

# Noah P. Snyder

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## EDUCATION

**Ph.D., Massachusetts Institute of Technology**, Cambridge, MA, geology (2001)

**B.S., Bates College**, Lewiston, ME, high honors in geology (1993)

## EMPLOYMENT

**Associate Professor**, Dept. of Earth and Environmental Sciences, Boston College (2010-)

**Director**, Environmental Studies Program, Boston College (2010-)

**Assistant Professor**, Dept. of Geology and Geophysics, Boston College (2004-2010)

**Postdoctoral Research Geologist**, U.S. Geological Survey Coastal and Marine Geology Team, Santa Cruz, CA (2001-2004)

**Research and Teaching Assistant**, Department of EAPS, MIT, Cambridge, MA (1996-2001)

**Visiting Instructor**, Department of Geology, Colorado College, Colorado Springs, CO (2000)

**Geologist**, Utah Geological Survey, Salt Lake City, UT (1994-1996)

**Teaching Assistant**, Department of Geology, Bates College, Lewiston, ME (1990-1993)

## RESEARCH INTERESTS

Rivers are conduits for transport of fresh water, sediment and nutrients throughout the landscape. Humans manage rivers for water supply, power generation, flood control and navigation. These needs often conflict with ecological functions of rivers, such fish migration. My research focuses on understanding how rivers respond to changes, ranging from long-term variations in tectonics or climate to short-term shifts in dam function or land use. I link measurements of channel morphology from high-resolution airborne lidar digital elevation models with field-based measurements of stream processes.

## FUNDING

**NSF, EAR, Geomorphology and Land Use Dynamics** (2015-2018)

*Collaborative research: Is Anthropocene sedimentation in valley bottoms a geologically significant event?* With co-investigators Dorothy Merritts and Robert Walter of Franklin and Marshall College, NSF #1451562 (\$310,000 total, \$172,188 to BC).

**Boston College Research Incentive grant** (2014-2015)

*Testing geomorphic mapping methods using a small unmanned aircraft system* (\$15,000).

**Boston College Teaching, Advising and Mentoring grant** (2013-2014)

*Developing campus-based learning geomorphology laboratories* (\$7,000).

**NSF, EAR, Geomorphology and Land Use Dynamics** (2007-2013)

*CAREER: Land use, geologic and climatic controls on stream processes in northern New England using airborne laser swath mapping*, NSF #0645343 (\$438,806).

**NOAA Open Rivers Initiative / Gomez and Sullivan Engineers, P.C.** (2008-2012)

*On-site monitoring related to the Merrimack Village Dam removal project.* (\$48,000).

**American Chemical Society, Petroleum Research Fund** (2008-2011)

*Dam-controlled river deltas as meso-scale analogues for offshore sedimentary systems* (\$50,000).

**National Fish and Wildlife Foundation, Maine Atlantic Salmon Conservation Fund** (2006-2007)

*Controls on channel morphology, sediment transport, and Atlantic salmon habitat in the Sheepscot and Narraguagus River watersheds, coastal Maine* (\$40,000).

**NCALM Seed Proposal** (2004-2005)

*Transient response of a desert river to forced diversion: Furnace Creek Wash, Death Valley National Park, California*. Airborne laser altimetry data collection completed in February 2005.

**U.S. Geological Survey Cooperative Agreement** (2004-2006)

*Quantifying sediment size and transport rates in Englebright Lake and the Yuba River*. Collaborative work with the USGS Water Resources Division in Sacramento, California (\$21,675).

**CALFED Science Fellows Program, California Sea Grant College Program** (2002-2005)

*Using stratigraphic and hydrologic data from the Yuba River system to develop reliable sediment transport predictions*. Postdoctoral salary and research funding (\$139,537 to USGS; \$22,099 to BC).

**Geological Society of America student research grant** (1997)

**Student Research Fund grant**, Department of EAPS, MIT (1997)

**Sigma Xi research grant** (1992)

**HONORS****Professor of the Year** (2011 and 2014)

Awarded by students of the Earth & Environmental Sciences Department, Boston College

**Visiting Erskine Fellowship**, University of Canterbury, Christchurch, New Zealand (2011)

**USGS STAR Award**, Englebright Lake coring project (2002)

**Teaching Assistant Excellence Prize** (2000)

Department of EAPS, MIT

Course: *Geological Image Interpretation*

**J. Hoover Mackin Research Award**

GSA Quaternary Geology & Geomorphology Division (1998)

Proposal title: *Channel response to varying uplift, King Range, northern California*

**Magna Cum Laude, Phi Beta Kappa, Sigma Xi** (1993); **Dean's List** (1989-1993)

**PUBLICATIONS****REFEREED ARTICLES** (\*Boston College student coauthors)

Collins, M.J., **Snyder, N.P.**, Boardman, G., Banks, W.S.L., Andrews, M., Baker, M.E., Conlon, M.\*, Gellis, A., McClain, S., Miller, A., and Wilcock, P., 2017, Channel response to sediment release: insights from a paired analysis of dam removal, *Earth Surface Processes and Landforms*, doi: 10.1002/esp.4108.

Hopkins, A.J.\*, and **Snyder, N.P.**, 2016, Performance evaluation of three DEM-based fluvial terrace mapping methods, *Earth Surface Processes and Landforms*, v. 41, n. 8, p. 1144-1152, doi: 10.1002/esp.3922.

Waldman, J., Wilson, K.A., Mather, M., and **Snyder, N.P.**, 2016, A resilience approach can improve anadromous fish restoration, *Fisheries*, v. 41, n. 3, p. 116-126, doi: 10.1080/03632415.2015.1134501.

Bresney, S.R.\*, Moseman-Valtierra, S., and **Snyder, N.P.**, 2015, Observations of greenhouse gases and nitrate concentrations in a Maine river and fringing wetland, *Northeastern Naturalist*, v. 22, n. 1, p. 120-143, doi: 10.1656/045.022.0125.

- Armstrong, W.H., Collins, M.J., and **Snyder, N.P.**, 2014, Hydroclimatic flood trends in the northeastern United States and linkages with large-scale atmospheric circulation patterns, *Hydrological Sciences Journal*, v. 59, p. 1636-1655, doi: 10.1080/02626667.2013.862339.
- Kasprak, A., Magilligan, F.J., Nislow, K.H., Renshaw, C.E., **Snyder, N.P.**, and Dade, W.B., 2013, Differentiating the relative importance of land cover change and geomorphic processes on fine sediment sequestration in a logged watershed, *Geomorphology*, v. 185, p. 67-77, doi: 10.1016/j.geomorph.2012.12.005.
- Santaniello, D.J.\*, **Snyder, N.P.**, and Gontz, A.M., 2013, Using ground-penetrating radar to determine the quantity of sediment stored behind the Merrimack Village Dam, Souhegan River, New Hampshire, in DeGraff, J.V. and Evans, J.E. (editors), *The Challenges of Dam Removal and River Restoration*, GSA Reviews in Engineering Geology, v. XXI, p. 45-57, doi:10.1130/2013.4021(04).
- Snyder, N.P.**, Nesheim, A.O.\*, Wilkins, B.C.\*, and Edmonds, D.A., 2013, Predicting grain size in gravel-bedded rivers using digital elevation models: application to three Maine watersheds, *Geological Society of America Bulletin*, v. 125, n. 1/2, p. 148-163, doi: 10.1130/B30694.1.
- Armstrong, W.H.\*, Collins, M.J., and **Snyder, N.P.**, 2012, Increased frequency of low magnitude floods in New England, *Journal of the American Water Resources Association*, v. 48, n. 2, p. 306-320, doi: 10.1111/j.1752-1688.2011.00613.x.
- Kasprak, A., Magilligan, F.J., Nislow, K.H., and **Snyder, N.P.**, 2012, A lidar-derived evaluation of watershed-scale large woody debris sources and recruitment mechanisms: coastal Maine, USA, *River Research and Applications*, v. 28, p. 1462-1476, doi: 10.1002/rra.1532.
- Snyder, N.P.**, 2012, Restoring geomorphic resilience in streams, in Church, M., Biron, P.M., and Roy, A., editors, *Gravel-bed Rivers: Processes, Tools, Environments*, John Wiley and Sons, Ltd., p. 160-164, doi: 10.1002/9781119952497.ch14.
- Pearson, A.J.\*, **Snyder, N.P.**, and Collins, M.J., 2011, Rates and processes of channel response to dam removal with a sand-filled impoundment, *Water Resources Research*, v. 47, doi:10.1029/2010WR009733.
- Wilkins, B.C.\*, and **Snyder, N.P.**, 2011, Geomorphic comparison of two Atlantic coastal rivers: toward an understanding of physical controls on Atlantic salmon habitat, *River Research and Applications*, v. 27, n. 2, p. 135-156, doi: 10.1002/rra.1343.
- Snyder, N.P.**, 2009, Studying stream morphology with airborne laser elevation data, *Eos*, v. 90, n. 6, p.45-46, doi:10.1029/2009EO060001.
- Snyder, N.P.**, Castele, M.R.\*, and Wright, J.R., 2009, Bedload entrainment in low-gradient paraglacial coastal rivers of Maine, U.S.A.: Implications for habitat restoration, *Geomorphology*, v. 103, n. 3, p. 430-446, doi: 10.1016/j.geomorph.2008.07.013.
- Snyder, N.P.**, and Kammer, L.L.\*, 2008, Dynamic adjustments in channel width in response to a forced diversion: Gower Gulch, Death Valley National Park, California, *Geology*, v. 36, p. 187-190, doi: 10.1130/G24217A.1.
- Snyder, N.P.**, Wright, S.A., Alpers, C.N., Flint, L.E., Holmes, C.W., and Rubin, D.M., 2006, Reconstructing depositional processes and history from reservoir stratigraphy: Englebright Lake, Yuba River, northern California, *Journal of Geophysical Research*, v. 111, F04003, doi: 10.1029/2005JF000451.
- Wobus, C.W., Whipple, K.X., Kirby, E., **Snyder, N.P.**, Johnson, J., Spyropolou, K., Crosby, B., and Sheehan, D., 2006, Tectonics from topography: Procedures, promise, and pitfalls, in Willett, S.D., Hovius, N., Brandon, M.T., and Fisher, D.M., editors, *Tectonics, Climate, and Landscape Evolution*, Geological Society of America Special Paper 398, p. 55-74, doi: 10.1130/2006.2398(04).

