

Patrick Belmont, Ph.D.

*Associate Professor, Department of Watershed Sciences, Utah State University,
Research Associate, Utah State University Ecology Center
Adjunct Faculty, Geography Department, Minnesota State University Mankato
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RESEARCH AND TEACHING INTERESTS

My scientific interests span hydrology and geomorphology with an emphasis on landscape and river channel change over geologic and human timescales. Specifically, my research involves development of water and sediment budgets, numerical modeling of sediment transport, geochemical sediment fingerprinting, mathematical modeling of fluvial and hillslope geomorphology, quantitative landscape morphometric analysis, and use of terrestrial cosmogenic nuclides to study Earth-surface processes.

EMPLOYMENT

Associate Professor, Department of Watershed Sciences and Ecology Center
Utah State University, July 2015 – current

Assistant Professor, Department of Watershed Sciences and Ecology Center
Utah State University, December 2009 – current

Lecturer, Department of Civil Engineering
University of Minnesota, January 2009 – May 2009

Postdoctoral Research Associate, National Center for Earth-surface Dynamics
University of Minnesota, July 2007 – December 2009

EDUCATION

Lehigh University, Bethlehem, PA
Ph.D. in Earth and Environmental Sciences, Geomorphology emphasis *Advisor*: Dr. Frank J. Pazzaglia
Dissertation Title: Landscape Evolution and Aquatic Ecology: Long-term Sediment Dynamics and Landscape Influences in Stream Ecosystems. August 2003 – August 2007

Lehigh University, Bethlehem, PA
M.S. in Earth and Environmental Sciences, Ecology emphasis *Advisor*: Dr. Don P. Morris
Thesis Title: An initial inspection of the transparency of streams to ultraviolet radiation in 16 small Pennsylvania watersheds. July 2001 – July 2003

Texas Christian University, Fort Worth, TX
B.S. in Biology, Molecular biology emphasis
Senior Thesis Title: The effects of catalase activity on the life span of *Caenorhabditis elegans*.
September 1996 – May 2000

Kumar, P., Le, P.V.V., Papanicolaou, A.N.T., Rhoads, B.L., Anders, A.M., Stumpf, A., Wilson, C.G., Bettis III, E.A., Blair, N., Ward, A.S., Filley, T., Lin, H., Keefer, L., Keefer, D.A., Lin, Y., Muste, M., Royer, T., Fofoula-Georgiou, E., and **Belmont, P.** (*in review*) Anthropogenically Constrained Self-Organizing Critical Zones of Intensively Managed Agricultural Landscapes. Submitted to Proceedings of the National Academy of Sciences.

Kumarasamy, K. and **Belmont, P.** (*in review*) Multiple domain evaluation of watershed hydrology models. Submitted to Hydrology and Earth System Sciences.

Vaughan, A.A., **Belmont, P.**, Hawkins, C.P., Wilcock, P.R., (*in review*) Discharge-Suspended sediment relations: Near-channel environment controls shape and steepness, land use controls median and low flow conditions. Submitted to Journal of Geophysical Research.

Kelly, S., Takbiri, Z., **Belmont, P.**, Fofoula-Georgiou, E. (*in review*) Human amplified changes in precipitation-runoff patterns in large river basins of the Midwestern United States. Submitted to Hydrology and Earth System Sciences.

Yan, Q., Iwasaki, T., Stumpf, A., **Belmont, P.**, Parker, G., Kumar, P. (*in review*) Hydrogeomorphological characterization of alluvial river valleys in glaciated landscapes: floodplain versus terrace. Submitted to Earth Surface Processes and Landforms.

Lenhart, C.F., Smith, D.J., Lewandowski, A., **Belmont, P.**, Nieber, J.L., Gunderson, L. (*in review*) Reduction of sediment pollution from the river corridor of the Minnesota River watershed: Sources and strategies. Submitted to Journal of Water Resources Planning and Management.

Lauer, J.W., Echterling, C., Lenhart, C., **Belmont, P.**, Rausch, R. (*in review*) Air-photo based change in channel width in the Minnesota River basin: Modes of adjustment and implications for sediment budget. Submitted to Geomorphology.

29. Call, B., **Belmont, P.**, Schmidt, J.C., Wilcock, P.R. (*in review*) Changes in Floodplain Inundation under Non-Stationary Hydrology for an Adjustable, Alluvial River Channel. Submitted to Water Resources Research.

28. Czuba, J.A., Fofoula-Georgiou, E., Gran, K.B., **Belmont, P.**, Wilcock, P.R., (*in review*) Interplay between Spatially Explicit Sediment Sourcing, Hierarchical River Network Structure, and In-Channel Bed-Material Sediment Transport and Storage Dynamics. Submitted to Journal of Geophysical Research-Earth Surface.

27. **Belmont, P.**, and Fofoula-Georgiou, E. (2017) Solving water quality problems in agricultural landscapes: new approaches for these nonlinear, multi-process, multi-scale systems. Water Resources Research.

26. Fofoula-Georgiou, E., **Belmont, P.**, Wilcock, P.R., Gran, K.B., Finlay, J., Kumar, P., Czuba, J.A., Schwenk, J., and Takbiri, Z. (2016) Comment on "Climate and agricultural land use change impacts on streamflow in the upper midwestern United States" by Gupta et al. Water Resources Research. 52(9), 7536-7539. [IF: 3.709]

25. **Belmont, P.**, Stevens, J.R., Czuba, J.A., Kumarasamy, K., Kelly, S.A. (2016) Comment on “Climate and agricultural land use change impacts on streamflow in the upper midwestern United States” by Gupta et al. *Water Resources Research*. 52(9), 7523-7528. [IF: 3.709]
24. Schaffrath, K.R., **Belmont, P.**, Wheaton, J.M. (2015) Landscape-scale geomorphic change detection: Quantifying spatially variable uncertainty and circumventing legacy data issues. *Geomorphology*, 250, 334-348. [IF: 2.813]
23. Passalacqua, P., **Belmont, P.**, Staley, D.M., Simley, J.D., Arrowsmith, J.R., Bode, C.E., Crosby, C., DeLong, S.B., Glenn, N.F., Kelly, S.A., Lague, D., Sangireddy, H., Schaffrath, K.R., Tarboton, D.G., Wasklewicz, T., Wheaton, J.M. (2015) Analyzing high resolution topography for advancing the understanding of mass and energy transfer through landscapes: A review. *Earth Science Reviews*. 148, 174-193. [IF: 7.14]
22. Gangodagamage, C., Foufoula-Georgiou, E., **Belmont, P.** (2014) River basin organization around the main stem: Scale invariance in tributary branching and the incremental area function. *Journal of Geophysical Research: Earth Surface*, 119(10), 2174-2193. [IF: 3.44]
21. **Belmont, P.**, Willenbring, J.K., Schottler, S.P., Marquard, J., Kumarasamy, K., Hemmis, J. (2014) Toward generalizable sediment fingerprinting with tracers that are conservative and non-conservative over sediment routing timescales. *Journal of Soils and Sediments*. 14 (8), 1479-1492. DOI: 10.1007/s11368-014-0913-5 [IF: 2.107]
20. Stout, J. C., **Belmont, P.**, Schottler, S. P., & Willenbring, J. K. (2014) Identifying Sediment Sources and Sinks in the Root River, Southeastern Minnesota. *Annals of the Association of American Geographers*, 104(1), 20-39. [IF: 2.11]
19. Stout, J. and **Belmont, P.** (2014) TerEx Toolbox for semi-automated selection of fluvial terrace and floodplain features from lidar. *Earth Surface Processes and Landforms*, 39(5), 569-580. [IF: 2.49]
18. Schottler, S.P., Ulrich, J., **Belmont, P.**, Moore, R., Lauer, J.W., Engstrom, D.R. (2014) Twentieth century agricultural drainage creates more erosive rivers. *Hydrological Processes*. DOI: 10.1002/hyp.9738 [IF: 2.49]
17. Gran, K.B., Finnegan, N., Johnson, A.L., **Belmont, P.**, Wittkop, C., Rittenour, T. (2013) Landscape evolution, valley excavation, and terrace development following abrupt postglacial base level fall. *GSA Bulletin*. 125(11-12), 1851-1864. [IF: 3.79]
16. Maalim, F.K., Melesse, A.M., **Belmont, P.**, Gran, K. (2013) Modeling the impact of land use changes on runoff and sediment yield in the Le Sueur watershed, Minnesota using GeoWEPP. *Catena*. 107: 35-45. [IF: 1.89]
15. Day, S.S., Gran, K.B., **Belmont, P.** (2013) Measuring bluff erosion part 2: pairing aerial photographs and terrestrial laser scanning to create a watershed scale sediment budget. *Earth Surface Processes and Landforms*. 38(10), 1068-1082. DOI: 10.1002/esp.3359 [IF: 2.43]
14. Viparelli, E., Lauer, J.W., **Belmont, P.**, Parker, G. (2013) A Numerical Model to Develop Long-term Sediment Budgets Using Isotopic Sediment Fingerprints. *Computers and Geosciences Special Issue on Modeling for Environmental Change*. 53: 114-122. doi:10.1016/j.cageo.2011.10.003 [IF: 1.83]

