Patrick Belmont, Ph.D.

Professor, Department of Watershed Sciences,
Utah Agricultural Experiment Station
Affiliated Researcher, Ecology Center, Utah State University

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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, mathematical modeling of sediment transport as well as fluvial and hillslope erosion processes, geochemical sediment fingerprinting, and quantitative landscape morphometric analysis. I conduct a considerable amount of interdisciplinary and transdisciplinary research and have a strong record of translating my science into useful information to inform policy and management decisions.

PROFESSIONAL EXPERIENCE

Professor, Department of Watershed Sciences
Utah State University, July 2024 - present

Professor and Head, Department of Watershed Sciences
Utah State University, July 2020 - 2024

Associate Professor, Department of Watershed Sciences and Ecology Center
Utah State University, July 2015 – June 2020

Assistant Professor, Department of Watershed Sciences and Ecology Center
Utah State University, December 2009 – June 2015

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

Lehigh University, Bethlehem, PA
M.S. in Earth and Environmental Sciences, Ecology emphasis *Advisor:* Dr. Don P. Morris

Texas Christian University, Fort Worth, TX
B.S. in Biology, Molecular biology emphasis

AWARDS AND HONORS

President, Utah State University Faculty Senate, 2018 – 2021

Utah State University Student Association Faculty Exceptional Service Award, 2020

Utah State University Sustainability Award, 2019

Quinney College of Natural Resources University Service Award, 2019

Kirk Bryan Award for Excellence, Geological Society of America, 2018

Utah State University Faculty Researcher of the Year, Robins Award, 2018

Quinney College of Natural Resources Faculty Researcher of the Year, 2018

Department of Watershed Sciences Faculty Researcher of the Year, 2018

Call et al., (2017, WRR) Highlighted as WRR Featured Article, Recognized in AGU Research Spotlight Eos, 98, https://doi.org/10.1029/2017EO081013. Published on 31 August 2017.

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) Highlighted as WRR Featured Article, Recognized in AGU Research Spotlight, EOS. 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

PEER-REVIEWED PUBLICATIONS citations: 3439 h-index: 33 i10-index: 56

*Graduate student coauthors underlined, undergraduates double underlined, IF = Journal Impact Factor
Conceptualization (C), Methodology (M), Analysis (A), Supervision of Analysis (A_s), Writing (W), Funding (F)

63. Klimas, K. B., Yocom, L. L., Murphy, B. P., David, S. R., **Belmont, P.**, Lutz, J. A., DeRose, R. J., & Wall, S. A. (2025). A machine learning model to predict wildfire burn severity for pre-fire risk assessments, Utah, USA.

62. Lachapelle, P., **Belmont, P.**, Grasso, M., McCann, R., Gouge, D. H., Husch, J., de Boer, C., Molzbichler, D., & Klain, S. (2024). Academic capture in the Anthropocene: a framework to assess climate action in higher education. Climatic Change, 177(3), 40.

61. Ridgway, P., Lane, B., Canham, H., Murphy, B. P., **Belmont, P.**, & Rengers, F. K. (2024). Wildfire, extreme precipitation and debris flows, oh my! Channel response to compounding disturbances in a mountain stream in the Upper Colorado Basin, USA. Earth Surface Processes and Landforms, 49(12), 3855-3872.

60. Jones, J. C., Stout, J. B., **Belmont, P.**, Blythe, T. L., & Wilcock, P. R. (2023). A century of channel change caused by flow augmentation on Sixth Water Creek and Diamond Fork River, Utah, USA. Earth Surface Processes and Landforms. 48: 2057–2078.

59. Wall, S., Murphy, B. P., **Belmont, P.**, & Yocom, L. (2023). Predicting post-fire debris flow grain sizes and depositional volumes in the Intermountain West, United States. Earth Surface Processes and Landforms, 48(1), 179-197.

58. David, S. R., Murphy, B. P., Czuba, J. A., Ahammad, M., & **Belmont, P.** (2023). USUAL Watershed Tools: A new geospatial toolkit for hydro-geomorphic delineation. Environmental Modelling & Software, 159, 105576.

57. Haghnazar, H., **Belmont, P.**, Johannesson, K. H., Aghayani, E., & Mehraein, M. (2023). Human-induced pollution and toxicity of river sediment by potentially toxic elements (PTEs) and accumulation in a paddy soil-rice system: A comprehensive watershed-scale assessment. Chemosphere, 311, 136842.

56. Lauer, J. W., Lenhart, C. F., Echterling, C., **Belmont, P.**, & Rausch, R. (2022). Air-Photo-Based Change in Channel Width Sedimentation in the Minnesota River Basin. In Geospatial Information Handbook for Water Resources and Watershed Management, Volume III (pp. 91-124). CRC Press.