- Snyder, N.P.**, Rubin, D.M., Alpers, C.N., Childs, J.R., Curtis, J.A., Flint, L.E., and Wright, S.A., 2004, Estimating rates and properties of sediment accumulation behind a dam: Englebright Lake, Yuba River, northern California, *Water Resources Research*, v. 40, W11301, doi: 10.1029/2004WR003279.
- Snyder, N.P.**, Whipple, K.X., Tucker, G.E., and Merritts, D.J., 2003, Importance of a stochastic distribution of floods and erosion thresholds in the bedrock river incision problem, *Journal of Geophysical Research*, v. 108 (B2), 2117, doi: 10.1029/2001JB001655.
- Snyder, N.P.**, Whipple, K.X., Tucker, G.E., and Merritts, D.J., 2003, Channel response to tectonic forcing: analysis of stream morphology and hydrology in the Mendocino triple junction region, northern California, *Geomorphology*, v. 53, p. 97-127, doi: 10.1016/S0169-555X(02)00349-5.
- Snyder, N.P.**, Whipple, K.X., Tucker, G.E., and Merritts, D.J., 2002, Interactions between onshore bedrock-channel incision and nearshore wave-base erosion forced by eustasy and tectonics, *Basin Research*, v. 14, p. 105-127, doi: 10.1046/j.1365-2117.2002.00169.x.
- Snyder, N.P.**, and Hodges, K.V., 2000, Depositional and tectonic evolution of a supradetachment basin:  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology of the Nova Formation, Panamint Range, California, *Basin Research*, v. 12, n. 1, p. 19-30, doi: 10.1046/j.1365-2117.2000.00108.x.
- Snyder, N.P.**, Whipple, K.X., Tucker, G.E., and Merritts, D.J., 2000, Landscape response to tectonic forcing: digital elevation model analysis of stream profiles in the Mendocino triple junction region, northern California, *Geological Society of America Bulletin*, v. 112, n. 8, p. 1250-1263, doi: 10.1130/0016-7606(2000)112<1250:LRTTFD>2.0.CO;2.
- Whipple, K.X., **Snyder, N.P.**, and Dollenmayer, K., 2000, Rates and processes of bedrock incision by the Upper Ukak River since the 1912 Novarupta ash flow in the Valley of Ten Thousand Smokes, Alaska, *Geology*, v. 28, n. 9, p. 835-838, doi: 10.1130/0091-7613(2000)28<835:RAPOBI>2.0.CO;2.

## PEER-REVIEWED REPORTS

- Alpers, C.N., Hunerlach, M.P., Marvin-DiPasquale, M.C., Antweiler, R.C., Lasorsa, B.K., De Wild, J.F., and **Snyder, N.P.**, 2006, Geochemical data for mercury, methylmercury, and other constituents in sediments from Englebright Lake, California, 2002, U.S Geological Survey Data-Series Report 2005-151, <http://pubs.water.usgs.gov/ds151/>, 95 p.
- Curtis, J.A., Flint, L.E., Alpers, C.N., Wright, S.A., and **Snyder, N.P.**, 2006, Use of sediment rating curves and optical backscatter data to characterize sediment transport in the upper Yuba River watershed, California, 2001–03, U.S. Geological Survey Scientific Investigations Report 2005-5246, <http://pubs.usgs.gov/sir/2005/5246/>, 74 p.
- Snyder, N.P.**, Allen, J.R., Dare, C., Hampton, M.A., Schneider, G., Wooley, R.J., Alpers, C.N., and Marvin-DiPasquale M.C., 2004, Sediment grain-size and loss-on-ignition analyses from 2002 Englebright Lake coring and sampling campaigns, U.S. Geological Survey Open-File Report 2004-1080, <http://pubs.usgs.gov/of/2004/1080/>, 46 p.
- Snyder, N.P.**, Alpers, C.N., Flint, L.E., Curtis, J.A., Hampton, M.A., Haskell, B.J., and Nielson, D.L., 2004, Report on the May-June 2002 Englebright Lake deep coring campaign, U.S. Geological Survey Open-File Report 2004-1061, <http://pubs.usgs.gov/of/2004/1061/>, 32 p., 10 plates.
- Snyder, N.P.**, and Hampton, M.A., 2003, Preliminary cross section of Englebright Lake sediments, U.S. Geological Survey Open-File Report 03-397, <http://geopubs.wr.usgs.gov/open-file/of03-397/>, 1 plate.
- Childs, J.R., **Snyder, N.P.**, Hampton, M.A., 2003, Bathymetric and geophysical surveys of Englebright Lake, Yuba-Nevada Counties, California, U.S. Geological Survey Open-File Report 03-383, <http://geopubs.wr.usgs.gov/open-file/of03-383/>, 20 p.
- Hampton, M.A., **Snyder, N.P.**, Chin, J.L., Allison, D.W., and Rubin, D.M., 2003, Bed-sediment grain-size and morphologic data from Suisun, Grizzly, and Honker Bays, CA, 1998-2002, U.S. Geological Survey Open-File Report 03-250, <http://geopubs.wr.usgs.gov/open-file/of03-250>.
- Snyder, N.P.**, 1998, Map of recharge and discharge areas for the principal valley-fill aquifer, Sevier Desert, Millard County, Utah, Utah Geological Survey Map 175, 21 p.
- Snyder, N.P.**, and Lowe, M., 1998, Map of recharge and discharge areas for the principal valley-fill aquifer, Sanpete Valley, Sanpete County, Utah, Utah Geological Survey Map 174, 21 p.
- Snyder, N.P.**, and Lowe, M., 1998, Map of recharge areas for the principal valley-fill aquifer, Ogden Valley, Weber County, Utah, Utah Geological Survey Map 176, 16 p.

**Snyder, N.P.**, 1996, Recharge area and water quality of the valley-fill aquifer, Castle Valley, Grand County, Utah, Utah Geological Survey Report of Investigation 229, 22 p.; and in Huffman, A.C., Jr., Lund, W.R., and Godwin, L.H. (eds.) *Geology and Resources of the Paradox Basin*, Utah Geological Association Guidebook 25, p. 395-404.

## OTHER PUBLICATIONS: REPORTS, THESES, GUIDEBOOK ARTICLES

**Snyder, N.P.**, 2016, Geomorphology of the Sheepscot River: postglacial evolution, salmon habitat and historic dams, *in* Berry, H.N., and West, D.P., editors, Guidebook for field trips along the Maine coast from Maquoit Bay to Muscongus Bay: New England Intercollegiate Geological Conference, 108th Annual Meeting, October 14-16, 2016, Bath, Maine, 326 p., [http://www.maine.gov/dacf/mgs/pubs/online/general/neigc16c\\_b3.pdf](http://www.maine.gov/dacf/mgs/pubs/online/general/neigc16c_b3.pdf).

