

Andrew Dale Ashton

Woods Hole Oceanographic Institution
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Current Position

Woods Hole Oceanographic Institution, Woods Hole, Massachusetts, 2007 - present

Assistant Scientist
Geology and Geophysics Department
Research focus: Coastal Processes and Morphodynamics

Education

Woods Hole Oceanographic Institution, Woods Hole, Massachusetts, 2005 - 2007

USGS Postdoctoral Scholar
Geology and Geophysics Department

Duke University; Durham, North Carolina, 1999 - 2005

Ph.D. – Division of Earth & Ocean Sciences,
Nicholas School of the Environment & Earth Sciences
Concentration in Nearshore Processes and Geomorphology
Certificate in Nonlinear and Complex Systems

Cornell University; Ithaca, New York, 1991 - 1995

Bachelor of Science
School of Civil and Environmental Engineering
Concentration: Hydraulics, Hydrology, and Water Quality.

Research Interests

Development and testing of numerical and conceptual models of the formation and evolution of coastal sedimentary environments
Plan-view delta evolution along wave-dominated coasts
Coastal response to climate change, sea-level rise, and anthropogenic activities
Application of 'reduced complexity' morphodynamic models to study earth-surface evolution

Professional Activities

Convener, Special Session "Coastal Geomorphology and Morphodynamics," AGU Fall meeting, 2006
Participant, National Center for Earth-Surface Dynamics Working Group: Field, Experimental, Modeling and Computational Issues Related to Moving Boundaries in the Environment, Massachusetts Institute of Technology, Cambridge MA, July, 2005.
Participant: USACE workshop on coastal erosion hotspots, Duck, NC. 2002.
Author: Union of Concerned Scientists Northeast Climate Change Impact Report
Journal Reviewer: *Journal of Geophysical Research–Earth Surface*; *Geophysical Research Letters*; *Marine Geology*; *Estuarine, Coastal and Shelf Science*; *Nonlinear Processes in Geophysics*.
Proposal Reviewer: NSF, DOE-NICCR.

Papers in refereed journals or books

- Ashton, A.D.**, Evans, R. and Donnelly, *in press*. A Discussion of the Potential Impacts of Climate Change on the Shorelines of the Northeastern USA. Mitigation and Adaptation Strategies for Global Change, *in press*.
- Ashton, A.D.**, and A. B. Murray, 2006. High-angle wave instability and emergent shoreline shapes: 1. Modeling of sand waves, flying spits, and capes, *J. Geophys. Res.*, 111, F04011, doi:10.1029/2005JF000422.
- Ashton, A.D.**, and A. B. Murray, 2006. High-angle wave instability and emergent shoreline shapes: 2. Wave climate analysis and comparisons to nature, *J. Geophys. Res.*, 111, F04012, doi:10.1029/2005JF000423.
- Slott, J.M., Murray, A.B., **Ashton, A.D.**, & Crowley, T.J., 2006. Coastline responses to changing storm patterns, *Geophysical Research Letters*, Vol. 33, L18404, doi:10.1029/2006GL027445.
- Valvo, L.M., Murray, A.B., and **Ashton, A.D.**, 2006. How Does Underlying Geology Affect Coastline Change? An Initial Modeling Investigation. *Journal of Geophysical Research - Earth surface*, 111, F02025, doi:10.1029/2005JF000340.
- Ashton A.**, Murray A. B., & Arnoult, O., 2001. Formation of coastline features by large-scale instabilities induced by high-angle waves. *Nature*, 414, pp. 296-300.