55. Xu, Z., **Belmont, P.**, Brahney, J., & Gellis, A. C. (2022). Sediment source fingerprinting as an aid to large-scale landscape conservation and restoration: A review for the Mississippi River Basin. Journal of Environmental Management, 324, 116260.

54. Ahammad, M., Czuba, J. A., Pfeiffer, A. M., Murphy, B. P., & **Belmont, P.** (2021). Simulated Dynamics of Mixed Versus Uniform Grain Size Sediment Pulses in a Gravel-Bedded River. *Journal of Geophysical Research: Earth Surface*, 126(10), e2021JF006194. MAsWF

53. Hansen, A.T., Campbell, T., Cho, S.J., Czuba, J.A., Dalzell, B.J., Dolph, C.L., Hawthorne, P.L., Rabotyagov, S., Lang, Z., Kumarasamy, K., **Belmont, P.**, Finlay, J.C., Foufoula-Georgiou, E., Kling, C.L., Wilcock, P.R. (2021) Integrated assessment modeling reveals near-channel management as cost-

effective to improve water quality in agricultural watersheds. *Proceedings of the National Academy of Sciences*, 118(28). CMA_sWF

52. Fisher, A., **Belmont, P.**, Murphy, B.P., MacDonald, L, Ferrier, K.L, Hu, K. (2021) Natural and anthropogenic controls on sediment rating curves in northern California coastal watersheds. *Earth Surface Processes and Landforms*, 46(8), 1610-1628. CMA_sWF

51. Donovan, M., Belmont, P., & Sylvester, Z. (2021). Evaluating the relationship between meander-bend curvature, sediment supply, and migration rates. *Journal of Geophysical Research: Earth Surface*, 126(3), e2020JF006058.. CMA_sWF

50. Wilkins, E. J., Akbar, H., Saley, T. C., Hager, R., Elkin, C. M., **Belmont, P.**, Flint, C.G., Smith, J.W. (2021) Climate Change and Utah Ski Resorts: Impacts, Perceptions, and Adaptation Strategies. *Mountain Research and Development*, 41(3), R12. MA_sWF

49. Zimmer, S.N., Grosklos, G., Adler, P.B., **Belmont, P.** (2021) Agreement and uncertainty among climate change impact models: A sagebrush steppe vegetation case study. *Rangeland Ecology and Management.* 75, 119-129. CMASWF

48. Brice, E.M., Miller, B.A., Zhang, H., Goldstein, K., Grosklos, G., Zimmer, S., **Belmont, P.**, Flint, C.G., Givens, J., Adler, P., Brunson, M., Smith, J. (2020) Impacts of climate change on multiple use management of Bureau of Land Management land in the Intermountain West (USA). Ecosphere. 11(11), e03286. [IF: 2.7] CMA_sWF

47. Murphy, B.P., Walsworth, T.E., **Belmont, P.**, Conner, M.M., and Budy, P. (2020) Dynamic Habitat Disturbance and Ecological Response (DyHDER): modeling population dynamics in response to variable disturbance of physical habitat condition. Ecosphere. 11(1), e03023. [IF: 2.7] CMA_sWF

46. Riley, K.E., Rittenour, T.M., Pederson, J.L., **Belmont, P.** (2019) Cosmogenic erosion rates in a transient landscape, Grand Staircase, southern Utah. Geology. 47(9), 811-814. [IF: 5.0] https://doi.org/10.1130/G45993.1 CMA_sW

45. Murphy, B.P., Czuba, J.A., **Belmont, P.** (2019) Post-wildfire sediment cascades: a modeling framework linking debris flow generation and network-scale sediment routing. Earth Surface Processes and Landforms. 44(11), 2126-2140. [IF: 3.7] https://doi.org/10.1002/esp.4635 CMA_sWF

44. Donovan, M., **Belmont, P.**, Notebaert, B., Coombs, T., Larson, P., Souffront, M. (2019) Accounting for uncertainty in remotely-sensed measurements of river planform change. Earth Science Reviews. 193, 220-236. [IF: 5.3] https://doi.org/10.1016/j.earscirev.2019.04.009 CMAWF

43. K. Gran, C. Dolph, A. Baker, M. Bevis, S.J. Cho, J.A. Czuba, B. Dalzell, A. Hansen, S. Kelly, Z. Lang, J. Schwenk, **P. Belmont**, J.C. Finlay, P. Kumar, S. Rabotyagov, G. Roehrig, P. Wilcock, and E. Foufoula-Georgiou (2019) Data synthesis for collaborative, multidisciplinary research in an intensively managed agricultural landscape: the Minnesota River Basin environmental observatory. Water Resources Research. 55(4), 3576-3592. [IF: 4.4] https://doi.org/10.1029/2018WR024211 WF