Larsen, L., Hajek, E., Maher, K., Paola, C., Merritts, D., Bralower, T., Montañez, I., Wing, S., **Snyder, N.P.**, Hochella, M., Kump, L., and Person, M., 2015, Taking the pulse of the Earth's surface systems, *Eos*, v. 96, doi:10.1029/2015EO040525.

**Snyder, N.P.**, and Collins, M.J., 2014, Geomorphic response to the removal of the Merrimack Village Dam on the Souhegan River, New Hampshire: results from six years of monitoring, *in* Thompson, M.D., Guidebook to Fieldtrips in Southeastern New England (MA-NH-RI), New England Intercollegiate Geologic Conference, October 10-12, 2014.

Merritts, D., Hilley, G., Arrowsmith, J.R., Carter, B., Dietrich, W., Jacobs, J., Martel, S., Roering, J., Shrestha, R., and **Snyder, N.P.**, 2009, *Workshop on Studying Earth Surface Processes with High-Resolution Topographic Data*, Report to the National Science Foundation.

**Snyder, N.P.**, 2004, Annual Highlights: Geomorphology, *Geotimes*, v. 49, n. 7, p. 22, [http://www.geotimes.org/july04/high\\_geomorph.html](http://www.geotimes.org/july04/high_geomorph.html).

**Snyder, N.P.**, 2004, The topography of California, p. 3E-3F in *Topographies*, curated by Karen Moss, San Francisco Art Institute, San Francisco.

**Snyder, N.P.**, 2001, Bedrock channel response to tectonic, climatic and eustatic forcings, Ph.D thesis, Dept. of Earth, Atmospheric, and Planetary Sciences, MIT, 142 p.

Lowe, M., and **Snyder, N.P.**, 1996, Protecting ground water at its source through recharge-area mapping, *Survey Notes - Utah Geological Survey*, v. 28, n. 1, p. 6-7.

**Snyder, N.P.**, 1993, Effects of the October 30, 1991 storm on the dune area of Seawall Beach, Morse Mountain Scientific Preserve, Phippsburg, Maine, Bachelor of Science thesis, Department of Geology, Bates College, Lewiston, ME, 97 p.

## ABSTRACTS AND MEETING PRESENTATIONS (\*Boston College student coauthors)

Ames, E.\*, **Snyder, N.P.**, Merritts, D.J., Walter, R.C., Cook, T.L., and Ahamed, A.\*, 2017, A comparison of land-use and glacial controls on erosion in the northeastern United States, *Abstracts with Programs*, Geological Society of America, Northeastern Section meeting, Pittsburgh, PA, March 18-21, 2017. Also presented at Amtrak Club, Pennsylvania State University, May 2017.

Dow, S.\*, and **Snyder, N.P.**, 2017, Mapping channel changes in glacial and legacy sediment reaches of the South River, *Abstracts with Programs*, Geological Society of America, Northeastern Section meeting, Pittsburgh, PA, March 18-21, 2017.

David, C.L., **Snyder, N.P.**, and Rosario, G.M.\*, 2016, Large wood influence on stream metabolism at a reach-scale in the Assabet River, Massachusetts, *Eos, Transactions, AGU, American Geophysical Union*, San Francisco, CA, December 12-16, 2016.

Dow, S.\*, **Snyder, N.P.**, Ouimet, W.B., Martini, A.M., Yellen, B., Woodruff, J.D., and Newton, R.M., 2016, Quantifying and tracing sediment mobilized during the 20th century in the South River watershed, western Massachusetts, *Eos, Transactions, AGU, American Geophysical Union*, San Francisco, CA, December 12-16, 2016. Also presented at Amtrak Club, Pennsylvania State University, May 2017.

**Snyder, N.P.**, Johnson, K.M.\*, Waltner, M.\*, Hopkins, A.J.\*, Dow, S.\*, Ames, E.\*, Merritts, D.J., Walter, R.C., and Rahnis, M.A., 2016, Legacy sediment storage in New England river valleys: anthropogenic processes in a postglacial landscape, *Eos, Transactions, AGU, American Geophysical Union*, San Francisco, CA, December 12-16, 2016. Also presented at Amtrak Club, Pennsylvania State University, May 2017.

Johnson, K.M.\*, **Snyder, N.P.**, Merritts, D.J., and Walter, R.C., 2016, Quantifying volume of Anthropocene sediment storage in valley bottoms of selected New England watersheds, *Abstracts with Programs*, Geological Society of America, Northeastern Section meeting, Albany, NY, March 21-23, 2016.

Lisius, G.L.\*, **Snyder, N.P.**, and Collins, M.J., 2016, Vegetation community response to geomorphic and hydrologic changes following dam removal in a New England river, *Abstracts with Programs*, Geological Society of America, Northeastern Section meeting, Albany, NY, March 21-23, 2016.

- Ridge Creamer, D.\*, Baker, K.\*, David, G.L.C., and **Snyder, N.P.**, 2016, Determining stream complexity using lidar data: focusing on the presence of large wood and dams in New England streams, *Abstracts with Programs*, Geological Society of America, Northeastern Section meeting, Albany, NY, March 21-23, 2016.
- Waltner, M.P.\*, **Snyder, N.P.**, and Johnson, K.M.\*, 2016, Legacy sediment storage in the upper Charles watershed, Massachusetts, *Abstracts with Programs*, Geological Society of America, Northeastern Section meeting, Albany, NY, March 21-23, 2016.
- Moon, S., Merritts, D.J., **Snyder, N.P.**, Sanquini, A., Fosdick, J., and Hilley, G., 2015, Denudation and topographic responses of coastal drainages near the Mendocino Triple Junction region (MTJ), northern California, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 14-18, 2015.
- Snyder, N.P.**, Merritts, D.J., Walter, R.C., Feibel, S., Gigliotti, S., Hoffman, A., Johnson, K.\*, Markey, E., Waltner, M.\* and Xu, C., 2015, Comparison of Anthropocene valley-bottom sedimentation in glaciated New England and the unglaciated mid-Atlantic region: preliminary results, *Abstracts with Programs*, Geological Society of America Annual Meeting, Baltimore, MD, November 1-4, 2015. (**invited talk**)
- Snyder, N.P.**, 2015, Longitudinal variations in channel morphology in postglacial watersheds of the northeastern United States, Joint Assembly, AGU-GAC-MAC-CGU, Montreal, Canada, May 3-7, 2015. (**invited talk**)
- Lucy, C.O.\* and **Snyder, N.P.**, 2015, Measuring river geomorphic change using a small unmanned aircraft system, *Abstracts with Programs*, Geological Society of America, Northeastern Section meeting, Bretton Woods, NH, March 23-25, 2015.
- Ahamed, A.\*, **Snyder, N.P.**, and David, G.L.C., 2014, Factors influencing watershed average erosion rates calculated from reservoir sedimentation in eastern USA, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 15-19, 2014.
- Collins, M.J., Boardman, G., Banks, W., Andrews, M., Conlon, M.\*, Dillow, J., Gellis, A., Lowe, S., McClain, S., Miller, A., **Snyder, N.P.**, and Wilcock, P., 2014, Dam breach release of non-cohesive sediments: channel response and recovery rates, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 15-19, 2014.
- Hopkins, A.J.\* and **Snyder, N.P.**, 2014, Performance evaluation of four DEM-based fluvial terrace mapping methods across variable geomorphic settings: application to the Sheepscot River watershed, Maine, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 15-19, 2014.
- Snyder, N.P.**, Collins, M.J., Armistead, C.C.\*, Conlon, M.\*, David, G.L.C., Lisius, G.\*, Lucy, C.\*, Munz, K.T.\*, Pearson, A.J.\*, and Santaniello, D.J.\*, Short- to medium-term geomorphic response of the Souhegan River to the 2008 removal of the Merrimack Village Dam in southern New Hampshire, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 15-19, 2014.
- Ahamed, A.\*, **Snyder, N.P.**, and David, G.L.C., 2014, Geomorphic and land use controls on sediment yields in eastern USA, *Abstracts with Programs*, Geological Society of America, Northeastern Section meeting, Lancaster, PA, March 23-25, 2014.
- Hopkins, A.J.\* and **Snyder, N.P.**, 2013, Comparison of methods to map and measure river terraces using high-resolution airborne LiDAR data, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 9-13, 2013.
- Armistead, C.C.\* and **Snyder, N.P.**, 2013, Application of 'structure from motion' photogrammetry to river channel change studies, *Abstracts with Programs*, Geological Society of America, Northeastern Section meeting, Bretton Woods, NH, March 18-20, 2013.
- Conlon, M.\* and **Snyder, N.P.**, 2013, A hindcast comparing field observation of the response of the Souhegan River to dam removal with simulations of the Dam Removal Express Assessment Model-1, *Abstracts with Programs*, Geological Society of America, Northeastern Section meeting, Bretton Woods, NH, March 18-20, 2013.
- Snyder, N.P.**, 2013, Controls on sediment flux and channel morphology in postglacial Maine watersheds, *Abstracts with Programs*, Geological Society of America, Northeastern Section meeting, Bretton Woods, NH, March 18-20, 2013.
- Wheaton, J.M., and **Snyder, N.P.**, 2013, What do fish care about hydrogeomorphology? A survey of the latest techniques at a full range of spatial scales, *Diadromous Species Restoration Science 2013: Migration, Habitat, Species Interactions, and Management*, University of Maine, Orono, January 10-11, 2013 (**invited talk by both authors**).
- Armstrong, W.H.\*, Collins, M.J., and **Snyder, N.P.**, 2011, Trends in flood discharge and peaks over threshold per water year on climate-sensitive rivers in the northeastern United States, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 5-9, 2011.
- Snyder, N.P.**, Nesheim, A.O.\*, Wilkins, B.C.\*, and Edmonds, D.A., 2011, Predicting bed grain size in threshold channels using lidar digital elevation models, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 5-9, 2011.
- Bresney, S.\*, **Snyder, N.P.**, and Moseman-Valtierra, S., 2011, Patterns of greenhouse gas production and water quality in high and low gradient reaches of the Sheepscot River, Maine, Maine Water Conference, Augusta, ME, March 16, 2011.

