sheared current," Applied Ocean Research **16**, pp.313-315, 1994.
15. Jassby, A.D., Kimmerer, W.M., Monismith, S.G., Armor, C., Cloern J.E., Powell, T.M., Schubel, J. and Vendlinski, T., "Isohaline position as a habitat indicator for estuarine resources: San Francisco Bay-Delta, California, U.S.A.," Ecological Applications. **5**, pp. 273-289, 1995.
16. O'Riordan, C.A., Monismith, S.G., and Koseff, J.R., "The effect of bivalve excurrent jet dynamics on mass transfer in a benthic boundary layer," Limnology and Oceanography, **40**, pp. 330-344, 1995.
17. Nepf, H.M., E.A. Cowen, S.J. Kimmel, S.G. Monismith, "Longitudinal vortices beneath breaking waves," J. Geophys. Res. (Oceans), **100**, p16211-16221, 1995.
18. Briggs, D.A., Ferziger, J.H., J.R. Koseff, and S.G. Monismith, "Entrainment in a shear-free turbulent mixing layer," J. Fluid Mech. **310**, pp. 215-241, 1996.
19. Johnson, P.A., N.H. Brooks, R.A. French, J.R. Koseff, D.R. Maidment, S.G. Monismith, and S. Parker (ASCE Task Committee on Hydraulic Engineering Research Advocacy), Environmental Hydraulics: New research directions for the 21<sup>st</sup> Century," ASCE J. Hyd. Eng. 122(4), pp. 180-183, 1996.
20. Monismith, S.G. and D.A. Fong, "A simple model of mixing in stratified tidal flows," J. Geophys. Res. (Oceans) **101**, pp. 28583-28597, 1996.
21. O'Riordan, C.A., Monismith, S.G., and Koseff, J.R., "The effects of near-bed hydrodynamics on model bivalve filtration rates," Arch. Hydrobiol. Spec. Issues Advanc. Limnol. **47**, pp. 247-254, 1996.
22. Monismith, S.G., Bureau, J. and M. Stacey, "Stratification Dynamics and Gravitational Circulation in Northern San Francisco Bay" in San Francisco Bay: The Ecosystem, ed. T. Hollibaugh, pp. 123-153, AAAS, 1996.
23. Cowen, E.A. and S.G. Monismith, "An hybrid digital particle tracking velocimetry technique," Experiments in Fluids, **22**, pp. 199-211, 1997.
24. Garg, R.P., J.H. Ferziger, and S.G. Monismith, "Hybrid spectral finite difference simulations of stratified turbulent flows on distributed memory architectures," Internat. J. Num. Methods in Fluids. **24**, pp 1129-1158, 1997
25. Briggs, D.A., Ferziger, J.H., J.R. Koseff, and S.G. Monismith. "Entrainment in a shear-free, stably stratified turbulent mixing layer," J. Fluid Mech., **354**, p. 175-208, 1997.

26. Lucas, L., J.E. Cloern, J.R. Koseff, S.G. Monismith, and J.K. Thompson "Does the Svedrup critical depth model explain blooms in the coastal zone?" J. Marine Res., **56**, pp. 375-415, 1998
27. Lin, C-L., Koseff, J.R., Ferziger, J.H., and Monismith, S.G., "Direct Numerical Simulation of Wave-Mean Flow and Wave-Wave Interactions: A Brief Perspective", IUTAM Symposium on Physical Limnology, ed. J. Imberger, AGU Monograph, , pp. 271-284, 1998.
28. Monismith, S.G. and J.M. Magnaudet, "On wavy mean flows, strain, turbulence and Langmuir cells," IUTAM Symposium on Physical Limnology, ed. J. Imberger, AGU Monograph, pp. 101-110, 1998.
29. Gross, E.S., Koseff, and S.G. Monismith, "Evaluation of advective schemes for estuarine salinity simulations," J. Hyd. Div. ASCE, 125(1), pp. 32-46, 1999.