42. Cho, S.J., Wilcock, P.R., **Belmont, P.**, Gran, K.B., Hobbs, B.F. (2019) Simulation model for collaborative decision-making on sediment source reduction in an intensively managed watershed. Water Resources Research. 55(2), 1544-1564. [IF: 4.4] https://doi.org/10.1029/2018WR024324 CMAWF

41. Donovan, M., and **Belmont, P.** (2019) Timescale dependence in river channel migration measurements. Earth Surface Processes and Landforms. 44(8), 1530-1541. https://doi.org/10.1002/esp.4590 [IF: 3.7] CMA_sWF

40. Prudencio, L., Choi, R., Esplin, E., Ge, M., Gillard, N., Haight, J., **Belmont, P.**, Flint, C. (2018) The Impacts of Wildfire Characteristics and Employment on the Adaptive Management Strategies in the Intermountain West. Fire. 1, 46. doi:10.3390/fire1030046. CMAWF

39. Murphy, B.P., Yocom, L.Y., **Belmont, P.** (2018) Beyond the 1984 perspective: narrow focus on modern wildfire trends underestimates future risks to water security. Earth's Future. 6(11), 1492-1497. https://doi.org/10.1029/2018EF001006 [IF: 4.6] CMA_sWF

38. Mitchell, N., Kumarasamy, K., Cho, S.J., **Belmont, P.**, Dalzell, B., Gran, K.B. (2018) Reducing High Flows and Sediment Loading through Increased Water Storage in an Agricultural Watershed of the Upper Midwest, USA. Water. 10(8), 1053; https://doi.org/10.3390/w10081053 [IF: 2.1] CMAWF

37. Kumarasamy, K. and **Belmont. P.** (2018) Calibration parameter selection and watershed hydrology model evaluation in time and frequency domains. Water. 10, 710. doi:10.3390/w10060710 [IF: 2.1] CMAWF

36. Kelly, S.A., and **Belmont, P.** (2018) High Resolution Monitoring of River Bluff Erosion Reveals Failure Mechanisms and Geomorphically Effective Flows. Water. 10(4), 394. doi:10.3390/w10040394 [IF: 2.1] CMAWF

35. 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., Foufoula-Georgiou, E., and **Belmont, P.** (2018) Critical transition in critical zone of intensively managed landscapes. Anthropocene. 22, 10-19. [IF: 4.3] WF

34. Yan, Q., Iwasaki, T., Stumpf, A., **Belmont, P.**, Parker, G., & Kumar, P. (2018). Hydrogeomorphological differentiation between floodplains and terraces. Earth Surface Processes and Landforms. 43(1), 218-228. doi: 10.1002/esp.4234 [IF: 3.7] MA_sWF

33. Lenhart, C. F., Smith, D. J., Lewandowski, A., **Belmont, P.**, Gunderson, L., & Nieber, J. L. (2018). Assessment of Stream Restoration for Reduction of Sediment in a Large Agricultural Watershed. Journal of Water Resources Planning and Management. 144(7), 04018032. [IF: 3.5] A_sWF

32. Vaughan, A.A., **Belmont, P.**, Hawkins, C.P., Wilcock, P.R., (2017) Near-channel versus watershed controls on sediment rating curves. Journal of Geophysical Research – Earth Surface. 122(10), 1901-1923. doi: 10.1002/2016JF004180 [IF: 3.4] CMAWF

31. Lauer, J.W., Echterling, C., Lenhart, C., **Belmont, P.**, Rausch, R. (2017). Air-photo based change in channel width in the Minnesota River basin: Modes of adjustment and implications for sediment budget. Geomorphology. 297, 170-184. doi: 10.1016/j.geomorph.2017.09.005 [IF: 3.0] MAWF

30. Kelly, S., Takbiri, Z., **Belmont, P.**, Foufoula-Georgiou, E. (2017) Human amplified changes in precipitation-runoff patterns in large river basins of the Midwestern United States. Hydrology and Earth System Sciences. 21(10), 5065. doi:10.5194/hess-2017-133 [IF: 4.4] CMAWF

· Selected as *WRR* Featured Article, Recognized in AGU Research Spotlight, *EOS*.

29. Call, B., **Belmont, P.**, Schmidt, J.C., Wilcock, P.R. (2017) Changes in Floodplain Inundation under Non-Stationary Hydrology for an Adjustable, Alluvial River Channel. Water Resources Research. 53(5), 3811-3834. doi:10.1002/2016WR020277 [IF: 4.4] CMAWF

28. Czuba, J.A., Foufoula-Georgiou, E., Gran, K.B., **Belmont, P.**, Wilcock, P.R., (2017) Interplay between Spatially Explicit Sediment Sourcing, Hierarchical River Network Structure, and In-Channel Bed-Material Sediment Transport and Storage Dynamics. Journal of Geophysical Research-Earth Surface. 122(5), 1090-1120. doi:10.1002/2016JF003965 [IF: 3.4] A_sWF