- Nesheim, A.O.\*, and **Snyder, N.P.**, 2011, Geologic and geomorphic controls on bed grain size in three Maine rivers, Maine Water Conference, Augusta, ME, March 16, 2011.
- Snyder, N.P.**, 2011, Restoring geomorphic resilience in Maine rivers, Maine Water Conference, Augusta, ME, March 16, 2011.
- Kasprak, A., Magilligan, F.J., Nislow, K.H., and **Snyder, N.P.**, 2010, A lidar-derived evaluation of watershed-scale large woody debris sources and recruitment mechanisms: coastal Maine, USA, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 13-17, 2010.
- Pearson, A.J.\*, **Snyder, N.P.**, and Collins, M.J., 2010, Geomorphic response of the Souhegan River to the removal of the Merrimack Village Dam, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 13-17, 2010 (**invited talk**). Also presented at: 4<sup>th</sup> National Conference on Ecosystem Restoration, Baltimore, MD, August 1-5, 2011.
- Strouse, S.R.\*, and **Snyder, N.P.**, 2010, Do post-glacial river valleys in northern New England store mill-dam legacy sediments?, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 13-17, 2010. Also presented at: Maine Water Conference, Augusta, ME, March 16, 2011.
- Snyder, N.P.**, 2010, Stream restoration in gravel-bed rivers, *Gravel-Bed Rivers 7*, Tadoussac, Quebec, September 6-10, 2010 (**invited discussion paper**).
- Snyder, N.P.** and Nesheim, A.O.\*, 2010, Predicting reach-scale channel characteristics using lidar digital elevation models: examples from three Maine river systems, *Gravel-Bed Rivers 7*, Tadoussac, Quebec, September 6-10, 2010.
- Collins, M.J., Armstrong, W.H.\*, and **Snyder, N.P.**, 2010, Hydroclimate flood trends in New England: Insights from annual and partial duration flood series at climate-sensitive stream gages with long records, *Hydrology and Sedimentation for Changing Future*, Joint Federal Interagency Conference, Las Vegas, NV, June 27 – July 1, 2010.
- Pearson, A.J.\*, **Snyder, N.P.**, and Collins, M.J., 2010, River response to dam removal: The Souhegan River and the Merrimack Village Dam, Merrimack, NH, *Hydrology and Sedimentation for Changing Future*, Joint Federal Interagency Conference, Las Vegas, NV, June 27 – July 1, 2010.
- Armstrong, W.H.\*, Collins, M.J., and **Snyder, N.P.**, 2010, Evidence of increased flood risk in New England over the past century using statistical analysis of the partial duration series, *Abstracts with Programs*, Geological Society of America, Northeastern Section and Southeastern Section Joint Meeting, Baltimore, MD, March 13-16, 2010. Also presented at: Maine Water Conference, Augusta, ME, March 17, 2010; and Northeast Fish and Wildlife Conference, Newton, MA, April 25-27, 2010.
- Santaniello, D.J.\*, **Snyder, N.P.**, and Gontz, A.M., 2010, Using ground penetrating radar to determine the quantity of impounded sediment behind a dam, *Abstracts with Programs*, Geological Society of America, Northeastern Section and Southeastern Section Joint Meeting, Baltimore, MD, March 13-16, 2010. Also presented at SAGEEP Annual Meeting, Keystone, CO, April 11-15, 2010.
- Strouse, S.R.\*, and **Snyder, N.P.**, 2010, Controls on legacy sediment mobility in a low-gradient post-glacial river, *Abstracts with Programs*, Geological Society of America, Northeastern Section and Southeastern Section Joint Meeting, Baltimore, MD, March 13-16, 2010. Also presented at Maine Water Conference, Augusta, ME, March 17, 2010.
- Johnson, E.A.\*, and **Snyder, N.P.**, 2009, Hydraulic and geomorphic effects of large woody debris additions in the Narraguagus River watershed, coastal Maine, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 14-18, 2009.
- Kasprak, A., Magilligan, F.J., Nislow, K.H., and **Snyder, N.P.**, 2009, Evaluating the impacts of land use change on stream morphology in coastal Maine, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 14-18, 2009.
- Pearson, A.J.\*, **Snyder, N.P.**, Collins, M.J., and Santaniello, D.J.\*, 2009, River response to dam removal: the Souhegan River and the Merrimack Village Dam, Merrimack, New Hampshire, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 14-18, 2009.
- Kasprak, A., Magilligan, F.J., Nislow, K.H., and **Snyder, N.P.**, 2009, A rapid, lidar-based delineation of watershed-scale large woody debris sources, *Abstracts with Programs*, Geological Society of America Annual Meeting, Portland, OR, October 18-21, 2009.
- Johnson, E.A.\*, and **Snyder, N.P.**, 2009, Hydraulic and geomorphic effects of large woody debris additions in the Narraguagus River watershed, coastal Maine, *Abstracts with Programs*, Geological Society of America, Northeastern Section Annual Meeting, Portland, ME, March 22-24, 2009. Also presented at Restoration of Diadromous Fishes and Their Ecosystems: Confluence of Science and Restoration, University of Maine, Orono, July 22-24, 2009.

