

## **EDWARD ERIC ADAMS**

### **Position:**

Senior Research Engineer and Lecturer, Dept. of Civil and Environmental Engineering, MIT  
Director, CEE Dept. Master of Engineering Program  
Associate Director for Research, MIT Sea Grant College Program

### **Contact information:**

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### **Areas of specialization:**

Environmental fluid mechanics; Dynamics of jets and plumes;  
Water quality modeling; Engineering for sustainability

### **Degrees:**

B.S., Engineering, Harvey Mudd College, 1970  
S.M., Civil Engineering, MIT, 1972  
Ph.D., Hydrodynamics, MIT, 1975

### **Major recent research projects:**

Applying chemical dispersants to sub-surface oil spills (Chevron)  
A flexible curtain to contain oil from a deep ocean blowout (ENI)  
Simulating 3D dispersal of aging oil with a Lagrangian approach (NSF RAPID)  
Innovative uses for a power plant's thermal discharge: de-stratifying the Charles River Basin  
(NOAA/Sea Grant).  
Experimental and mathematical models of sediment clouds (Singapore NRF)  
Modeling the direct release of CO<sub>2</sub> to the ocean (DOE/FE and OS)  
Behavior of capped contaminated marine sediments (NOAA/Sea Grant; US ACE)  
Modeling of multi-phase plumes with application to deep-sea oil spills (DOI/MMS)

### **Subjects taught recently:**

Water Quality Control (Graduate Subject 1.77); Design for Sustainability (Graduate Subject 1.819);  
Concepts of Engineering Practice (Graduate Subject 1.133); Environmental Fluid Mechanics Lab  
(Undergraduate Subject 1.108)

### **States in which registered:**

Massachusetts (#30602)

### **Selected consulting activities:**

Northeast Utilities/Dominion Resources Service Co.; Union Carbide; Camp, Dresser & McKee; Metcalf & Eddy; Morgan, Lewis & Bockius; Woodward-Clyde Consultants; Latham & Watkins; EIH (Argentina); AES/Harriman Cove; Eastern Minerals; Bechtel Civil, Inc; Public Service Electric & Gas; Mass Water Res Auth, Dominion Power Co; Chevron, ExxonMobil; Eletrobras Termonuclear (Brazil).

### **Scientific and professional societies:**

American Soc. Civil Engineering; Boston Soc. Civil Engineering Sect., Int'l Assoc. Hydro-Environment and Research, Water Environment Federation, American Physical Society

### **Awards:**

MIT CEE Dept. Effective Teaching Award (1994); MIT Institute Grad Student Advising Award (1998);  
Harold Shoemaker Prize (Best paper in JHR, IAHR, 2007);  
Ig Nobel Award (Chemistry, 2010);  
Karl Emil Hilgard Prize (best paper in JHE, ASCE, 2014).

## Major publications last six years

- Adams, E. and Caldeira, K. 2008. "Ocean Storage of CO<sub>2</sub>" *Elements* 4: 319-324.
- Adams, E. 2008. "Discussion of 'Distributed entrainment sink approach for modeling mixing and transport in the intermediate field' by Choi and Lee," *J. Hydraulic Engineering* 134(12): 1785-1876.
- Wang, R. Q., Law, A., Adams, E., and Fringer, O., 2009 "Buoyant formation number of a starting forced plume", *Physics of Fluids* **21**, 125104(2009); doi: 10.1063/1.3275849.
- Israelsson, P.H. Chow, A.C. Adams, E.E , 2010. "An updated assessment of the acute impacts of ocean carbon sequestration", *Int'l J. Greenhouse Gas Control*, 4: 262-271.
- Chow, A. and Adams, E. 2010 "Particle laden flows through an inverted chimney with application to ocean carbon sequestration", *Environmental Fluid Mechanics* DOI 10.1007/s10652-010-9200-1.
- Wang, R.-Q. Law, A., Adams, E. and Fringer, O.2010 "Large-eddy simulation of starting buoyant jets", *Environmental Fluid Mechanics* DOI 10.1007/s10652-010-9201-1.
- Wang, R.-Q. A. Law, and E. Adams, 2011 "Pinch-off and formation number of negatively buoyant jets", *Physics of Fluids* 23, 052101
- Chow, A and Adams, E. 2011. "Prediction of drag coefficient and secondary motion of free falling rigid cylindrical particles with and without curvature at moderate Reynolds number", *J. Hydraulic Engineering* DOI 10.1007/s10652-010-9201-0.
- Socolofsky, S. Adams, E. and Sherwood, C. 2011. "Formation dynamics of subsurface hydrocarbon intrusions following the Deepwater Horizon blowout". *Geo. Res. Lettr.* 38, L09602, Doi:10.1029/2011GLO47174, 2011.
- North, N. Adams, E. Schlag, Z., Sherwood, C., He, R., and Socolofsky, S. 2011. "Simulating aging droplet dispersal from the Deepwater Horizon Spill with a Lagrangian approach" in *Monitoring and modeling the Deepwater Horizon Oil Spill: A record breaking enterprise* Geophys. Monogr. Ser., Vol 195, 271 p., AGU, Washington, DC, doi: 10.1029/GM195.
- Gensheimer, R.J., Adams, E.E. and Law, A.W.K. 2013. Dynamics of particle clouds in ambient currents with application to open water sediment disposal. *J. Hydr. Engrg.* 139(2): 114-123.
- Zhao, B., Law, A.W.K., Adams, E.E., Shao, D., and Huang, Z 2012. Effect of air release height on the formation of sediment thermals in water. *J. Hydraulic Research* 50 (5): 532-540.
- Zhao, B., Law, A.W.K., Huang, Z., Adams, E.E., and Lai, A.C.H. 2013. Behaviour of Sediment Clouds in Waves. *J. Waterway, Port, Coastal and Ocean Engineering* 139(1)
- Lai, A., Zhao, B., Law, A. Adams, E. 2013. A two-phase model of sediment clouds. *Environ. Fluid Mech.* 13: 435-463.
- Zhao, B., Law, A., Lai, A., Adams, E., 2013. On the internal vorticity and density structures of miscible thermals, *J. Fluid Mechanics*, 722, DOI 10.1017/jfm.2013.158.
- Adams, E., Socolofsky, S., Boufadel, M. 2013. Comment on "Evolution of the Deewater Horizon Well Blowout: simulating the effects of the circulation and synthetic dispersants on the subsea oil transport. *Environ. Sci. Technol.* 47: 11905-11905.
- Zhao, B., Law, A.W.K., Adams, E. and Er, J.W., 2014. Formation of particle clouds. *J. Fluid Mechanics*, 746: 193-213.
- Harada, S., Koshikawa, H. and Adams, E., 2014. Estimation of vertical eddy diffusivity in a shallow floating mesocosm. *J. Marine Environmental Engingeering*, 9:275-283.
- Chan, G.K.Y., Chow, A.C., and Adams, E. E.. 2014 Effects of droplet size on intrusions of sub-surface oil spills. *Environmental Fluid Mechanics* (submitted).