27. **Belmont, P.**, and Foufoula-Georgiou, E. (2017) Solving water quality problems in agricultural landscapes: new approaches for these nonlinear, multi-process, multi-scale systems. Water Resources Research. 53(4), 2585-2590. doi:10.1002/2017WR020839 [IF: 4.4] CMAWF

26. Foufoula-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: 3.7] CWF

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: 3.7] CMAWF

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: 2.8] CMAWF

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: 7.1] CMAWF

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: 3.4] A_sW

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: 2.1] CMAWF

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: 2.1] CMAWF

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: 2.5] CMAWF

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. 28(4), 1951-1961 DOI: 10.1002/hyp.9738 [IF: 2.5] AW

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: 3.8] CMAW

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: 1.9] CMAW

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: 2.4] CMAW

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: 1.8] CMAW

13. Day S.S., Gran, K.B., **Belmont, P.**, Wawrzyniec, T. (2013) Measuring bluff erosion part 1: terrestrial laser scanning methods for change detection. Earth Surface Processes and Landforms. 38(10), 1055-1067. DOI: 10.1002/esp.3353 [IF: 2.4] MAW

12. Passalacqua, P., **Belmont, P.**, Foufoula-Georgiou, E. (2012) Automatic geomorphic feature extraction from lidar in flat and engineered landscapes. Water Resources Research. 48: W03528. doi:10.1029/2011WR010958. [IF: 2.7] CMAW

· 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: 4.8] CMAWF

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] CMAW

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] CMAW

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

8. Gangodagamage, C., **Belmont, P.**, and Foufoula-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: 2.7] A_sW

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] CMAW

6. **Belmont, P.** (2011) Floodplain width adjustments in response to rapid base level fall and knickpoint migration. Geomorphology. 128 (1-2): 92-102. [IF: 2.4] CMAW

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: 2.1] CMAW

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] CMAW

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: 4.1] CMAW

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: 2.6] CMAW

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: 0.7] AW

OTHER PUBLICATIONS

Published data and models:
Brice, E., B. A. Miller, H. Zhang, K. Goldstein, S. Zimmer, G. Grosklos, **P. Belmont**, C. G. Flint, J. Givens, M. Brunson, P. Adler, J. W. Smith (2020). Impacts of climate change on the management of multiple uses of BLM land in the IMW, HydroShare, https://doi.org/10.4211/hs.5f6249260f5f4f3fa9818a97970886af

Ferrier, K., L. H. MacDonald, **P. Belmont**, K. Hu (2020). ^{10}Be concentrations in stream sediment and inferred denudation rates in the Little River and Elk River basins, northern California Coast Ranges, HydroShare, https://doi.org/10.4211/hs.b7515f219c7a40439c9c2b44183192c4

Belmont, P. (2019) Public Comments on Draft Order No. R1-2020-0001 "California Regional Water Quality Control Board Waste Discharge Requirements for the Elk River Watershed in Humboldt County, California."
https://www.waterboards.ca.gov/northcoast/board_info/board_meetings/02_2020/index.html

Prudencio, L., R. Choi, E. D. Esplin, M. Ge, N. Gillard, J. Haight, **P. Belmont,** C. G. Flint (2019). The Impacts of Wildfire Characteristics and Employment on the Adaptive Management Strategies in the

Intermountain West, HydroShare,
http://www.hydroshare.org/resource/c063e0d244744d298428ea17e3a93b69

Kelly, S., Call, B., Levine, S., **Belmont**, **P.**, Larson, P. (2018). Minnesota River Bathymetry: 2013 - 2016 , HydroShare, http://dx.doi.org/10.4211/hs.6cd3728f69cb4cb39c6f11baac1734ec

Belmont, P. (2018) Cross sections of the Le Sueur and Maple Rivers, Minnesota. https://sead2.ncsa.illinois.edu/datasets/5b9c6f1fe4b0a6268630dec5, http://doi.org/10.5967/M0639MTH

Belmont, P. (2018) Greater Blue Earth and Lake Pepin sediment fingerprinting data. http://doi.org/10.5967/M0WQ01XT

Kelly, S., Z. Takbiri, **P. Belmont**, E. Foufoula-Georgiou (2017). Human amplified changes in precipitation–runoff patterns in large river basins of the Midwestern United States - accompanying data, HydroShare, http://dx.doi.org/10.4211/hs.e10be4569cf54127bf6a225862b964ee

Published reports and papers:
Ahammad, M., Czuba, J. A., David, S. R., Murphy, B. P., & **Belmont, P.** (2023, January). Control of flow sequence and spatial distribution of debris flow input on river network modeling. In Proceedings of SEDHYD 2023: Conferences on Sedimentation and Hydrologic Modeling.