13. Day S.S., Gran, K.B., **Belmont, P.**, Wawrzyniec, T. (2013) Measuring bluff erosion part 1: terrestrial laser scanning methods for change detection. 38(10), 1055-1067. DOI: 10.1002/esp.3353 [IF: 2.43]

12. Passalacqua, P., **Belmont, P.**, Fofoula-Georgiou, E. (2012) Automatic geomorphic feature extraction from lidar in flat and engineered landscapes. *Water Resources Research*. 48: W03528. doi:10.1029/2011WR010958. [IF: 2.74]

· Highlighted as an Editor's Choice in *Science* October 21, 2011:

11. **Belmont, P.**, Gran, K.B., Schottler, S.P., Wilcock, P.R., Day, S.S., Jennings, C., Lauer, J.W., Viparelli, E., Willenbring, J.K., Engstrom, D.R., Parker, G. (2011) Large shift in source of fine sediment in the Upper Mississippi River. *Environmental Science and Technology*. 45, 8804–8810. dx.doi.org/10.1021/es2019109 [IF: 4.83]

10. Smith, S.M.C., **Belmont, P.**, Wilcock, P.R. (2011) Closing the gap between watershed modeling, sediment budgeting, and stream restoration, in *Stream Restoration in Dynamic Fluvial Systems: Scientific Approaches, Analyses, and Tools*, AGU Geophysical Monograph Series, vol. 194, edited by A. Simon, S. J. Bennett, and J. M. Castro, pp. 293–317, AGU, Washington, D. C. doi:10.1029/2011GM001085 [IF: NA]

9. Gran, K.B., **Belmont, P.**, Day, S.S., Finnegan, N., Jennings, C., Lauer, J.W., Wilcock, P.R. (2011) Landscape evolution in south-central Minnesota and the role of geomorphic history on modern erosional processes. *GSA Today*. 21 (9): 7-9 [IF: NA, ranked 15th of 196 journals in the subject category Geology 2011 SCImago Journal Rank]

· Selected as *WRR* Featured Article, Recognized in AGU Research Spotlight, *EOS*. volume 92, number 34:

8. Gangodagamage, C., **Belmont, P.**, and Fofoula-Georgiou, E. (2011) Revisiting scaling laws in river basins: New considerations across hillslope and fluvial regimes, *Water Resources Research*, 47, W07508, doi:10.1029/2010WR009252. [IF: 2.74]

7. **Belmont, P.**, Gran, K., Jennings, C.E., Wittkop, C., Day, S.S. (2011) Kirk Bryan Field Trip: Holocene landscape evolution and erosional processes in the Le Sueur River, central Minnesota. Guide book for 2011 GSA National Meeting Kirk Bryan Field Trip, Minneapolis, MN. [IF: NA]

6. **Belmont, P.** (2011) Floodplain width adjustments in response to rapid base level fall and knickpoint migration. *Geomorphology*. 128 (1-2): 92-102. [IF: 2.35]

5. **Belmont, P.**, Morris, D.P., Pazzaglia, F.J., Peters, S.C. (2009) Penetration of ultraviolet radiation in streams of eastern Pennsylvania: environmental controls and the role of suspended particulates. *Aquatic Sciences*. March, 189-201. [IF: 2.05]

4. Gran, K.B., **Belmont, P.**, Day, S.S., Jennings, C., Johnson, A., Perg, L., and Wilcock, P.R. (2009) Geomorphic evolution of the Le Sueur River, Minnesota, USA, and implications for current sediment loading, in James, L.A., Rathburn, S.L., and Whittecar, G.R., eds., *Management and Restoration of Fluvial Systems with Broad Historical Changes and Human Impacts*: Geological Society of America Special Paper 451, p.119-130. [IF: NA]

3. **Belmont, P.**, Pazzaglia, F.J., Gosse, J.C. (2007) Cosmogenic 10-Be as a Tracer for Hillslope and Channel Sediment Dynamics in the Clearwater River Basin, Western Washington State. *Earth and Planetary Science Letters*. 264: 123-135. [IF: 4.062]

2. **Belmont, P.**, Hargreaves, B.R., Morris, D.P., Williamson, C.E. (2007) Estimating attenuation of ultraviolet radiation in streams: field and laboratory methods. *Photochemistry and Photobiology*. 83 (6): 1339-1347. [IF: 2.553]

1. Hartman, P., **Belmont, P.**, Zuber, S., Ishii, N., Anderson, J. (2003) Relationship between catalase and life span in recombinant inbred strains of *Caenorhabditis elegans*. *Journal of Nematology*. 35 (3) 314-319. [IF: 0.71]

OTHER PUBLICATIONS

Belmont, P., Dogwiler, T., and Kumarasamy, K. (2016) An integrated sediment budget for the Root River watershed, southeastern Minnesota. Final Report to the Minnesota Department of Agriculture. <http://www.mda.state.mn.us/protecting/cleanwaterfund/research/sedimentrootriver.aspx>

Czuba, J.A, Foufoula-Georgiou, E., Gran, K.B., **Belmont, P.**, and Wilcock, P.R. (2016) Modeling bed-material sediment transport on river network. Proceedings paper for River Flow 2016. St. Louis, MO. July 12-15, 2016.

Belmont, P. (2014) Public comment on “Aquatic life water quality standards draft technical support document for total suspended solids (turbidity).” Minnesota Pollution Control Agency.

Belmont, P. (2013) Sediment fingerprinting for sources and transport pathways in the Root River, southeastern Minnesota. Project Final Report to Minnesota Corn Growers Association.