- Pearson, A.J.\*, **Snyder, N.P.**, and Collins, M.J., 2009, River response to dam removal: initial results from the Souhegan River and the Merrimack Village Dam, Merrimack, New Hampshire, *Abstracts with Programs*, Geological Society of America, Northeastern Section Annual Meeting, Portland, ME, March 22-24, 2009. Also presented at: NOAA Restoration Center, Gloucester, MA, March 10, 2009; Association of Environmental and Engineering Geologists New England Section, Chestnut Hill, MA, April 4, 2009; New Hampshire River Restoration Task Force, Concord, NH, May 26, 2009; Restoration of Diadromous Fishes and Their Ecosystems: Confluence of Science and Restoration, University of Maine, Orono, July 22-24, 2009.
- Snajczuk, P.B.\* and **Snyder, N.P.**, 2009, Using airborne lidar data to create a surficial geologic map of the upper Narraguagus River watershed, Maine, *Abstracts with Programs*, Geological Society of America, Northeastern Section Annual Meeting, Portland, ME, March 22-24, 2009.
- Wilkins, B.C.\* and **Snyder, N.P.**, 2009, Geomorphic comparison of two Atlantic coastal streams: toward a better understanding of anthropogenic impacts on Atlantic salmon spawning and rearing habitat, *Abstracts with Programs*, Geological Society of America, Northeastern Section Annual Meeting, Portland, ME, March 22-24, 2009.
- Pearson, A.J.\*, **Snyder, N.P.**, Collins, M.J., Santaniello, D.J.\*, and Gontz, A.M., 2008, Preliminary analysis of changes in the lower Souhegan River, New Hampshire due to removal of Merrimack Village Dam, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 15-19, 2008.
- Snyder, N.P.**, Wilkins, B.C.\*, and Wright, J.R., 2008, Toward a simple, DEM-based model for linking channel morphology with Atlantic salmon habitat, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 15-19, 2008.
- Snyder, N.P.**, 2008, Channel responses to climate and land-use change: applications of high-resolution topographic data in California and Maine, *Studying Earth Surface Processes with High-Resolution Topographic Data*, NSF workshop, Boulder, CO, June 15-18, 2008 (**invited talk**).
- Kasprak, A.\*, **Snyder, N.P.**, Buynevich, I.V., and Johnson, E.A.\*, 2008, Measuring sedimentation rates and land-use change in a dam-influenced lake delta: Narraguagus River, Maine, *Abstracts with Programs*, Geological Society of America, Northeastern Section Annual Meeting, Buffalo, NY, March 27-29, 2008. Also presented at *Research Forum: Atlantic Salmon and Their Ecosystems*, University of Maine, Orono, ME, January 8-9, 2008.
- Wilkins, B.C.\* and **Snyder, N.P.**, 2008, Comparison of channel morphology in two Atlantic coastal streams: preliminary results and analysis, *Abstracts with Programs*, Geological Society of America, Northeastern Section Annual Meeting, Buffalo, NY, March 27-29, 2008. Also presented at *Research Forum: Atlantic Salmon and Their Ecosystems*, University of Maine, Orono, ME, January 8-9, 2008.
- Snyder, N.P.**, Castele, M.R.\*, and Wright, J.R., 2008, Observations of bedload sediment transport in Maine rivers: implications for Atlantic salmon habitat restoration, *Research Forum: Atlantic Salmon and Their Ecosystems*, University of Maine, Orono, ME, January 8-9, 2008.
- Hazlinsky, E.J.\*, Wilkins, B.C., and **Snyder, N.P.**, 2007, Measuring changes in river geometry using aerial photographs and field surveys: Narraguagus and Sheepscot Rivers, Maine, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 10-14, 2007.
- Snyder, N.P.**, and Kammer, L.L.\*, 2007, Dynamic Adjustments in Channel Width in Response to a Forced Diversion: Gower Gulch, Death Valley National Park, California, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 10-14, 2007 (**invited talk**).
- Lopez, C.\*, Hallett, L., Aigler, B.V., Hancock, G., and **Snyder, N.P.**, 2007, Evaluation of the effectiveness of a retention pond for channel protection downstream of a suburban development, James City County, Virginia, *Abstracts with Programs*, Geological Society of America, Southeastern Section Annual Meeting, Savannah, GA, March 29-30, 2007.
- Castele, M.R.\*, and **Snyder, N.P.**, 2007, Modeling sediment transport and quantifying channel morphology of the Sheepscot River, coastal Maine, *Abstracts with Programs*, Geological Society of America, Northeastern Section Annual Meeting, Durham, NH, March 12-14, 2007. Also presented at *Maine Water Conference*, Augusta, ME, March 21, 2007.
- Hazlinsky, E.J.\*, and **Snyder, N.P.**, 2007, Documenting 20<sup>th</sup> century changes in river morphology using aerial photographs and field surveys: Narraguagus and Sheepscot rivers, Maine, *Abstracts with Programs*, Geological Society of America, Northeastern Section Annual Meeting, Durham, NH, March 12-14, 2007. Also presented at *Maine Water Conference*, Augusta, ME, March 21, 2007.
- Snyder, N.P.**, 2006, Exploiting anthropogenic “natural” experiments to measure river erosion rates and processes, *Annual Meeting Expanded Abstracts*, Geological Society of America, Philadelphia, PA, October 22-25, 2006 (**invited talk**).
- Wright, S.A., and **Snyder, N.P.**, 2006, Reconstructing reservoir stratigraphy from hydrologic history and simple transport calculations: Eglebright Lake, Yuba River, northern California, Joint Federal Interagency Conference (8th Federal Interagency Sedimentation Conference & 3rd Federal Interagency Hydrologic Modeling Conference), Reno, NV, April 2-6, 2006.



- Snyder, N.P.**, and Schultz, L.L.\*, 2005, Stream morphologic measurements from airborne laser swath mapping: Comparisons with field surveys, traditional DEMs, and aerial photographs, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 5-9, 2005 (**invited talk**).
- Schultz, L.L.\*, and **Snyder, N.P.**, Investigation of the transient response of Gower Gulch to forced diversion, Death Valley, California, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 5-9, 2005.
- Snyder, N.P.**, Alpers, C.N., Childs, J.R., Curtis, J.A., Flint, L.E., Holmes, C.W., Rubin, D.M., and Wright, S.A., 2004, Reconstructing watershed history from reservoir stratigraphy: Englebright Lake, northern California, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 15-19, 2004.
- Snyder, N.P.**, Alpers, C.N., Childs, J.R., Curtis, J.A., Flint, L.E., Holmes, C.W., Rubin, D.M., and Wright, S.A., 2004, Rates and history of sediment accumulation behind Englebright Dam, CALFED Science Conference, Sacramento, CA, October 4-6, 2004.
- Alpers, C.N., Hunerlach, M.P., Marvin-DiPasquale, M.C., **Snyder, N.P.**, and Krabbenhoft, D.P., 2004, Mercury and methylmercury in the upper Yuba River watershed: fluvial transport and reservoir sedimentation, CALFED Science Conference, Sacramento, CA, October 4-6, 2004.
- Kirby, E., **Snyder, N.P.**, Whipple, K.X., Walker, J.D., and Andrew, J., 2003, Neotectonics of the Panamint Valley fault zone: Active slip on a low-angle normal fault system, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 8-12, 2003.
- Whipple, K.X., Wobus, C.W., Kirby, E., and **Snyder, N.P.**, 2003, Tectonics from topography: methods, applications, and limitations, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 8-12, 2003.
- Snyder, N.P.**, Childs, J.R., Hampton, M.A., Rubin, D.M., Alpers, C.N., Flint, L.E., Curtis, J.A., Wright, S.A., and Topping, D.J., 2003, The history and future of sediment deposition behind Englebright Dam, Yuba River, northern California, *Annual Meeting Expanded Abstracts*, Geological Society of America, Seattle, WA, November 2-5, 2003.
- Snyder, N.P.**, 2003, Geologic setting and sedimentation: field studies on bedrock streams in coastal northern California, *Applying What we are Learning: Sedimentation in Northern California Watersheds*, University of California Cooperative Extension Sedimentation Workshop, Santa Rosa, CA, May 22, 2003 (**invited talk**).
- Snyder, N.P.**, Rubin, D.M., Alpers, C.N., Flint, L.E., Curtis, J.A., Childs, J.R., and Haskell, B.J., 2003, Preliminary results from the 2002 Englebright Lake coring project: a record of rapid sedimentation in the Yuba River system, CALFED Science Conference, Sacramento, CA, January 14-16, 2003.
- Snyder, N.P.**, Tucker, G.E., Whipple, K.X., and Merritts, D.J., 2003, The importance of a stochastic distribution of floods and erosion thresholds in the bedrock river incision problem: field application to the Mendocino triple junction region, *Tectonics, Climate, and Landscape Evolution*, Geological Society of America Penrose Conference, Taroko National Park, Taiwan, January 13-17, 2003.
- Snyder, N.P.**, Tucker, G.E., Whipple, K.X., and Merritts, D.J., 2002, Modeling the influence of sea-level fluctuations on fluvial morphology in tectonically active coastal regions, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 6-10, 2002.
- Snyder, N.P.**, Rubin, D.M., Alpers, C.N., Flint, L.E., Curtis, J.A., Childs, J.R., and Haskell, B.J., 2002, A record of rapid fluvial sedimentation in the Sierra Nevada hydraulic-mining region: Preliminary results from the 2002 Englebright Lake coring project, *Annual Meeting Expanded Abstracts*, Geological Society of America, Denver, CO, October 27-30, 2002.
- Snyder, N.P.**, Whipple, K.X., and Tucker, G.E., 2001, Modeling stochastic floods and erosion thresholds in bedrock rivers: Field data from northern California, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 10-14, 2001.
- Snyder, N.P.**, Whipple, K.X., and Tucker, G.E., 2000, The influence of a stochastic distribution of storms and a critical shear stress for detachment on the relation between steady-state bedrock channel gradient and rock-uplift rate, *Annual Meeting Expanded Abstracts*, Geological Society of America, Reno, NV, November 12-16, 2000.
- Snyder, N.P.**, Tucker, G.E., Whipple, K.X., and Merritts, D.J., 2000, Channel response to tectonic forcing: field-based analysis of channel morphology in the Mendocino triple junction region, northern California, International Binghamton Geomorphology Symposium, Binghamton, NY, October 13-15, 2000. (**invited talk**)
- Snyder, N.P.**, Tucker, G.E., Whipple, K.X., and Merritts, D.J., 1999, Evaluation of the shear-stress bedrock incision model in an area of variable rock-uplift rates, *Eos, Transactions, AGU*, American Geophysical Union, San Francisco, CA, December 13-17, 1999.
- Snyder, N.P.**, Tucker, G.E., Whipple, K.X., and Merritts, D.J., 1999, Evidence for an equilibrium between main-trunk-channel incision and tectonic uplift: Mendocino triple junction region, northern California, *Annual Meeting Expanded Abstracts*, v. 31, n. 7, p. 444-445, Geological Society of America, Denver, CO, October 24-28, 1999.