30. Gross, E.S. Koseff, and S.G. Monismith, "Three-dimensional salinity simulations in South San Francisco Bay," J. Hyd. Div. ASCE, 125(11), pp. 1199-1209, 1999.
31. Lucas, L., J.E. Cloern, J.R. Koseff, S.G. Monismith, and J.K. Thompson 1999 "Processes governing phytoplankton blooms in estuaries: Part I: The local production-loss balance" Mar Ecol. Prog. Ser.186, pp.1-15, 1999.
32. Lucas, L., J.E. Cloern, J.R. Koseff, S.G. Monismith, and J.K. Thompson 1999, "Processes governing phytoplankton blooms in estuaries: Part II: The role of transport in global dynamics" Mar Ecol. Prog. Ser. 186, pp.17-30, 1999.
33. Stacey, M.T., S.G. Monismith, and J.R. Burau, 1999 "Observations of turbulence in a partially stratified estuary," J. Phys. Oceanog. 29 pp. 1950-1970, 1999.
34. Stacey, M.T., S.G. Monismith, and J.R. Burau, "Measurements of Reynolds stress profiles in unstratified tidal flow," J. Geophys. Res. (Oceans), 104 (C5) pp. 10933-10949, 1999.
35. Stacey, M.T., E.A. Cowen, T.M. Powell, E. Dobbins, E., S.G. Monismith, and J.R. Koseff, "Plume dispersion in a stratified, near-coastal flow: measurements and modeling," Cont. Shelf Res., **20**, pp.637-663, 2000.
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38. Lacy, J. and S.G. Monismith, "Secondary currents in a curved, stratified channel," J. Geophys. Res (Oceans) 106(C12): 31,283-31,302, 2001.
39. Brennan, M.L., Schoellhamer, D.H., Burau, J.R. and Monismith, S.G. "Tidal asymmetry and variability of cohesive sediment transport at a site in San Francisco Bay, California". In: INTERCOH-2000: Fine Sediment Dynamics in the Marine Environment / Ed. by J.C. Winterwerp, C. Kranenburg. Amsterdam u.a.: Elsevier (Proceedings in Marine Science; 5), pp. 93-108, 2002.
40. Ferziger, J.H., J.R. Koseff, and S.G. Monismith. "Numerical simulation of geophysical turbulence," Computers and Fluids 31: 557-568, 2002
41. Genin, A., G. Yahel, M.A. Reidenbach, S.G. Monismith, and J.R. Koseff "Intense benthic grazing on phytoplankton in coral reefs revealed using the control volume approach," Oceanography, 15(2), pp. 90-97, 2002.

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48. Fong, D.A., and S.G. Monismith, "Evaluation of the accuracy of a ship-mounted, bottom-tracking ADCP in a near-shore coastal flow," J. Atmos. Ocean. Tech., 21(7): 1121-1128, 2004.
49. Monismith, S.G., and D.A. Fong, "A note on the transport of scalars and organisms by surface waves," Limnol. Ocean. 49: 1214-1219, 2004
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60. Horner-Devine, A.R., D.A. Fong, S.G. Monismith, and T. Maxworthy, "Laboratory experiments simulating a coastal river inflow," J. Fluid Mech. 555, pp. 203-232, 2006.
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64. Shellenbarger, G. G., S.G. Monismith, A. Genin and A. Paytan. "The importance of submarine groundwater discharge to the near shore nutrient supply in the Gulf of Aqaba (Israel)," Limnol. Oceanog 51(4), pp. 1876-1886, 2006.
65. Falter J.L., Atkinson M.J., Fleming J.H., Bos M.M., Lowe R.J., Koseff J.R., Monismith S.G. "A new mesocosm for simulating the effects of wave-driven water motion on the biogeochemistry of benthic reef communities." Limnol. Oceanogr. Methods, 4, pp. 68-79, 2006.
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75. Gawarkiewicz, G., S. Monismith, and J. Largier, "Observing larval transport processes affecting population connectivity: Progress and challenges" Oceanography 20(3), pp. 40-53, 2007.
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