Murphy, B. P., David, S. R., Belmont, P., Ahammad, M., Czuba, J. A., Wall, S., **Belmont, P.** & Stout, J. (2023, January). Water supply vulnerability to post-wildfire reservoir sedimentation: A new modeling framework for the western US and applications to Salt Lake City, Utah. In Proceedings of SEDHYD 2023: Conferences on Sedimentation and Hydrologic Modeling.

David, S. R., Murphy, B. P., **Belmont, P.**, Czuba, J. A., & Ahammad, M. (2023, January). Fire-WATER: A new GIS framework to assess post-wildfire erosion, watershed-scale sediment dynamics, and downstream impacts in the western US. In Proceedings of SEDHYD 2023: Conferences on Sedimentation and Hydrologic Modeling.

David, S. R., **Belmont, P.**, Murphy, B. P., & Ahammad, M. (2023, January). Predicting post-wildfire risks to and vulnerability of transportation infrastructure. In Proceedings of SEDHYD 2023: Conferences on Sedimentation and Hydrologic Modeling.

Belmont, P., and Davies, R. (2021) Surprise! You're probably a climate change denier. Medium. https://medium.com/@patrick.belmont/surprise-youre-probably-a-climate-change-denier-52a5e2dd7743

Belmont, P., Murphy, B.P., David, S., Czuba, J.A., Ahammad, M., Wall, S., Yocom, L, Klimas, K., Del Fante, K., (2021) Assessing vulnerability of reservoirs to post-wildfire sedimentation in the Wasatch Front. Final report for the Utah State Legislature, funded by Utah State University Public Lands Initiative.

Wilcock, P., Atwood, T., **Belmont, P.**, Epperly, J., Gaeta, J., Hammill, H., Jones, J., Stout, J. (2018) Comprehensive Study and Recommendations for Instream Flow Requirements on Sixth Water Creek and Diamond Fork River. Final project report for the Utah Reclamation, Mitigation and Conservation Commission.

Belmont, P., Donovan, M., Brahney, J., Capito, L., Burgert, Z. (2018) Sediment dynamics in the Bear River-Mud Lake-Bear Lake system. Final project report. https://doi.org/10.15142/T3N36J.

MacDonald, L. H., Miles, M. W., Beach, S., Harrison, N. M., House, M. R., **Belmont, P.**, & Ferrier, K. L. (2017). Development and Implications of a Sediment Budget for the Upper Elk River Watershed, Humboldt County. Gen. Tech. Rep. PSW-GTR-258. Albany, CA: US Department of Agriculture, Forest Service, Pacific Southwest Research Station: 163-173, 258, 163-173.

Wilcock, P., Cho, S.J., Gran, K., Hobbs, B., **Belmont, P.**, Bevis, M., Heitkamp, B., Marr, J., Mielke, S., Mitchell, N., and Kumarasamy, K. (2016) CSSR: Collaborative for Sediment Source Reduction Greater Blue Earth River Basin. Final project report for MPCA, MDA, USEPA, MAWRC. http://www.bwsr.state.mn.us/drainage/dwg/resources/CSSR_Final_Report.pdf

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.

Gran, K.B., **Belmont, P.**, Day, S., Jennings, C., Lauer, J.W., Viparelli, E., Wilcock, P.R., Parker, G., (2011) An Integrated Sediment Budget for the Le Sueur River Basin Final Report June 2011. https://www.pca.state.mn.us/sites/default/files/wq-iw7-29o.pdf

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

*For collaborative projects, dollar amounts listed as (my portion/total award).

2024 - 2029 Murphy, B.P., David, S., Belmont, P., Yocom, L., Lane, B., Moraes, A. **Predicting burn severity and runoff response for pre-fire watershed assessment in California.** California Department of Forestry and Fire Protection. ($150,000/$750,000)

2025-2027 Lane, B., Murphy, B.P., Belmont, P., Yocom, L. **Routing post-fire sediment risks: modeling downstream sedimentation impacts to transportation infrastructure over management time-scales.** Colorado Department of Transportation. ($50,000/$200,000)

2025-2027 Lane, B., Murphy, B.P., Belmont, P., Yocom, L. **Geospatial and machine-learning tools to assess and plan for direct post-wildfire sediment hazards to transportation infrastructure.** Colorado Department of Transportation. ($50,000/$199,938)

2023-2025 Belmont, P., **Opportunities to Mitigate Transportation Effects in Burned Riparian Areas.** US Forest Service. ($60,000)

2022-2024 Belmont, P., Braithwaite, H., Yocom, L., Murphy, B.P., David, S. **Reducing wildfire-related risks to water infrastructure in Utah.** Utah State University Extension. ($74,562)

2022-2024 David, S., Belmont, P., Murphy, B.P. **A geospatial toolkit for rapid assessment of post-wildfire sedimentation risks to infrastructure**. Utah Department of Transportation. ($70,000)