Belmont, P. (2012) “Floods” World Book Encyclopedia, print and online editions.

Belmont, P. (2012) “Watershed” World Book Encyclopedia, online edition.

Belmont, P. (2012) “Water Cycle” World Book Encyclopedia, online edition.

Belmont, P., Wilcock, P.R., Viparelli, E. (2010) Sediment Budget for Source Analysis: Le Sueur River, Minnesota. Technical paper, 9th Federal Interagency Sedimentation Conference. 13 ms p.

Wilcock, P.R., and others including **P. Belmont** (2009) Identifying sediment sources in the Minnesota River Basin. Minnesota River sediment colloquium report published by Minnesota Pollution Control Agency. 18 ms p.

RESEARCH FUNDING

*Dollar amounts listed as (my portion/total award).

Current:

2016 - 2021 Huntly, N., Wang, S.Y., Belmont, P., Flint, C., Tarboton, D. **NRT-DESE: Training data-enabled and flexible professionals for careers in climate adaptation.** Submitted to National Science Foundation National Research Traineeship Program. (\$2,990,798)

2016 - 2018 Wilcock, P.R., Atwood, T., Belmont, P., Hammill, E., Gaeta, J. **Comprehensive study and recommendations for instream flow requirements on Sixth Water Creek and**

Diamond Fork River. Utah Reclamation, Mitigation and Conservation Commission (\$100,000/\$500,000)

- 2015 - 2017 Larson, P., Belmont, P., Moore, R., Fisher, S. **Hydro-geomorphic analysis to prevent migration of invasive carp in the Minnesota River.** Funded by Minnesota Department of Natural Resources. (\$220,413/\$425,000)
- 2014 - 2017 Belmont, P. **Coupled human-biophysical framework to predict conservation effectiveness.** Conservation Innovation Grant. Funded by US Department of Agriculture. (\$123,763/\$123,763)
- 2014 - 2016 Belmont, P., Null, S., Wang, S., Gordillo, L. **Modeling Ecosystem Response to Climate Change Initiative (MERCCI).** Funded by USU Office of Research and Graduate Studies. (\$16,800/\$50,400)
- 2014 - 2017 Belmont, P. **Tracking downstream distance of post-wildfire sediment impacts.** Funded by Utah Agricultural Experiment Station Seed Grant Program. (\$20,000/\$20,000)
- 2013 - 2015 Passalacqua, P., Belmont, P., Staley, D., Simley, J. **Exploiting high-resolution topography for advancing the understanding of mass and energy transfer across landscapes: Opportunities, challenges, and needs.** Powell Center Synthesis Working Group. Funded by National Science Foundation and US Geological Survey. (\$50,000/\$100,000 + working group travel expenses)
- 2013 - 2017 Belmont, P., Budy, P. **Understanding the effects of wildfire on fish populations and stream geomorphology in Twitchell Canyon, Utah.** Funded by Utah Division of Wildlife Resources. (\$97,216/\$207,154)
- 2013 - 2015 Belmont, P., Saffer, D., Arthur, M. **Collaborative development of an open, online course “Water: Science and Society”.** Funded by the National Science Foundation via InTeGrate. (\$15,000/\$45,000).
- 2013 - 2015 Belmont, P. **Measuring long-term erosion rates near Hells Canyon, Idaho.** Funded by Idaho Power Company (\$29,208/\$29,208)
- 2013 - 2016 Belmont, P. **Measuring long-term erosion rates and post-fire geomorphic response for the Hayman Fire, Colorado and Twitchell Fire, Utah** (\$12,000/\$12,000)
- 2012 - 2017 Foufoula-Georgiou, Belmont, P., Kling, C., Rabotyagov, S., Wilcock, P.R., Parker, G., Roehrig, G., Gran, K.B., Finlay, J.C., Kumar, P. **Climate and Human Dynamics as Amplifiers of Natural Change: A Framework for Vulnerability Assessment and Mitigation Planning.** Funded by National Science Foundation Water, Sustainability, and Climate Program (\$470,000/\$4,372,127)
- 2012 - 2015 Belmont, P., Dogwiler, T. **An integrated sediment budget for the Root River, southeastern Minnesota.** Funded by Minnesota Department of Agriculture. (\$203,871/\$227,658)

2012 - 2016 Wilcock, P.R., Belmont, P., Marr, J., Gran, K.B., Hobbs, B. **Collaborative Implementation Strategy for Sediment Reduction for the Greater Blue Earth River Basin (CISSR-Blue Earth)**. Funded by Minnesota Pollution Control Agency. Minnesota Department of Agriculture, and Minnesota Corn Research and Promotion Council (\$184,165/\$770,000)

Completed:

2011 - 2013 Belmont, P. **Thresholds for Catastrophic Erosion Events: Using Beryllium-10 to explore interactions between fire, land use, and extreme precipitation in the John Day Basin, Oregon**. Funded by Utah Agricultural Experiment Station. (\$17,250/\$17,250)

2011 - 2012 Belmont, P. **Geomorphic Context for Salmon Habitat Recovery in the Columbia River Basin**. Funded by Utah State University Research Catalyst Program. (\$19,390/\$19,390)

2011 - 2013 Belmont, P. **Linking landscape sediment dynamics and aquatic habitat in the Columbia River**. Funded by Eco Logical Research, Inc. and Integrated Status and Effectiveness Monitoring Protocol, NOAA Fisheries (\$58,140/\$58,140)

2010 - 2012 Belmont, P. **Sediment Fingerprinting for Sources and Transport Pathways in the Root River, southeastern Minnesota**. Funded by Minnesota Corn Growers Association (\$144,226/(\$144,226)

2010 - 2011 Belmont, P. **Sediment Fingerprinting with Meteoric ¹⁰Be and ²¹⁰Pb in the Root River Watershed, Southeastern Minnesota**. Funded by Fillmore County SWCD (\$45,000/\$45,000)

2010 - 2013 Belmont, P. **Erosion and Sediment Dynamics in Forested Watersheds of the Mountain West**. Funded by US Department of Agriculture McIntire-Stennis Fund via Utah Agricultural Experiment Station (\$12,000/\$12,000)

Prior to arrival at Utah State University:

2009 - 2010 Foufoula-Georgiou, E., Belmont, P. **Understanding Water-Human Dynamics with Intelligent Digital Watersheds**. Supplement to CDI Grant, Funded by National Science Foundation (\$89,000)

2009 - 2012 Belmont, P., Willenbring, J.K. **Tracing sediment sources with meteoric ¹⁰Be: Linking erosion and the hydrograph**. Funded by Minnesota Department of Agriculture. (\$65,298)

2008 - 2010 Frankel, K.L., Belmont, P. **Investigating Source to Sink Processes with Cosmogenic Nuclide Concentrations in Multiple Alluvial Sediment Grain Size Fractions**. Funded by American Chemical Society Petroleum Research Fund. (\$100,000)