Other Publications

- Ashton, A.D.** and Giosan, L., 2007. Investigating plan-view asymmetry in wave-influenced deltas. 5th IAHR Symposium on River, Coastal, and Estuarine Morphodynamics. International Association of Hydraulic Researchers, Enschede, Netherlands, p. 681-688.
- Ashton, A.D.**, Murray, A.B., and Littlewood, R., 2007. The response of spit shapes to wave-angle climates. *Coastal Sediments '07*, New Orleans, Louisiana, ASCE, p. 351-363.
- List, J.H. and **Ashton, A.D.** A circulation modeling approach for evaluating the conditions for shoreline instabilities. *Coastal Sediments '07*, New Orleans, Louisiana, ASCE, p. 327-340.
- Littlewood, R., Murray, A.B., and **Ashton, A.D.** An alternative explanation for the shape of 'log-spiral' bays. *Coastal Sediments '07*, New Orleans, Louisiana, ASCE, p. 341-350.
- Murray, A.B., Valvo, L., Slott, J, **Ashton, A.**, Crowley, T. Variable shoreline responses to sea-level rise and climate change. *Coastal Sediments '07*, New Orleans, Louisiana, ASCE, p. 1214-1226.
- Ashton, A.D.**, and Murray, A.B., 2005. Delta simulations using a one-line model coupled with overwash. *Coastal Dynamics '05*, Barcelona, Spain, ASCE.
- Valvo, L., Murray, A.B., and **Ashton, A.**, 2005, Investigating shoreface lithology effects in a process-based model of coastal change, *Coastal Dynamics '05*, Barcelona, Spain, ASCE.
- Ashton, A.D.**, Murray, A.B. and Ruessink, B.G., 2003. Initial tests of a possible explanation for alongshore sandwaves on the Dutch coast, 3rd IAHR Symposium on River, Coastal and Estuarine Morphodynamics, International Association of Hydraulic Researchers, Barcelona, Spain.
- Murray, A.B. & **Ashton, A.**, 2004. Extending a 1-line modeling approach to explore emergent coastline behaviors, *Proceedings of the 29th International Conference on Coastal Engineering*, Lisbon, Portugal.
- Ashton, A.**, List, J.H., Murray, A.B. and Farris, A.S., 2003. Links between erosional hotspots and alongshore sediment transport, *Proceedings of the International Conference on Coastal Sediments 2003*, Clearwater Beach, Florida, ASCE.
- Murray, A.B. & **Ashton, A.**, 2003. Sandy-coastline evolution as an example of pattern formation involving emergent structures and interactions, *Proceedings of the International Conference on Coastal Sediments 2003*, Clearwater Beach, Florida, ASCE.
- Murray, A.B., **Ashton, A.**, & Arnoult, O., 2001. Large-scale morphodynamic consequences of an instability in alongshore transport. *Proceedings of the International Association for Hydraulic Research Symposium on River, Coastal, and Estuarine Morphodynamics*, Obohiro, Japan, Sept 10-14.

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Murray, A.B., **Ashton, A.**, & Arnoult, O., 2001. An instability in shoreline shape, and connections with eolian morphodynamics. Proceedings of the 2nd International Conference on Dune Formation and Migration, Nouachott, Mauritania, February, 2001.

Published Abstracts:

- Ashton, A.D.** and Giosan, L., 2006. Emergent shoreline behaviors reflected in the depositional history of wave-dominated deltas. American Geophysical Union Fall Meeting (EOS Trans. AGU, 87(52), Fall Meet. Suppl., abstract NG53A-02)
- Ashton A.D.**, Littlewood, R., & Murray, A.B., 2006. Emergent interactions and self-organization in the shape evolution of enclosed water bodies, European Geosciences Union Spring Meeting (Geophysical Research Abstracts, Vol. 8, 08612).
- Slott, J., Murray, A. B., Valvo, L., **Ashton, A.**, 2006. Shoreline response to climate change in a model of large-scale coastal change, European Geosciences Union Spring Meeting (Geophysical Research Abstracts, Vol. 8, 05057).
- Ashton, A.** Murray, B., & Giosan, L, 2005. Wave-Dominated Delta Evolution: New Insights From One-Line Numerical Simulations. American Geophysical Union Fall Meeting (EOS Transactions 86(52), H51D-0400).
- Tebbens, S.F., Murray, A.B., and **Ashton, A.**, 2005, Quantifying coastal change patterns using LIDAR, *Eos Trans. AGU*, Fall Meet. Suppl.
- Slott, J.M., Murray, A.B., Valvo, L., and **Ashton, A.**, 2005, Shoreline responses to climate change and human manipulations in a model of large-scale coastal change, *Eos Trans. AGU*, Fall Meet. Suppl.
- Ashton, A.** Murray, B., 2004. Alongshore coastline instability: wave climate analysis and comparisons to nature. American Geophysical Union Fall Meeting (EOS Transactions 85(45), H41C-0317).
- Ashton, A.** & Murray, A.B, 2004. Self-organized behavior of modeled shoreline shapes. Dynamics Days 2004: 23rd Annual Conference on Nonlinear Dynamics and Complex Systems. Chapel Hill, NC. (contributed talk)
- Ashton, A.**, List, J.H., Murray, A.B., & Farris, A.S., 2002. Are There Connections Between Erosional Hot Spots and Alongshore Sediment Transport Along the North Carolina Outer Banks? American Geophysical Union Fall Meeting, *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract OS52F-09.
- Ashton, A.**, Murray, B., 2001. Responses of simulated and natural shorelines to high-angle waves: Perturbation growth and long-range interactions. American Geophysical Union Fall Meeting (EOS Transactions 82, p. F623).
- Ashton, A.**, Murray, A.B., & McNinch, J., 2000. Modeling large scale coastal morphodynamics. American Geophysical Union Fall Meeting (EOS Trans. AGU 81(48), p. F681). Also presented at Dynamics Days 2001, Chapel Hill, NC.

Professional Experience

David J. Newton Associates; Portland, Oregon, 1997 - 1999

Civil Engineer focusing on hydrology and hydrodynamics

Hydraulic and hydrologic design of gravel mining sites, water systems, including dams, culverts, storm drainage systems, water supply systems, and stormwater retention ponds.

Dewberry & Davis; Fairfax, VA, 1996 - 1997

Civil Engineer working on technical evaluation contract with Federal Emergency Management Agency (FEMA), for the National Flood Insurance Program (NFIP).

Field Experience:

Massachusetts/Rhode Island, summer 2006. Vibracoring and geophysical surveying (CHIRP, GPR) of multiple coastal ponds, lagoons, and marshes.

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Danube Delta, Romania, September 1-14, 2006. Vibrocoring, CHIRP surveying, and gravity coring of Danube river floodplain and Danube Delta to locate recent flood deposits and to further develop age models of the Danube Delta formation.

Martha's Vinyard, June 16-19, 2007. R.V. Tioga. Geophysical surveying (EM and CHIRP) and Rossfelder vibrocoring of offshore deposits.

Invited Talks:

Rice University, Department of Earth Sciences, 2007

Woods Hole Oceanographic Institution, Coastal Ocean Fluid Dynamics Laboratory Seminar, 2007

Tulane University, Department of Earth and Environmental Sciences, 2007

University of Virginia, Department of Environmental Sciences, 2007

Woods Hole Oceanographic Institution, Geology and Geophysics Department, Geophysics Seminar, 2007

Naval Research Laboratory, Marine Geosciences, Stennis, Mississippi, 2007

University of Michigan, Department of Geological Sciences, 2007

University of Texas, Jackson School of Geosciences, 2006

Woods Hole Oceanographic Institution, Applied Ocean Physics and Engineering Department Seminar, 2006

Massachusetts Institute of Technology, Department of Civil & Environmental Engineering, Environmental Fluid Mechanics Seminar, 2006

USGS Woods Hole Field Center, 2006

Boston University, Department of Earth Sciences, 2006

US Army Corps of Engineers Field Research Facility, Duck, North Carolina, 2004