- Snyder, N.P.**, Tucker, G.E., Whipple, K.X., and Merritts, D.J., 1999, Comparison of Slope-Area Datasets From Coastal Streams in the Mendocino Triple Junction Region, Northern California: Implications for Channel Concavity in an Area of Variable Rock-Uplift Rates, *Eos, Transactions, AGU*, v. 80, n. 17, p. S126, American Geophysical Union, Boston, MA, June 1-4, 1999.
- Snyder, N.P.**, Hodges, K.V., Krol, M.A., 1998, Depositional and tectonic evolution of an extensional basin revealed through  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology; the Nova Basin, Panamint Mountains, California, *Abstracts with Programs*, v. 30 n. 7, p. 234, Geological Society of America, Toronto, ON, Canada, October 26-29, 1998.
- Snyder, N.P.**, and Whipple, K.X., 1998, New constraints on bedrock channel response to varying uplift, King Range, California, *Annual Meeting Expanded Abstracts*, American Association of Petroleum Geologists, Salt Lake City, UT, United States, May 17-20, 1998.
- Dollenmayer, K., Whipple, K.X., and **Snyder, N.P.**, 1997, Rates and processes of bedrock channel incision along the upper Ukak River, Valley of Ten Thousand Smokes, AK, *Eos, Transactions, AGU*, v. 78, n. 26, p. F299, American Geophysical Union, San Francisco, CA, December 8-12, 1997.
- Snyder, N.P.**, and Lowe, M., 1996, Recharge and discharge areas for the principal valley-fill aquifer, Sanpete Valley, Sanpete County, Utah, *Abstracts with programs*, v. 28, n. 4, p. 38, Geological Society of America, Rocky Mountain Section, 48th annual meeting, Rapid City, SD, April 18-19, 1996.
- Snyder, N.P.**, 1993, Effects of the October 30, 1991 storm on the dune area of Seawall Beach, Morse Mountain Scientific Preserve, Phippsburg, Maine, *Abstracts with Programs*, v. 25 n. 2, p. 80, Geological Society of America, Northeastern Section, 28th annual meeting, Burlington, VT, March 22-24, 1999.

## INVITED LECTURES

- Boston College, Weston Geophysical Observatory, October 19, 2016
- COG<sup>3</sup> Seminar, MIT, October, 16, 2015
- Department of Geosciences, Williams College, April 14, 2015
- Center for Integrative Geosciences, University of Connecticut, October 14, 2014
- Environmental Sciences Seminar Series, University of New Hampshire, November 15, 2013
- Geography, Environment and Development Studies, Victoria U. of Wellington, NZ, May 3, 2012
- New Zealand Geoscience Society, Canterbury Branch, Christchurch, March 27, 2012
- University of Canterbury, New Zealand, Hydro. and Ecological Engineering, March 8, 2012
- University of Canterbury, New Zealand, Dept. of Geological Sciences, October 3, 2011
- NOAA Restoration Center, Gloucester, MA, March 10, 2009
- Bridgewater State College, Geology Club Lecture, March 5, 2009
- Boston College, Boisi Center for Religion and American Public Life, February 4, 2009
- College of the Holy Cross, Environmental Studies and Biology Seminar, April 15, 2008
- University of Maine, Orono, Dept. of Earth Sciences, March 22, 2007
- University of Massachusetts, Amherst, Dept. of Geosciences, December 1, 2006
- Association of Engineering Geologists, Northeast Section, Woburn, MA, February 16, 2006
- Rensselaer Polytechnic Institute, Dept. of Earth and Environmental Sciences, October 26, 2005
- Boston College, Weston Geophysical Observatory, November 10 and 17, 2004
- USGS Coastal and Marine Geology Team, Santa Cruz and Menlo Park, April 15 and 27, 2004
- Cornell University, Dept. of Earth and Atmospheric Sciences, April 8, 2003
- University of Montana, Dept. of Geology, March 17-18, 2003
- Rice University, Dept. of Earth Sciences, March 3, 2003
- Boston College, Dept. of Geology and Geophysics, February 27-28, 2003
- San Francisco State University, Dept. of Geosciences, February 21, 2003
- Oregon State University, Geosciences Dept., February 13, 2003
- UCSC, Institute of Marine Sciences, January 29, 2003
- USGS Coastal and Marine Geology Team, Menlo Park, CA, July 25, 2002
- Dartmouth College, Dept. of Earth Sciences, January 31-February 1, 2002
- Boston Bay Group, Cambridge, MA, May 16, 2001
- UCSC, Institute of Marine Sciences, April 16, 2001
- University of Virginia, Dept. of Environmental Sciences, February 27, 2001
- Middlebury College, Geology Dept., January 11, 2001
- Bates College, Geology Dept., February 2, 2000

## TEACHING

### COURSES TAUGHT AT BOSTON COLLEGE

**Exploring the Earth** (GE132-GE133-GE136, 4 credits, 35-56 students, Fall 2004-2010; 2012)

First semester of the introductory course for Geology and Geophysics majors, and core students seeking a rigorous introduction to Earth science. Readings from a textbook and recent journal articles. Included one or two Saturday fieldtrips designed to emphasize field observations and problem solving. Grading based on tests, fieldtrip reports and laboratory. Usually co-taught with another professor.

**Rivers and the Environment** (GE170/EESC1170, 3 credits, 45-240 students, Spring 2005-2007, 2009-2010; Fall 2013-2015)

Core course geared for non-science majors. Readings selected from textbooks, recent journal articles and popular nonfiction. Included a one-day fieldtrip to the Quabbin Reservoir in central Massachusetts. Grading based on papers, exercises (short essays and calculations), class participation, and midterm and final examinations. Was the first natural science course to participate in the pilot Writing Fellows Program (in 2006 and 2007).

**Environmental Systems: Human Footprint** (EESC2201+EESC2211, 2 credits, 25-56 students, Fall 2010, 2012, 2013, Spring 2017)

Introductory course for Environmental Geoscience majors and Environmental Studies minors. Readings selected from a textbook, recent journal articles and popular nonfiction. Grading based on lab projects (reports and calculations), class participation, and midterm and final examinations.

**Environmental Systems: Water Resources** (EESC22031+EESC2213, 2 credits, 29 students, spring 2017)

Introductory course for Environmental Geoscience majors and Environmental Studies minors. Readings selected from a textbook, recent journal articles and popular nonfiction. Grading based on lab projects (reports and calculations), class participation, and midterm and final examinations.

**Geomorphology and Landscape Change** (EESC4400-EESC4401, 4 credits, 13-20 students, Spring 2006, 2014, 2016; Fall 2007, 2009)

Taught to majors and graduate students. Readings from a textbook and recent journal articles. Centered on a series of 6 multiweek field and computer lab projects designed to teach quantitative methods, problem-solving skills, and scientific report writing, using the campus as a field site. Grading based on lab projects, a midterm, a take-home final exam, and participation.