- 2008 - 2009 Lightbody, A., Belmont, P., Orr, C., Marr, J. **Determination of appropriate metric(s) for sediment-related total maximum daily loads (TMDLs)**. Funded by National Institutes for Water Resources. (\$30,000)
- 2006 - 2007 Belmont, P. **Long-term erosion rate response to fault activity in the Lemhi Range, eastern Idaho**. Funded by Sigma Xi (\$400)
- 2005 - 2007 Belmont, P. **Calibrating model for estimating basin-wide erosion rates from in situ terrestrial cosmogenic nuclides**. 2005: 2 yrs, Funded by Geological Society of America Graduate Student Research Grant (\$3,000)
- 2003 - 2004 Belmont, P. **Granulometric analysis of alluvial sediments in the Clearwater River Basin**. Funded by Palmer Fund, Lehigh University (\$845)

TEACHING EXPERIENCE

Small Watershed Hydrology, WATS 4490/6490. Conceptual and quantitative analysis of key hydrological processes. Particular attention paid to study of partitioning of water in the hydrologic cycle, sources for runoff generation, snow and snowmelt, and erosion. Features process modeling and parameter estimation techniques as related to wildland systems. Utah State University. Lecture and lab components. (4 Credits, Every Spring semester)

Fundamentals of Watershed Science, WATS 3700. Introduction to the core concepts that define watershed science as a discipline and to familiarize students with the principles of watershed management. The course illustrates the interdisciplinary nature of watershed science, covering aspects of geography, climatology, hydrology, soil science, geomorphology, ecology, chemistry, and water policy. (3 Credits, Odd year Spring semesters)

Rivers, Sediment and Ecology, WATS 6900. Examines the interactions between sediment and biota in riverine ecosystems. This discussion-driven course covers three broad topics: 1) the physical science that dictates the spatial distribution and dynamics of stream sediments, 2) the response of stream biota to natural variation in sediment, and 3) the impacts (physical and biotic) and regulatory implications of anthropogenic shifts in riverine sediment regimes (sediment starvation, sediment pollution, changes in transport capacity, relative changes in coarse/fine sediment load). Co-taught with Chuck Hawkins. (1 Credit, Last taught Fall 2012)

Sediment Routing and Fluvial Stratigraphy, WATS 6900. This course links fundamental principles of sediment transport and fluvial stratigraphy with an emphasis on modeling and field observation. Course content includes a) routing of fine and coarse sediment at the reach and channel network scales b) creation of fluvial stratigraphy and its relation to morphologic evolution to modern rivers and c) traditional and emerging techniques for measuring sediment-related phenomena. The course culminates with a field measurement campaign designed to address these questions. The course is web-linked with a complementary graduate level class at University of Wyoming, taught by Brandon McElroy. (3 Credits, Last taught Spring 2014)

Geochemical Methods in Geochronology, WATS/GEO 6100/7100. Covers fundamental concepts and mathematical principles behind common methods for dating sediment and tracking erosion and sediment

transport through watersheds and river networks. Focuses on applications of cosmogenic nuclides (^{10}Be , ^{26}Al), meteoric tracers (^{10}Be , ^{210}Pb , ^{137}Cs), radiocarbon, and optically stimulated luminescence. Co-taught with Tammy Rittenour. (1 Credit, Last taught Fall 2010)

Watershed Science Graduate Student Induction Field Course, WATS 6100. A 5 day short-course designed to introduce new graduate students to a) the grand questions in Watershed Science, b) Cache Valley and the surrounding landscape, c) the people that comprise the Department of Watershed Sciences, and d) the state-of-the-art research techniques used by our faculty and staff. Co-taught with Joe Wheaton and several other faculty. My contributions were to lead the portion of the course in the Tetons, including several lectures and field exercises. (1 Credit, Week prior to each Fall semester)

Sediment Transport in Stream Assessment and Design, WATS 6900. This course is intended for those who wish to understand and apply the principles of sediment transport to alluvial channel assessment and design. Principles of open channel flow and sediment transport are combined with watershed-scale, hydrologic and sediment source analysis to place channel assessment and design in the appropriate context. Tools for estimating sediment supply at the watershed to reach level are applied in class exercises. Threshold and alluvial channel design methods are presented along with guidelines for assessing and incorporating uncertainty. The course balances advance reading, lecture, field work, and hands-on exercises for estimating sediment supply, calculating sediment transport rates, and forecasting channel response to water and sediment supply. This course is intended for participants who are familiar with basic principles of river geomorphology. Co-taught with Peter Wilcock and Tyler Allred. (2 credits, Taught each Summer, 5 days in late July or early August).

Courses taught at previous institutions:

Hydrologic design. Statistical analysis of hydrologic data and estimation of design flows. Open channel flow, flow through conduits, detention basin design, hydraulic structure sizing, estimation of flood risk. University of Minnesota. (Spring 2009) 50 students with 2 TAs.

Global Environmental Change. Graduate Teaching Assistant - 3 recitation sections (35 students each). Lehigh University (Fall 2004 and 2005)

Environmental Systems and Solutions. Graduate Teaching Assistant - 3 recitation sections (30 students each). Lehigh University (Spring 2005)

Environmental Science Field Course. Curriculum development and Instructor - 5 week advanced field-based course taught in northern Rocky Mountains. Lehigh University (July 2005 - 2009)

The Science of Environmental Issues. Curriculum development and Instructor - 3 recitation sections (25 students each). Lehigh University (Fall 2006)

BROADER IMPACT ACTIVITIES

Powell Center Lidar Synthesis Working Group. A 2 year effort that brings together 13 lidar experts from the US and France to evaluate standards for acquisition of lidar data, evaluate tools for analyzing lidar data, and develop generalizable techniques for quantifying and representing uncertainty associated with lidar data.

The Stream Project. A two year effort of a dozen collaborators dedicated to development of a Stream Restoration Design Analysis and Design Guidance manual with the goal of providing a physically meaningful, predictive basis for stream restoration. The team is composed of biologists, physical scientists, economists, and engineers from Utah State University, Johns Hopkins University, and the Army Corps of Engineers.

Community Surface Dynamics Modeling System: Terrestrial Working Group Participant. A 5-10 year effort headed by James Syvitski (University of Colorado) to compile, archive, and improve the vast number of Earth Surface Dynamics computational models. One goal of this group is to develop a plug-and-play environment for coupling physical-biological-human dynamics models.

AWARDS AND HONORS

Department of Watershed Sciences Graduate Research Mentor of the Year Award, 2013

Belmont et al., (2011, ES&T) Highlighted as an Editor's Choice in *Science* October 21, 2011

Gangodagamage et al., (2011, WRR) Selected as WRR Featured Article, Recognized in AGU Research Spotlight, EOS. volume 92, number 34

Commencement Speaker, Lehigh University, Spring, 2007 Graduation Ceremony

Graduate Student Leadership Award, Lehigh University, 2007

TA of the Year, EES Department, Lehigh University, 2005

Robert K. Fahnestock Memorial Research Award Recipient for 2005, GSA QG&G Division

J. Hoover Mackin Award Recipient for 2005, GSA QG&G Division

INVITED PRESENTATIONS

*Graduate student coauthors underlined, Undergraduate student coauthors double-underlined

48. **Belmont, P.**, Kumarasamy, K. (2015) Amplification and Damping of Environmental Signals in Intensively Managed Landscapes. Invited speaker in session "Landscape Evolution from a Critical Zone Science Perspective" American Geophysical Union Fall meeting. December 2015. San Francisco, CA.

47. Foufoula-Georgiou, E., Czuba, J.A., **Belmont, P.**, Wilcock, P.R., Gran, K.B, Kumar, P. (2015) Climate and Humans as Amplifiers of Hydro-Ecologic Change: Science and Policy Implications for Intensively Managed Landscapes. American Geophysical Union Fall meeting. December 2015. San Francisco, CA.