2022-2024 Belmont, P., David, S., Murphy, B.P. **Proactive planning tool to reduce wildfire sedimentation risks: a pilot project.** Utah Department of Transportation. ($70,000)

2021-2026 Belmont, P., **Assessing post-wildfire sediment and wood dynamics in stream networks.** USDA McIntire-Stennis Grant. ($20,000)

2021-2022 Belmont, P., Stout, J., Gowing, I., and Torres-Rua, A. **Quantifying the impact of reservoir sedimentation and wildfire on water security in the Weber River watershed.** US Geological Survey 104b program. ($38,611/$92,475)

2020 - 2025 Belmont, P., Brahney, J., Wheaton, J., Gellis, A. **Identifying sediment sources and guiding conservation strategies in the Mississippi River Basin.** USDA NRCS. ($243,942/$820,000)

2019 - 2023 Yocom, L., Murphy, B.P., Belmont, P. **Evaluating fuel treatment efficacy in reducing risk of high-severity fire and downstream impacts.** Joint Fire Science Program. ($85,242/$445,159)

2019 - 2023 Murphy, B.P., Belmont, P., Czuba, J. **Predicting post-wildfire sedimentation of reservoirs: probabilistic modeling of debris flow generation and downstream sediment routing.** National Science Foundation. ($180,000/$490,000)

2016 - 2022 Huntly, N., Wang, S.Y., Belmont, P., Flint, C., Tarboton, D. **NRT: Graduate Climate Adaptation Research that Enhances Education and Responsiveness of science at the management-policy interface (Grad-CAREER)** National Science Foundation National Research Traineeship Program. ($2,698,878/unsplit among PIs)

Completed:

2018 - 2020 Belmont, P. and Murphy, B. **Assessing vulnerability of reservoirs to post-wildfire sedimentation in the Wasatch Front.** Utah State University Public Lands Initiative. Utah State University. ($52,000)

2017 - 2020 Belmont, P. and MacDonald, L. **Analysis of discharge-suspended sediment relationships to examine effects of geologic setting and management practices.** National Council for Air and Stream Improvement. ($57,000)

2018 - 2019 Belmont, P. **Developing a Sediment Budget for the Upper Elk River.** National Council for Air and Stream Improvement. ($33,800)

2018 - 2019 Belmont, P. **Sediment Production Rates over Time in Two Sub-watersheds in Little River.** National Council for Air and Stream Improvement. ($26,200)

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)

2016 - 2018 Belmont, P. **Water and sediment dynamics of the Bear River-Dingle Marsh-Bear Lake system.** Bear Lake Watch ($74,391)

2014 - 2018 Belmont, P. **Coupled human-biophysical framework to predict conservation effectiveness.** Conservation Innovation Grant. Funded by US Department of Agriculture. ($123,763)

2016 - 2017 Belmont, P., Belmont, S.W. **Analysis of hydrologic change and sources of excess sediment in Scott County, MN**. Funded by Scott County, Minnesota. ($25,000/$50,000)

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 - 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 - 2016 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 - 2016 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.** Funded by Utah Agricultural Experiment Station McIntire-Stennis Grant. ($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)

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 McIntire-Stennis Grant. ($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 ^{10}Be and ^{210}Pb 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.** National Science Foundation ($89,000)

2009 - 2012 Belmont, P., Willenbring, J.K. **Tracing sediment sources with meteoric ^{10}Be: Linking erosion and the hydrograph.** Funded by MN Dept 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, precipitation, interception, evapotranspiration, infiltration, groundwater flow, sources for runoff generation, open channel flow, snow and snowmelt. Features process modeling and parameter estimation techniques as related to wildland systems. Lecture and lab components. (4 Credits, Every Spring semester)

Physical Geography (GEOG 1000). This is an introductory level interdisciplinary natural science course that explores Earth's systems (the atmosphere, lithosphere, hydrosphere, and biosphere) and the linkages between them. The course provides essential insights into the natural processes and features of the Earth, enabling informed decision-making across various sectors that directly impact human life and

the environment. We cover basic theory as well as applications including disaster preparedness and management, environmental conservation, urban planning and development, agriculture and food security, and climate change mitigation and adaptation.

Climate Adaptation Science Studio Course, CAS 6002, 6003. This is a two-semester course that serves as the curricular 'heart' of the Climate Adaptation Science graduate program. The course emphasizes core training in informatics, interdisciplinary research methods, a variety of modeling and analytical approaches from climate, ecology, and social sciences, and project management. The first semester provides a series of lectures, discussions, and exercises targeted to broaden and deepen students' exposure to climate adaptation issues and the skillsets needed to work on transdisciplinary teams. The first semester culminates in the development of a collaborative research proposal. The second semester provides a supportive and dynamic forum for conducting the research outlined in the proposal. (4 Credits, Course spans Fall and Spring semesters)

Geomorphology, WATS/GEOL 3600. Lecture and laboratory course focused on learning and applying fundamental principles, generalizations, and theories of geomorphology. The course covers concepts such as form-process relationships, equilibrium, geochronology, physical and chemical weathering, soil development, hillslope processes, stream hydrology, sediment transport, stream profiles, stream reach classification, glacial processes and landforms, eolian processes and landforms, and landscape evolution. Labs involve a combination of field work and surveying, GIS mapping and computational analysis. (4 credits, Even year Fall semesters, stating Fall 2018)

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).