**Remote Sensing and Image Interpretation** (EESC4490, 3 credits, 8-20 students, Fall 2006; Spring 2009, 2013, 2015; Fall 2016)

Taught to majors and graduate students. Readings selected from textbooks and recent journal articles. Centered on a series of 7 image-analysis projects using a variety of methodologies and technologies.

**Environmental Seminar** (GE580, 3 credits, 29-51 students, Spring 2007, 2010, 2011)

Final seminar for Environmental Studies minors. Co-taught. Grading based on written assignments, final group presentations and class participation. Discussed topic-specific assigned readings, including contemporary books and articles. Teams of 3-5 students were responsible for leading the discussion each week.

**Earth Systems Seminar** (GE692 or GE693, 3 credits, 9-12 students, Fall 2005 and 2009)

Co-taught with Professor Gail Kineke. Focused on training in research skills for new graduate students in Geology and Geophysics. Included a fieldtrip following the Merrimack River in New Hampshire and Massachusetts. Grading based on problem sets and written assignments, a final research proposal and oral presentation, and class discussions of recent scientific literature.

**Seminar in Geology: Tectonic Geomorphology** (GE794, 3 credits, 6 students, Fall 2004)

**Readings and Research in Environmental Geoscience** (GE596); **Readings and Research in Geology** (GE597 and GE799); **Advanced Independent Research** (GE599); **Thesis Seminar** (GE801)

**Environmental Studies Introductory Seminar** (ENVS1100, 1 credit, 15 students, Fall 2014-2016)

## STUDENT MENTORING AT BOSTON COLLEGE

### M.S. STUDENTS

**Kaitlin Johnson; Samantha Dow; Elisabeth Ames** (current)

**Caleb Lucy**, graduated 2015, *Rapid acquisition of low cost high-resolution elevation datasets using a small unmanned aircraft system: an application for measuring river geomorphic change*

**Aakash Ahamed**, graduated 2014, *Geomorphic and land use controls on sediment yield in eastern USA*

**Austin Hopkins**, graduated 2014, *A comparison of DEM-based methods for fluvial terrace mapping and sediment volume calculation: application to the Sheepscot River watershed, Maine*

**Benjamin Daniels**, graduated 2014, *Effects of climate nonstationarity on low-flow models for southern New England*

**Maricate Conlon**, graduated 2013, *A hindcast comparing the response of the Souhegan River to dam removal with the simulations of the Dam Removal Express Assessment Model-1*

**Stephanie Strouse**, graduated 2013, *The effect of millponds on sedimentation in a post-glacial mid-coast Maine river valley*

**Andrew Nesheim**, graduated 2011, *Predicting bed grain size in Maine rivers using lidar topographic data*

**Adam Pearson**, graduated 2010, *River response to dam removal: case study of the Souhegan River and the removal of the Merrimack Village Dam, Merrimack, New Hampshire*

**Elizabeth Johnson**, graduated 2009, *Hydraulic and geomorphic effects of large woody debris additions in the Narraguagus River watershed, coastal Maine*

**Benjamin Wilkins**, graduated 2009, *Geomorphic comparison of two Atlantic coastal rivers: toward an understanding of physical controls on Atlantic salmon habitat*

**Michael Castele**, graduated 2007, *Modeling sediment transport and quantifying channel morphology of the Sheepscot River, coastal Maine*

**Lisa Schultz**, graduated 2005, *Investigation of the transient response of Gower Gulch to forced diversion, Death Valley, California*

### B.S. THESIS SUPERVISION

**Grace Lisius**, graduated 2016, *Vegetation community response to hydrologic and geomorphic changes following dam removal in a New England River*; Scholar of the College thesis; McCarthy Prize winner

**Mason Waltner**, graduated 2016, *Quantifying legacy sediment in the upper Charles River watershed, Massachusetts*

**Jae Jin Han**, graduated 2014, *Understanding the past, present, and future flood risks on Boston College campus in relation to development*

**Corrine Armistead**, graduated 2013, *Applications of 'structure from motion' photogrammetry to river channel change studies*

**Susan Bresney**, graduated 2011, *Patterns of greenhouse gas production and water quality in high and low gradient reaches of the Sheepscot River, Maine*

**Billy Armstrong**, graduated 2010, *Trends in New England flood magnitude and frequency revealed by partial duration flood series analyses of long gauge records*

**David Santaniello**, graduated 2010, *Using ground penetrating radar to determine the quantity of sediment stored behind the Merrimack Village Dam, New Hampshire*

**Peter Snajczuk**, graduated 2009, *Using airborne lidar data to create a surficial geologic map of the upper Narraguagus River watershed*

**Alan Kasprak**, graduated 2008, *Measuring sedimentation rates and land-use change in a dam-influenced lake delta: Narraguagus River, Maine*

**Cristina Lopez**, graduated 2007, *The evaluation of the effectiveness of retention ponds at stormwater control and downstream channel protection*

**Michele Gryga**, graduated with honors 2006, *Controls on water temperature in the Sheepscot River, Maine*

## SERVICE ACTIVITIES AT BOSTON COLLEGE

### DEPARTMENT OF EARTH AND ENVIRONMENTAL SCIENCES

- Study-abroad advisor (2012-present).
- Member of the department Undergraduate Studies Committee (2004-present). Director (2009-2011; 2016-). Assessed and developed a new curriculum for all undergraduate majors.
- Member of six faculty search committees. Organized and conducted informal interviews with top candidates (selected from the pool) during the American Geophysical Union meeting in San Francisco (December 2004, 2005, 2008, 2009, 2011, 2012 and 2016). Chaired the Sedimentary Processes (2012-13) and Environmental Systems Modeling (2016-17) search committees.
- Faculty coordinator of the department lecture series committee (2004-2010). Brought 5-10 speakers to campus each year.
- Co-organized the William Morris Davis Lecture, an annual event hosted at a Boston-area university (2007-present). BC hosted the lecture by Prof. Dorothy Merritts on October 17, 2008.
- Participated in *Strengthening Your Geoscience Program: A Practical Workshop with Ideas and Examples* (College of William and Mary, Williamsburg, VA, June 2-4, 2009).
- Participated in the *Early Career Faculty Workshop: Teaching, Research, and Managing Your Career*, part of the *NSF On the Cutting Edge* program (College of William and Mary, Williamsburg, VA, June 8-13, 2005).
- Gave presentations on the department during Admitted Students Weekends (2005-present).
- Organized information sessions during advising period for majors and minors in the department (2005-present).
- M.S. thesis committee member for Tracey Arvin, Matthew Brennan, Alana Burton, Maria Crosby, Kristy Heath, Alexandra Koester, Ellen Kristiansen, Katie LaVallee, Michelle Lermon, Ross Markwort, James Pyburn, Michael Robbins, Lisa Schultz, Kevin Simans, Misty Stroud, Kendall Valentine, and Jia Yan.

### COLLEGE OF ARTS AND SCIENCES

- Chaired a search for an Associate Director of the Environmental Studies Program and Professor of the Practice in Earth and Environmental Sciences (2015).
- Represented the Earth and Environmental Sciences Department to the University Core Renewal Committee (2015-16).
- Appointed director of the Environmental Studies Program (2010-present). Conducted a review and revision of the Environmental Studies minor curriculum (2010-2011). Created and launched a new, interdisciplinary Environmental Studies Major (2012-2014), featured in the "Linden Lane" section of the *BC Magazine* (Fall 2014 issue). Organized special events (lectures, film screenings, conferences, art exhibits) on campus.
- Evaluated candidates for tenure-track searches related to Environmental Studies in the Economics and History departments (2015).
- Non-voting member of the search committee for a Sociology-Environmental Studies open-rank faculty position (2014).
- Evaluated candidates for the Biology Department non-tenure track faculty search (2013).

- Reviewed Dean's Scholar applications (2011).
- Revised the curriculum of *Rivers and the Environment* (GE 170, core) to be the first natural science course in the pilot BC Writing Fellows Program. The course included two short writing assignments that build toward a final paper. Each of these assignments was revised by the students in consultation with the writing fellows (Spring 2006 and 2007).
- Organized Geology and Geophysics department presentation for the Parent's Weekend undergraduate research poster session (2004-2008).
- Officially advised 3-15 students per year (2005-present).