46. Czuba, J.A., Foufoula-Georgiou, E., Gran, Karen, B., **Belmont, P.**, Wilcock, P.R., (2015) Near-Channel Sediment Sources Now Dominate in Many Agricultural Landscapes: The Emergence of River-Network Models to Guide Watershed Management. American Geophysical Union Fall meeting. December 2015. San Francisco, CA.

45. **Belmont, P.**, Budy, P., Finch, C., Schaffrath, K. (2015) Effects of the Twitchell Canyon fire on stream geomorphology and fish habitat. Restoring the West Conference. October, 2015. Logan, UT.

44. **Belmont, P.** (2015) Targeted water storage to maintain productive land and restore clean water. Agricultural Drainage and the Future of Water Quality Workshop. August, 2015. Mankato, MN.
43. **Belmont, P.** (2015) Restoring the health of the Le Sueur River Watershed. Le Sueur River Watershed Network. June, 2015. Pemberton, MN.
42. Fofoula-Georgiou, E. and **Belmont, P.** (2015) Climate and human dynamics as amplifiers of natural change. National Science Foundation Water, Sustainability and Climate PI meeting. February 2015. Arlington, VA.
41. **Belmont, P.**, Kumarasamy, K., Kelly, S.A., Schaffrath, K.R., Beach, T.J. (2014) The cascade of non-stationarity. American Geophysical Union Fall meeting. December 2014. San Francisco, CA.
40. **Belmont, P.**, Kumarasamy, K., Kelly, S.A., Schaffrath, K.R., Beach, T.J. (2014) The cascade of non-stationarity. University of Tennessee, Knoxville Distinguished Lecturer Series.
39. **Belmont, P.** and Kumarasamy, K. (2014) Distinguishing sediment derived from soil erosion versus channel erosion in sediment budgets and watershed hydro-erosion models. Geological Society of America annual meeting, Vancouver, BC, Canada.
38. **Belmont, P.** (2014) The Science of Sediment: From Basics to State-of-the-Art. Mud Lake Symposium hosted by Bear Lake Watch. Fish Haven, Idaho. May 2014.
37. **Belmont, P.** (2014) Lake Pepin: The past, the problem, the future. Fox and Hounds Breakfast Club. Minnetonka, Minnesota. April, 2014.
36. **Belmont, P.** and Gran, K.B. (2014) Healthy Minnesota Land and Water: Making ravines part of the solution and not part of the problem. Fishers and Farmers Partnership for the Upper Mississippi River Basin Workshop on Ravine Management. April 2014.
35. **Belmont, P.** (2014) Climate and human dynamics as amplifiers of natural change in river networks. Invited speaker in PAGES Focus 4 Workshop “Towards a more accurate quantification of human-environment interactions in the past.” University of Leuven, Belgium.
34. Fofoula-Georgiou, E., **Belmont, P.**, and Rabotyagov, S. (2014) Climate and humans as amplifiers of natural change: new “macro-scale” frameworks for assessment of vulnerability and resilience. National Science Foundation Water, Sustainability and Climate Program Annual PI Retreat.
33. **Belmont, P.** (2013) Better budgeting by redundancy, context, and coupling of coarse and fine sediment dynamics. Invited speaker in session “Fluvial Sediment Budgets: Can We Do Better?” American Geophysical Union Fall meeting. December 2013. San Francisco, CA.
32. **Belmont, P.** (2013) Landscape erosion and sediment routing under non-stationary hydrologic conditions. Desert Research Institute, University of Nevada-Reno. Seminar Speaker for Hydrologic Science Program Seminar Series, October 18, 2013. Reno, Nevada.

31. **Belmont, P.** and Stout, J. (2013) Tracking channel-floodplain sediment exchange with conservative and non-conservative geochemical tracers. Keynote Speaker for Canadian Society of Soil Science Annual Meeting, July 21-24, 2013. Winnipeg, Canada.
30. **Belmont, P.** and Stout, J. (2013) Tracking channel-floodplain sediment exchange with conservative and non-conservative geochemical tracers. European Geosciences Union annual meeting, April 8-12, 2013. Vienna, Austria.
29. **Belmont, P.** (2013) Advances in geomorphic assessments at the watershed scale. Invited speaker at Utah Chapter of the American Fisheries Society Annual Meeting, March 26-29, 2013.
28. **Belmont, P.** (2013) Landscape erosion and sediment routing under non-stationary hydrologic conditions. Keynote speaker, Hydrologic Sciences Symposium, March 18-19, 2013. University of Colorado, Boulder, CO.
27. **Belmont, P.** and Fofoula-Georgiou, E. (2013) Human Amplified Natural Change: Water is the pollutant? National Science Foundation. March 13, 2013. Arlington VA.
26. **Belmont, P.** (2013) Recent shift in sources of mud challenges Upper Mississippi River cleanup efforts. Invited Keynote Speaker for Department of Earth and Environmental Sciences Graduate Symposium, Lehigh University, February 22, 2013. Bethlehem, PA.
25. **Belmont, P.**, (2012) Understanding the past and present to predict your watershed's future: from reductionism to synthesis in watershed science. Invited speaker for Northern Region Watershed Restoration Initiative meeting October 2, 2012. DWR Regional Office, Ogden, UT.
24. Portugal, E., **Belmont, P.**, (2012) Linking temporal and spatial variability of millennial and decadal-scale sediment yield to aquatic habitat in the Columbia River Watershed. Invited speaker in technical session "Riparian Fringe" Society of Wetlands Scientists Pacific Northwest Chapter, September 2012, Boise, ID.
23. **Belmont, P.** (2012) Constraining natural and historic variability in geomorphic systems. Invited speaker at National Center for Earth-surface Dynamics Summer Institute, August 2012. Minneapolis, MN.
22. **Belmont, P.** (2012) Lidar and radionuclide fingerprinting: advances in watershed sediment budgeting. Invited speaker in session "Watershed Sediment Source Identification" Association of American Geographers, February 2012. New York, NY.
21. Passalacqua, P., **Belmont, P.**, Fofoula-Georgiou, E. (2011) Automatic geomorphic feature extraction from lidar in flat and engineered landscapes. Invited speaker in session "Spatial Analysis of High-Resolution Remote Sensing for Hydrology, Ecology, and Biogeochemistry" American Geophysical Union Fall meeting. December 2011. San Francisco, CA.
20. **Belmont, P.** (2011) New Tools for Tracking Mud in Rivers. University of Minnesota Soil, Water, Climate Department. October, 2011. St. Paul, Minnesota.