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 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 reach and channel network scales b) creation of fluvial stratigraphy and its relation to morphologic evolution of rivers and c) traditional and emerging techniques to measure 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)

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)

BROADER IMPACT ACTIVITIES

Dialogues on Economic Growth and Sustainability
In February 2024, I convened the Dialogues on Economic Growth and Sustainability symposium, designed to explore the tensions and opportunities in promoting well-being for both people and the planet. With support from the USU President's Office, Quinney College of Natural Resources, Huntsman School of Business, and College of Humanities and Social Sciences' Community and Natural Resources Institute. The three-part symposium featured a series of panel discussions and presentations that delved into topics such as the relationship between economic growth and well-being, the feasibility of decoupling economies from energy and material consumption, and strategies for enhancing community resilience. Notable speakers included Dr. Rob Davies, Associate Professor of Physics,

Darren Parry, Shoshone Nation Tribal Leader, David Zook, Cache County Executive, Jeff Reece, Sustainability Entrepreneur, and others. The event aimed to foster a compelling vision for the co-evolution of economics and environmental sustainability.

Guest Editor for Special Issue of Open-Access Journal *Water* focused on "Watershed Hydrology, Erosion and Sediment Transport Processes" Hydrology is changing in profound and pervasive ways in watersheds throughout the world, with important implications for erosion and sediment transport. Our ability to study linkages between hydrology and sediment dynamics has advanced considerably within the past few years. I am serving as Guest Editor for this special issue that seeks to highlight innovative studies that utilize new monitoring, modeling or analytical techniques to examine these linkages and predict the implications for water quality, river channel morphology, flood risk, human-built infrastructure, or land and water management, policy and restoration.

Member of National Association of Geoscience Teachers Traveling Workshops Team. Starting in 2017, I have been selected as a member of the NAGT Traveling Workshops team. NAGT workshops focus on 'Building Stronger Geoscience and Environmental Science Programs', 'Strengthening Cross-Campus Environmental and Sustainability Programs' and 'Supporting the Success of All Students.' Departments or programs throughout the US can apply for NAGT TW members to facilitate a workshop on any of these topics, customized to the needs of the requesting institution. As a facilitator, I work directly with the requesting institution and utilize the wealth of resources that have been compiled by NAGT, SERC, InTeGrate and others to assess the current status of the department/program and develop vision for where they want to go as well as an action plan to get them there.

Advisor for Minnesota State Legislature and Environmental Agencies. Since 2008, I have served as an advisor to a variety of Minnesota government agencies, consulting on topics regarding environmental modeling, development of TMDLs, developing conservation strategies for a wide range of topics such as reducing erosion and sediment pollution, managing water runoff, and protecting rivers against invasive carp. I work directly with the Minnesota Legislative Water Commission, Minnesota Pollution Control Agency, Minnesota Department of Agriculture, Minnesota Board of Water and Soil Resources, and county-level Soil and Water Conservation Districts.

INVITED PRESENTATIONS

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

85. **Belmont, P.**, (2025) Restoring Great Salt Lake. Canyon Rim Academy. Salt Lake City, Utah. January 2025

84. **Belmont, P.**, (2024) Restoring Great Salt Lake. Brigham City Women's Club. Brigham City, Utah. November 2024.

83. **Belmont, P.**, (2024) Can we live the good life and keep the planet healthy? Science on Tap. The Cache Bar. Logan, Utah. October, 2024.

82. **Belmont, P.**, (2024) Can we live the good life and keep the planet healthy? Science Unwrapped. Utah State University. Logan, Utah. October, 2024.

81. **Belmont, P.**, (2024) The Art and Science of Terrible Decisions. Heathen Church, The White Owl. Logan, Utah. September, 2024.

80. **Belmont, P.**, Brahney, J., Wheaton, J., Bailey, P., Xu, Z., Herbine, L., Sawyer, S. (2024) Sediment sources and conservation planning in the Mississippi River Basin. Joint National Meeting of Natural Resources Conservation Service and Soil and Water Conservation Society. Myrtle Beach, South Carolina. July, 2024.

79. **Belmont, P.**, (2024) Motivating universities to be better leaders in solving the climate crisis. National Equal Justice Association. San Francisco, California. June, 2024.