## UNIVERSITY

- Participated in a panel on environment and economics at the All Development Retreat (August 2016).
- Participated in the Boston College Accreditation Self Study, Committee on Organization & Governance (2015-2017).
- Co-organized the *Our Common Home* Conference (September 28 – October 1, 2015). Included obtaining a \$25,000 grant from the Institute for Liberal Arts. An interdisciplinary working group continues (2015-present).
- Appointed to the Core Foundations Task Force (2014-2015).
- Appointed to the International Programs Committee (2012-present).
- Represented BC at Council of Environmental Deans and Directors meetings (June 2013, January 2014, June 2014, June 2015).
- Co-organized the Boston College Sesquicentennial Symposium, *Energy: From the Last to the Next 150 Years* (October 25, 2013). Moderated one of the panel discussions.
- Participant in the evening Thresholds seminar series for mid-career faculty (2011-present). Gave a research talk on my sabbatical year in New Zealand (October 2012).
- Presidential Scholars Program faculty mentor for Ryan Beck, a double major in CSOM (Finance) and Environmental Geoscience (2007-2010), and Michael Cuttler, a Geology major (2009-2011). Conducted interviews for the program (2016).
- Co-organized the BC Energy and Environment Alumni Network (BCEEAN) *Excelling at Sustainability Conference* (April 15-16, 2011).
- Participated in the Junior Scholars in Conversation monthly meeting series (2006-2009).
- Participant in the *Liberal Education and Beyond* working group of the university Institute for Liberal Arts (2008-2009).
- Participant in the *Ways of Knowing* working group of the university *Catholic Intellectual Traditions* initiative (2008-2009). Gave a public talk at the Boisi Center for Religion and American Public Life (February 4, 2009; [http://www.bc.edu/centers/boisi/publicevents/current\\_semester/snyder.html](http://www.bc.edu/centers/boisi/publicevents/current_semester/snyder.html)).
- Participated in the *Ethics and Sustainability of the Earth* conference, hosted by the Jesuit Institute (March 2009).
- Gave a presentation on NSF-CAREER award to the BC Board of Trustees Academic Affairs Committee (March 9, 2007).
- Participated, with 11 other professors from Atlantic Coast Conference universities, on a three-week trip to meet with researchers in Vietnam and China centered around the subject "Water resources research in major watersheds in southeast Asia" (June 2006).
- Participated in the AnDover Faculty Weekend on Teaching (April 2005).
- Member of SustainBC (2007-2011).

## PROFESSIONAL COMMUNITY SERVICE

- Led a fieldtrip on Sheepscot River geomorphology at the 108<sup>th</sup> annual New England Intercollegiate Geologic Conference (October 2016).

- Co-led a fieldtrip on the Souhegan River, New Hampshire for a professional short course, *Using Fluvial Geomorphology in Watershed Assessment and Stream Restoration* (April 2016).
- Co-led a session at a Stream Restoration workshop for Project Share (Bangor, Maine, January 2016).
- Co-organized a session on *Pleistocene to Anthropocene Landscape Evolution in the Northeastern U.S.* at the Northeastern Section, Geological Society of America meeting (March 2015 and 2016).
- Ph.D thesis committee member for: William Ouimet at MIT (2007); Eric Bilderback at the University of Canterbury (2012); Paul Richardson at MIT (2013-2015); Amani Al Abri (BU, 2016-).
- M.S. thesis committee member for Noah Slovin at UMass Amherst (2013-2015).
- Member of the Massachusetts Fluvial Geomorphology Task Force (2013-present).
- External Reviewer of the Environmental Studies Program at the University of Oregon (May 2015).
- Co-lead fieldtrips on the Souhegan River in New Hampshire for the 106<sup>th</sup> New England Intercollegiate Geological Conference (October 12, 2014) and the New Hampshire Geological Society (July 11, 2015).
- Participated in a NSF-sponsored workshop on *Research Infrastructure in Support of NSF-Surface Earth Processes Grand Challenges* (Chicago, October 5-7, 2014). Helped with preparation of a white paper.
- Panelist for the NSF Geomorphology and Land-Use Dynamics Program (2014).
- Participated in planning meetings for the Narraguagus River Restoration Project (Maine; March and December 2014).
- Participated in Fluvial Geomorphology Workshop at the Massachusetts Water Resources Research Center (October 2012).
- Presented research on dam removal at the New Hampshire River Restoration Task Force meeting, Concord, NH (September 2012).
- Named a Geological Society of America Exceptional Reviewer for 2011 for work on *GSA Today*.
- Visiting scholar, Geological Sciences Department, University of Canterbury, Christchurch, New Zealand (2011-2012).
- Core network participant on the NSF-funded Diadromous Species Restoration Research Network, which brings together multidisciplinary researchers working on ecosystem restoration in northern New England (2008-2014). Helped organized science conferences in Orono, Maine (July 2009 and January 2013). Participated in research workshops (April 2010 and May 2011).
- Reviewed 30 student proposals for GSA Quaternary Geology and Geomorphology Division Mackin and Howard awards (2011).
- Presented research at a meeting on *Streambank Stabilization, Flow Redirection and Stream Enhancement* organized by the U.S Fish and Wildlife Service and Natural Resources Conservation Service (June 2011).
- Co-organized a semi-weekly evening seminar with faculty, researchers and students from Boston College, Boston University and MIT (February-May 2011).
- Co-chaired a session on *River Restoration in Maine and the Region* at the Maine Water Conference in Augusta (March 2011).
- Appointed to a three-year term on the Steering Committee of the National Center for Airborne Laser Mapping (NCALM, <http://www.ncalm.org>, 2008-2010). Committee chair (2009).
- Acted as a formal discussant on river restoration at the 7<sup>th</sup> Gravel-Bed Rivers Conference in Tadoussac, Quebec, Canada (September 2010).
- Co-organized a NSF-sponsored workshop on *New Tools in Process-Based Analysis of Lidar Topographic Data*, in Boulder, CO (June 1-2, 2010). ([http://www.opentopography.org/index.php/resources/short\\_courses/lidar2\\_2010/](http://www.opentopography.org/index.php/resources/short_courses/lidar2_2010/)).



- Co-chaired a session on *Habitat restoration in North Atlantic watersheds* at the Northeastern Section of the Geological Society of America meeting and Maine Water Conference in Portland, Maine (March 2009).
- Member of two interdisciplinary task forces related to river restoration in Maine: the Penobscot River Science Steering Committee and the Atlantic Salmon Recovery Habitat Work Group. Also a member of the Hydrology and Hydraulics subcommittee for the Penobscot River project. (2005-2008; <http://www.penobscotriver.org/> and [http://www.nero.noaa.gov/prot\\_res/altsalmon/](http://www.nero.noaa.gov/prot_res/altsalmon/)).
- Co-chaired a session on *Quaternary landscape changes: sedimentary and geomorphic records* at the Northeastern Section of the Geological Society of America meeting in Buffalo (March 2008).
- Hosted a meeting on Massachusetts rivers with researchers from the NOAA Restoration Center, Massachusetts Riverways, American Rivers, and the College of Holy Cross (February 2008).
- Panel member for two meetings of the NSF Geomorphology and Land Use Dynamics program. Reviewed and provided recommendations on ~45 proposals at each panel meeting (2007).
- Participated (with 4 students) in a field campaign at the Merrimack Village Dam in southern New Hampshire with scientists and land managers from the NOAA Restoration Center, NH state agencies, Gomez and Sullivan consultants, and American Rivers (August 2007).
- Participated in a meeting on *Fluvial Geomorphology and Salmon Habitat on the Narraguagus River* led by the Maine Atlantic Salmon Commission and Project SHARE. Provided input, based on research findings, on two river restoration plans presented by consultants (April 2007).
- Provided input on restoration strategies for the Sheepscot River with representatives from the Sheepscot Valley Conservation Association, Kleinschmidt Consultants and the U.S. Fish and Wildlife Service (January 2007).
- Member of the agency team of the Upper Yuba River Studies Program, a stakeholder-driven, land-use decision-making process (California, 2001-2006).
- Chaired a session on *Managed rivers as large-scale experiments in geomorphic processes* at the AGU Fall meeting in San Francisco (December 2004).
- Acted as an external reviewer for 5-10 manuscripts per year for journals including *Earth Surface Processes and Landforms*, *Geology*, *Geological Society of American Bulletin*, *Geomorphology*, *Journal of Geophysical Research*, *Nature*, *River Research and Applications*, *Water Resources Research* (2001-present).
- Acted as an external reviewer for 4-10 proposals per year for the National Science Foundation and other funding organizations (2005-present).
- Member of the American Geophysical Union (1996-present, <http://www.agu.org/>).
- Member of the Geological Society of America (1996-present, <http://www.geosociety.org/>).