19. **Belmont, P.** (2011) New Insights on Erosion and Transport of Fine Sediment at the Watershed Scale. Washington State University and University of Idaho joint seminar series. September, 2011. Pullman, Washington
18. **Belmont, P.** (2011) New tools for non-point sediment pollution research. University of Manitoba. June, 2011. Winnipeg, Manitoba, Canada.
17. Foufoula, E., J. Schnoor, **P. Belmont**, P. Passalacqua (2011) A CDI Collaboration: Geosciences and Engineering for Intelligent Digital Watersheds. National Science Foundation. May, 2011. Arlington, Virginia.
16. **Belmont, P.**, Willenbring, J., Marquard, J. (2011) Measuring event- and century-scale changes in sediment sources to the upper Mississippi River. European Geosciences Union Annual Meeting. Vienna, Austria.
15. **Belmont, P.** (2010) Geochemically-assisted Sediment Budgets: New Opportunities and Challenges. Utah State University Water Initiative Seminar. December, 2010. Logan, Utah.
14. **Belmont, P.** (2010) Tracking mud in southern Minnesota Rivers. Winona State University. October, 2010. Winona, Minnesota.
13. **Belmont, P.**, E. Viparelli, J. W. Lauer, G. Parker (2009) A morphodynamic routing model for the Maple River, southern Minnesota. Invited speaker in session “Advances in Riverine Morphodynamics.” American Geophysical Union Fall meeting. December 2009. San Francisco, CA.
12. **Belmont, P.**, E. Viparelli, J. W. Lauer, S.S. Day (2009) Channel-floodplain sediment exchange in a meandering and actively incising river. Speaker in session “Streambanks in Theory and Practice” Geological Society of America National Meeting. October 2009. Portland, OR.
11. **Belmont, P.** (2009) Water: destruction, reorganization and construction of landscapes. Guest lecture for Science Museum of Minnesota training session for internationally renowned Water Exhibit. St. Paul, MN.
10. **Belmont, P.** (2009) An integrated sediment budget and routing model for the Le Sueur River, southern Minnesota. Dept. of Watershed Sciences, Utah State University. Logan, Utah.
9. **Belmont, P.** and others (2008) Parameterization of a complex landscape for a sediment routing model of the Le Sueur River, southern Minnesota. Invited speaker in session H29: Stochastic Transport and Emergent Scaling on the Earth’s Surface. American Geophysical Union Fall meeting. December 2008. San Francisco, CA.
8. **Belmont, P.** and others (2008) Watershed Context for a Sediment Routing Model in the Le Sueur River, Southern Minnesota. Invited speaker in session 283-T12: Channel Networks as a Template for Earth and Environmental Processes: Toward an Integrative Process Model for Landscape Evolution. GSA National Meeting, October 2008, Houston, TX.

7. **Belmont, P.** (2008) Tracking sediment through drainage networks: A sampling of TCN applications. Invited speaker for Sediment Fingerprinting short course, University of Minnesota. May 2008. Minneapolis, MN.
6. **Belmont, P.** (2008) Landscape evolution of the Le Sueur River Basin, southern Minnesota. Presented at the University of Minnesota - Duluth Department of Geological Sciences seminar series. April 2008. Duluth, MN.
5. **Belmont, P.** and C. Jennings (2008) Sediment dynamics, turbidity and TMDLs in agricultural watersheds. Presented at Partnership for River Restoration and Science in the Upper Midwest (PRRSUM) March 2008 symposium. Minneapolis, MN.
4. **Belmont, P.** (2008) Tracking sediment through drainage networks in theory and practice: applications in southern Minnesota and the Olympic Mountains, western Washington State. Presented at the Georgia Institute of Technology - School of Earth and Atmospheric Sciences seminar series. January 2008. Atlanta, GA.
3. **Belmont, P.** (2008) Sediment sources and transport in the upper Mississippi and Minnesota Rivers: The science behind the management and policy decisions. Presented at University of North Dakota - Earth System Science and Policy January 2008. Grand Forks, ND.
2. **Belmont, P.** (2007) Sediment dynamics in the agricultural Le Sueur River watershed, southern Minnesota: An integrated assessment of sediment sources, transport and storage for the purpose of better policy and management. Presented at University of Minnesota - Geology and Geophysics Department Seminar Series. October 2007. Minneapolis, MN
1. **Belmont, P.** (2007) Landscape evolution in a grain of sand: using cosmogenic nuclides to quantify long-term landscape change. Poster presentation for the inauguration ceremony of President Alice Gast - Lehigh University. April 2007. Bethlehem, PA.

OTHER PRESENTATIONS

*Graduate student coauthors underlined, Undergraduate student coauthors double-underlined

46. Libby, D. J., Larson, P.H., **Belmont, P.** (2015) Quantifying Historic Channel Change Dynamics of the Minnesota River, south-central Minnesota, USA. Association of American Geographers Conference. March 2016. San Francisco, CA.
45. Belmont, P., Stout, J. (2015) Sediment fingerprinting with long- and short-lived radionuclide tracers in the Root River watershed, southeastern Minnesota. American Geophysical Union Fall meeting. December 2015. San Francisco, CA.
44. Kelly, S.A., **Belmont, P.** (2015) Patterns and Processes of Width Adjustment to Increased Streamflows in Semi-Alluvial Rivers. American Geophysical Union Fall meeting. December 2015. San Francisco, CA.
43. Vaughan, A.A., **Belmont, P.** (2015) How are River Discharge - Suspended Sediment Relations Influenced by Watershed and Channel-Floodplain Morphology? American Geophysical Union Fall meeting. December 2015. San Francisco, CA.

42. Kumarasamy, K., **Belmont, P.** (2015) Hydrograph structure informed calibration in the frequency domain with time localization. American Geophysical Union Fall meeting. December 2015. San Francisco, CA.
41. Call, B., **Belmont, P.** (2015) Modeling channel-floodplain hydrologic connectivity under non-stationary conditions. American Geophysical Union Fall meeting. December 2015. San Francisco, CA.
40. Kumarasamy, K., and Belmont, P. (2014) Quantifying uncertainty and variability in sediment yield estimates in the Le Sueur River Basin. American Geophysical Union Fall meeting. December 2014. San Francisco, CA.
39. Viparelli, E., Lauer, J.W., and **Belmont, P.** (2014) MAST-1D, a Model to Route Sediment and Tracers in Channel-Floodplain Complexes. American Geophysical Union Fall meeting. December 2014. San Francisco, CA.
38. Kelly, S.A., and **Belmont, P.** (2014) Channel topographic signatures in meandering rivers with varying degrees of outer bank cohesion. American Geophysical Union Fall meeting. December 2014. San Francisco, CA.
37. Schaffrath, K.R., and **Belmont, P.** (2014) A comparison of post-wildfire geomorphic response over annual and millennial time scales. American Geophysical Union Fall meeting. December 2014. San Francisco, CA.
36. Hemmis, J., Stout, J., Souffront, M.A., and **Belmont, P.** (2014) Sediment budgeting and restoration planning in a heterogeneous landscape, the Root River watershed, southeastern Minnesota. American Geophysical Union Fall meeting. December 2014. San Francisco, CA.
35. Kelly, S.A., and **Belmont, P.** (2014) Application of terrestrial-based structure-from-motion photogrammetry to the measurement and monitoring of river bluff erosion. Geological Society of America annual meeting, October 2014. Vancouver, BC, Canada.
34. **Belmont, P.**, Willenbring, J.K., Schottler, S.P., Marquard, J., Kumarasamy, K., Hemmis, J. (2014) Moving toward generalizable, geomorphically-informed sediment fingerprinting. PAGES Focus 4 Workshop “Towards a more accurate quantification of human-environment interactions in the past.” University of Leuven, Belgium.
33. Willenbring, J.K., Gasparini, N.M., Crosby, B.T., Brocard, G., and **Belmont, P.** (2013) Isotopic hysteresis in detrital cosmogenic nuclide-derived denudation rate studies. Invited speaker in session “Path-Dependence and Hysteresis in Earth-Surface Dynamics” American Geophysical Union Fall meeting. December 2013. San Francisco, CA.
32. Willenbring, J.K., Gasparini, N.M., Crosby, B.T., Brocard, G., Occhi, M.E., and **Belmont, P.** (2013) Temporal evolution of detrital cosmogenic denudation rates in transient landscapes from in situ produced and meteoric ^{10}Be . Goldschmidt Conference. Florence, Italy.
31. Kelly, S.A., **Belmont, P.**, (2013) Mapping bathymetry in a large meandering river above and below a significant sediment input. American Geophysical Union Fall Meeting. San Francisco, CA.

