

Qualifications Summary

- More than 25 years' academic and consulting experience in hydrodynamics, sediment transport, and coastal processes
- Expertise in design and interpretation of field measurements for understanding coastal systems and evaluating and improving models
- Strong written and verbal communication skills

JOHN H. TROWBRIDGE, Sc.D.

Senior Coastal Scientist

Fields of Expertise

Research on coastal hydrodynamics and sediment transport. Design of oceanographic measurement programs for evaluation and improvement of models of coastal waves, currents, and sediment transport. Interpretation of measurements and model simulations. Development of simplified conceptual and analytical approaches to provide preliminary estimates, facilitate feasibility studies, and design complex measurement programs and model implementations. Development of analysis methods for extraction of robust statistics from measurements.

Employment

1987-Present Woods Hole Oceanographic Institution – Assistant, Associate and Senior Scientist
1983-1987 University of Delaware, Department of Civil Engineering – Assistant Professor
1977-1983 Massachusetts Institute of Technology (MIT), Department of Civil Engineering – Graduate Research and Teaching Assistant
1979-1980 Woods Hole Oceanographic Institution, Department of Geology and Geophysics – Research Assistant

Higher Education

Sc.D., Oceanographic Engineering – Massachusetts Institute of Technology and Woods Hole Oceanographic Institution (1983)
S.M., Civil Engineering-Massachusetts Institute of Technology (1979)
B.S., Civil Engineering-University of Washington (1977)

Key Projects

Measurement and analysis of turbulence statistics and characteristics of suspended sediments during the Coastal Mixing & Optics experiment on the New England shelf.

Measurement and interpretation of turbulent stresses in the surf zone during the SandyDuck experiment in Duck, North Carolina.

Development of a theoretical model for the development and maintenance of shore-oblique sand ridges on the east coast of the United States.

Development of measurement and analysis methods for determining turbulence statistics in the presence of energetic waves.

Development of analytical modeling approaches for prediction of the fate and transport of a spill of tetra-ethyl lead off Venezuela.

Development of a code for computer simulation of coastal wave-driver currents, sediment transport, and patterns of erosion and accretion.

Publications (A Selection of 10)

Trowbridge, J. H., W. R. Geyer, M. M. Bowen, and A. J. Williams, 1999. Near-bottom turbulence measurements in a partially mixed estuary: turbulent energy balance, velocity structure, and along-channel momentum balance. *Journal of Physical Oceanography*, 29, 3056-3072.

Shaw, W. J., J. H. Trowbridge and A. J. Williams, 2001. Budgets of turbulent kinetic energy and scalar variance in the continental shelf bottom boundary layer. *Journal of Geophysical Research*, 106, 9551-9564.

Trowbridge, J. H. and S. Elgar, 2001. Turbulence measurements in the surf zone. *Journal of Physical Oceanography*, 31, 2403-2417.

Trowbridge, J. H. and S. Elgar, 2003. Spatial scales of stress-carrying nearshore turbulence. *Journal of Physical Oceanography*, 33, 1122-1128.

Fries, S. J. and J. H. Trowbridge, 2003. Flume observations of enhanced fine particle deposition to permeable sediment beds. *Limnology and Oceanography*, 48, 802-812.

Trowbridge, J. H. and Y. Agrawal, 2004. A two-spot sensor for measurement of dissipation by means of laser-Doppler velocimetry. *Journal of Atmospheric and Oceanic Technology*, 21, 1104-1111.

Fedderson, F. and J. H. Trowbridge, 2005. The effect of wave breaking on surfzone turbulence and alongshore currents: a modeling study. *Journal of Physical Oceanography*, 35, 2187-2203.

Fedderson, F., J. H. Trowbridge and A. J. Williams, 2007. Vertical structure of dissipation in the nearshore. *Journal of Physical Oceanography*, 37, 1764-1776.

Gerbi, G. P., J. H. Trowbridge, J. B. Edson, A. J. Plueddemann, E. A. Terray and J. J. Fredericks, 2008. Measurements of momentum and heat transfer across the air-sea interface. *Journal of Physical Oceanography*, 38, 1054-1072.

Publications (continued)

Gerbi, G. P., J. H. Trowbridge, E. A. Terray, A. J. Plueddemann and T. Kukulka, 2009. Observations of turbulence in the ocean surface boundary layer: energetics and diffusivity. *Journal of Physical Oceanography*, in press.