30. Schaffrath, K.R., **Belmont, P.**, Wheaton, J. (2013) Quantifying geomorphic change and characterizing uncertainty in repeat aerial lidar over an enormous area: Blue Earth County, MN. American Geophysical Union Fall Meeting. San Francisco, CA.
29. Schaffrath, K.R., **Belmont, P.**, Wheaton, J. (2013) Respecting uncertainty in geomorphic change detection using aerial lidar over an enormous area: Blue Earth County, MN. Geological Society of America Annual Meeting. Denver, CO.
28. Kelly, S.A., **Belmont, P.** (2013) Mapping bathymetry in a large meandering river above and below a significant sediment input. Geological Society of America Annual Meeting. Denver, CO.
27. **Belmont, P.**, Foufoula-Georgiou, E., Passalacqua, P. (2012) Sharp landscape features and their role in predictive hydrology and geomorphology. American Geophysical Union Fall Meeting. San Francisco, CA.
26. Gran, K.B., Matteson, S.C., **Belmont, P.** (2012) Ravine contributions to basin-wide sediment loads in an incising agricultural basin, south-central Minnesota, USA. Geological Society of America annual Meeting. Charlotte, NC.
25. Wilcock, P.R., **Belmont, P.**, Gran, K. (2011) Human Amplified Natural Change: An approach to vulnerability assessment and mitigation planning. Poster, American Geophysical Union Fall Meeting. San Francisco, CA.
24. Stout, J., **Belmont, P.** (2011) Sediment sources and transport pathways in the Root River. Poster that was invited for oral presentation after another talk was withdrawn, American Geophysical Union Fall Meeting. San Francisco, CA.
23. Marsteller, T.L., Frankel, K.L., **Belmont, P.**, Wegmann, K.W. (2011) Investigating sediment source to sink processes in a post-orogenic landscape. Poster, American Geophysical Union Fall Meeting. San Francisco, CA.
22. **Belmont, P.** (2011) An Integrated Sediment Budget for the Le Sueur Watershed. Oral, Minnesota Water Resources Conference. St. Paul, Minnesota.
21. **Belmont, P.** (2011) Water and Sediment Dynamics in Agricultural Landscapes: Towards Prediction of Watershed Sediment Yield. Oral, Geological Society of America Annual Meeting. Minneapolis, MN.
20. Lauer, J.W., Viparelli, E., **Belmont, P.**, Parker G. (2011) A numerical model for sediment tracer movement through an actively evolving floodplain. Oral, ASCE Environmental Water Resources Institute Conference, Palm Springs, CA.
19. **Belmont, P.**, Willenbring, J., and Schottler, S. (2010) Quantifying sediment dynamics over century and event timescales with Beryllium-10 and Lead-210. Poster, American Geophysical Union Fall Meeting. San Francisco, CA.

18. Marstellar, T. L., Frankel, K. L., and **Belmont, P.** (2010) Investigating Source to Sink Processes with Cosmogenic ^{10}Be Concentrations in Multiple Alluvial Grain Sizes. Poster, American Geophysical Union Fall Meeting. San Francisco, CA.
17. Finnegan, N.J., Gran, K., Johnson, A., **Belmont, P.**, Wilcock, P., Dietrich, W.E. (2010) The importance of downstream bed surface coarsening in predicting the wave of incision in response to a sudden base level drop at the mouth of a river: the Holocene Le Sueur River, Minnesota, USA. Oral, American Geophysical Union Fall Meeting. San Francisco, CA.
16. **Belmont, P.**, Viparelli, E., and Wilcock, P. (2010) Sediment Budget for Source Analysis. Oral, 9th Federal Interagency Sedimentation Conference. June 2010. Las Vegas, Nevada.
15. **Belmont, P.** and others (2009) Morphodynamics of streambank erosion in the Le Sueur River, southern Minnesota. Oral, Geological Society of America Annual Meeting. October 2009. Portland, Oregon.
14. **Belmont, P.**, Shostal, C., Anderson, T., and Wong, M. (2009) Barr-NCED Mapper for Channel-Floodplain Sediment Exchange Modeling. Oral, Minnesota Water Resources Center Conference. October 2009. St. Paul, Minnesota.
13. **Belmont, P.** (2008) Long-term landscape evolution of the Le Sueur River Basin: putting sediment dynamics into context. Oral, Presented to Minnesota Pollution Control Agency. January 2008. St. Paul, MN
12. Parker, G., **P. Belmont**, K. Gran, C. Jennings, J.W. Lauer, L. Perg, E. Viparelli, P. Wilcock (2008) Effect on rivers of massive changes in hydrologic regime due to human intervention. Oral, European Geosciences Union General Assembly 2008, Vienna, Austria.
11. **Belmont, P.**, Perg, L., Day, S.S., Jennings, C., Gran, K., Johnson, A., Wilcock, P. (2007) Characterization of sediment sources in the Le Sueur River watershed, southern Minnesota. Poster, Eos Trans. AGU, 88 (52), Fall Meet. Suppl. Abstract H21A-0194.
10. Day, S.S., **Belmont, P.**, Perg, L., Jennings, C., Gran, K., Johnson, A., Wilcock, P. (2007) An integrated sediment budget for the Le Sueur River in southern Minnesota. Poster, Eos Trans. AGU, 88 (52), Fall Meet. Suppl. Abstract H21A-0194.
9. **Belmont, P.** (2007) Sediment dynamics in the agricultural Le Sueur River watershed, southern Minnesota. Oral, Presented at National Center for Earth-surface Dynamics Videoconference Seminar Series. October 2007.
8. **Belmont, P.**, Pazzaglia, F.J., and Morris, D.P. (2007) Strong geomorphic controls on stream optical environments in eastern Pennsylvania. Oral, Abstract for Geological Society of America annual meeting, Denver, CO.
7. **Belmont, P.** (2007) Landscape Evolution and Aquatic Ecology: Long-term Sediment Dynamics and Landscape Influences in Stream Ecosystems. Oral, Doctoral Dissertation, Lehigh University.

6. **Belmont, P.**, Pazzaglia, F.J., Gosse, J. (2006) Using the 10-Be Grain Size Dependency in Alluvial Sediments to Investigate Hillslope and Channel Processes. Oral, American Geophysical Union Fall meeting, San Francisco, CA.
5. **Belmont, P.**, Hargreaves, B.R., and Morris, D.P. (2006) Empirical model for estimating attenuation of ultraviolet radiation in streams. Oral, North American Benthological Society Annual meeting, Anchorage, AK.
4. **Belmont, P.** and Pazzaglia, F.J. (2005) Geologic Influences on Downstream Fining in the Clearwater River Basin, western Washington State: Implications for Transient Landscapes, Poster, Eos Trans. American Geophysical Union, 86 (52), Fall Meet. Suppl., Abstract H31A-1267.
3. **Belmont, P.**, Pazzaglia, F.J., and Gosse, J. (2005) In situ terrestrial cosmogenic nuclides in alluvial sediment: grain size matters. Poster, Geological Society of America annual meeting, Salt Lake City, UT.
2. Frankel, K.L., Dolan, J.F., Finkel, R.C., Owen, L.A., Knott, J.R., **Belmont, P.**, and Lee, J. (2005) Fault slip rates on the Northern Death Valley Fault Zone and Eastern California Shear Zone kinematics. Poster, Geological Society of America annual meeting, Salt Lake City, UT.
1. **Belmont, P.** (2003) An initial inspection of the transparency of streams to ultraviolet radiation in 16 small Pennsylvania watersheds. Oral, M.S. Thesis, Lehigh University.

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

American Geophysical Union

Geological Society of America

American Association of Geographers

Utah Geological Association

Peer reviewer for:

Funding Agencies: National Science Foundation, Natural Sciences and Engineering Research Council of Canada, Romanian National Council for Scientific Research

Journals: American Journal of Science, Earth Science Reviews, Ecological Applications, Geografiska Annaler, Geological Society of America Bulletin, Geology, Geomorphology, Geosphere, Hydrology and Earth System Sciences, Journal of Environmental Quality, JGR- Earth Surface, Journal of Soil and Water Conservation, Journal of Soils and Sediments, Natural Hazards and Earth System Sciences, Quaternary Geochronology, Nature Publishing Group Scientific Reports

Convener of the following sessions at the American Geophysical Union Fall Meeting:

2011: "Predictive understanding of integrated human-natural systems and their response to change." Earth and Planetary Surface Processes Division. *Session organizer and co-chair with E. Foufoula and P. Passalacqua.*

2010: “Lidar for Analysis of Earth Surface Processes.” Earth and Planetary Surface Processes Division. *Session organizer and co-chair with P. Passalacqua.*

2008: “Understanding Sediment Movement Through Fluvial Networks”. Hydrology Division. *Session organizer and co-chair with L. Sklar and R. Cox.*

2006: “New Tools to Study Drainage Basin Evolution”. Hydrology Division. *Session organizer and co-chair with K. Frankel.*

Convener of the following sessions at the Geological Society of America National Meeting:

2011: “Water and Sediment Dynamics in Agricultural Landscapes: Toward Prediction of Watershed Sediment Yield.” Special Session, Panel Discussion, and related Poster Session. *Session organizer and co-chair with K. Gran and C. Jennings.*

2009: “Streambanks in Theory and Practice.” Special Session Sponsored by Hydrogeology and Quaternary Geology and Geomorphology Divisions. *Session organizer and co-chair with K. Skalak.*

Co-author (with Miguel Wong) of Memorandum of Understanding establishing formal collaborative relationship between Saint Anthony Falls Laboratory/National Center for Earth-surface Dynamics and Barr Engineering Co. April, 2008.

Network of Interdisciplinary Initiatives Collaborative Leadership Working Group member. University of Minnesota Graduate School. 2007 - 2008.

Lehigh University Graduate Student Senate, Treasurer 2006 – 2007

Graduate Research and Graduate Student Life Committees, Lehigh University 2006 – 2007

Co-organizer of NABS graduate student workshop for 2005, 2006, and 2007 annual meetings

Organizer, Saucon Creek Sweep and Canal Cleanup Outreach Program, 2003 - 2007

Lehigh in Iceland 2002 and 2007 Trip Organizer/co-leader, co-author of Lehigh in Iceland Guidebook

Foster Hewitt Lecture Series, Lehigh University Co-organizer for 2002 symposium “Extremophiles in time and space”.

Other professional development activities:

NSF Regional Grants Conference. *Participant.* October 25-26, 2010, Salt Lake City, Utah.

Fine Sediment in the Chesapeake Bay Watershed Info Exchange. *Participant.* September 2008. Baltimore, MD.

On the Cutting Edge, 2006 Workshops for Geoscience Faculty. Preparing for an Academic Career in the Geosciences: A Workshop for Graduate Students and Post-doctoral Fellows. *Participant.* Sponsored by the National Science Foundation.

MENTORING

Post-doctoral researcher: Karthik Kumarasamy (started Aug 2014, Probabilistic modeling of water and sediment routing at the watershed scale)

Current Graduate Students (name, degree, years involved, thesis research):

Keelin Schaffrath (PhD, started Aug 2012, Monitoring geomorphic change and understanding implications for fish habitat)

Sara Kelly (PhD, started Aug 2012, Hydraulics, vegetation, and sediment transport processes influencing river channel migration)

Mitchell Donovan (PhD, starting Aug 2014, High resolution topography data to measure river channel form and dynamics)

Angus Vaughan (MS, starting August 2014, Hydrology and sediment dynamics in the Minnesota River Basin)

Bruce Call (MS, starting May 2014, Developing computational tools for automated identification of features in high resolution topography data)

Completed Graduate Students (name, degree received, year graduated, thesis title, current position):

Justin Stout (MS, May 2012, Identifying and quantifying sediment sources and sinks in the Root River, southeastern Minnesota, now pursuing PhD at University of Melbourne)

Michael Souffront (MS, Dec 2013, Channel adjustment and channel-floodplain sediment exchange in the Root River, southeastern Minnesota, employed with BioWest)

Elijah Portugal (MS, Jan 2014, Linking temporal and spatial variability of millennial and decadal-scale sediment yield to aquatic habitat in the Columbia River Basin, employed with Eco Logical Restoration, Inc.)

Current Undergraduate Students: Adam Fisher, Dan Bone, Tim Beach, John Saunders

Mentoree Notable Accomplishments:

Sara Kelly (PhD, ongoing) awarded 3 year NSF GRFP Fellowship for grant proposal “Meandering rivers: migrating towards a predictive understanding of eco-geomorphic feedbacks in channel evolution.” Awarded GSA Graduate Student Research Grant (April 2014).

Keelin Schaffrath (PhD, ongoing) awarded seed grant from National Center for Airborne Laser Swath Mapping for 40 km² of high-resolution, green-wavelength airborne lidar data for grant proposal “Fish and Fire: quantification of post-wildfire fish habitat quality using bathymetric lidar.”

Abby Baur and Meghan Kershner (undergraduates, 2013) Awarded CNR Research Assistantship and Undergraduate Research Grant for grant proposal “Sensitivity of subarctic trees to highway-related effects on permafrost.”

Elijah Portugal (MS 2013) awarded AGU Travel Grant to present at the 2011 Fall Meeting in San Francisco (September 2011). Awarded GSA Graduate Student Research Grant (April 2012). Invited speaker for Society of Wetland Scientists Pacific Northwest Chapter meeting, September 2012, Boise, ID.

Scott Shahverdian (undergraduate, 2012) Awarded Summer Undergraduate Research and Creative Opportunity Grant. Moved on to an MS program at Colorado State University working with Sara Rathburn.

Justin Stout (MS 2012) selected as USU College of Natural Resources Graduate TA of the Year (Feb 2012). Awarded GSA Graduate Student Research Grant (April 2012). Recognized as one of the top 20 graduate research proposals funded in the nation by GSA in 2012. Currently in a PhD program at University of Melbourne working with Ian Rutherford.