78. **Belmont, P.**, and others (2024) Building Connections: Pathways to community engagement and accessibility in natural resource education. 15th Biennial Conference on University Education in Natural Resources. Oregon State University. Corvallis, OR. April, 2024.
Civil discourse in science, society, and politics. Department of Political Science. Utah State University. Logan, Utah. April, 2024.

77. **Belmont, P.**, and others (2024) Entropy and Preservation of Great Salt Lake. Utah Museum of Contemporary Art. Salt Lake City, Utah. April, 2024.

76. **Belmont, P.**, and others (2024) Growth and Balance: Air quality and health of humans and ecosystems. Community and Natural Resources Institute, Utah State University. Logan, Utah. February, 2024.

75. **Belmont, P.**, and David, S. (2023) Tools to reduce wildfire sedimentation risks. Utah Transportation Conference. Sandy, Utah. October, 2023.

74. McLennan, C., and **Belmont, P.** (2023) Inclusive Excellence in Sustainability. Utah State University. Logan, Utah. October, 2023.

73. **Belmont, P.**, (2023) Restoring Great Salt Lake. Women's Democratic Club. Salt Lake City, Utah. June, 2023.

72. **Belmont, P.**, (2023) Restoring Great Salt Lake. Campbell Scientific. Logan, Utah. May, 2023.

71. **Belmont, P.**, Murphy, B.P., David, S. (2023) Reducing wildfire-related risks to water infrastructure in Utah. Spring Runoff Conference, Utah State University. Logan, Utah. March, 2023.

70. **Belmont, P.**, (2023) Great Salt Lake. Institute on Government and Politics, Utah State University. Logan, Utah. April, 2023.

69. **Belmont, P.**, (2023) Restoring Great Salt Lake. Powder Mountain Ski Resort. Eden, Utah. February, 2023

68. **Belmont, P.** (2022) Snow Trends, Risks, and Adaptation Strategies for Winter Mountain Recreation. Mountain Travel Symposium. Vail, Colorado. April, 2022.

67. **Belmont, P.** (2022) Science and management of wildfire, fish, and water resources in the western US. Southwest Fire Science Consortium webinar series. February, 2022.

66. **Belmont, P.** (2022) Science and management of wildfire, fish, and water resources in the western US. Weber State University Department of Earth & Environmental Sciences seminar series. Ogden, Utah. February, 2022.

65. **Belmont, P.** (2021) Overcoming the 'soft' climate change denier in each of us. Simon Fraser University. Vancouver, BC, Canada (via zoom). October, 2021.

64. **Belmont, P.** (2021) Overcoming 'soft' climate change denial. UK Bath Psychology Department seminar series. Bath, UK (via zoom). October, 2021.

63. **Belmont, P.** (2021) FIRED UP: Wildlife, Fish and Water Security in Utah. Swaner Preserve and Ecocenter Lecture Series. Park City, Utah. August, 2021.

62. **Belmont, P.** (2021) Climate change denial as it relates to forestry, from the perspective of a watershed scientist. Intermountain Society of American Foresters annual conference. Logan, Utah (via zoom). April, 2021.

61. **Belmont, P.** (2021) Redefining climate change denial. TEDxUSU. Logan, Utah (via zoom). March, 2021.

60. **Belmont, P.** (2020) USU Clean Energy Plan. Utah State Legislature Clean Air Caucus. Salt Lake City, Utah. June 2020.

59. **Belmont, P.** (2019) Is there a future for skiing in Utah? Stokes Nature Center Canyon Conversations Seminar Series. October, 2019. Logan, Utah.

58. **Belmont, P.** (2019) Restoring the health of large rivers in agricultural landscapes. Webinar for USDA Natural Resources Conservation Service Leadership Team. Washington, D.C. June, 2019.

57. **Belmont, P.** (2019) Restoring the health of large rivers in agricultural landscapes. Webinar for Grassland Soil and Water Research Laboratory USDA-Agricultural Research Service. Temple, Texas. May, 2019.

56. **Belmont, P.** (2019) Monitoring and modeling sediment dynamics at large landscape scales. O.T. Hayward Distinguished Lecture Series. March, 2019. Baylor University, Waco, Texas.

55. **Belmont, P.** (2019) Restoring the health of large rivers in agricultural landscapes. O.T. Hayward Distinguished Lecture Series. March, 2019. Baylor University, Waco, Texas.

54. **Belmont, P.**, (2019) Measuring and mitigating sediment pollution problems at the watershed scale. Minnesota Erosion Control Association Conservation Training Workshop. January, 2019. St. Cloud, Minnesota.

53. **Belmont, P.**, (2018) Water Storage: Best hope for reducing high flows and sediment pollution in southern Minnesota. River Restoration 2018 – Protecting and Restoring Rivers in the Face of Uncertainty. October 2018. Two Harbors, Minnesota.

52. **Belmont, P.,** and Murphy, B.P. (2018) Routing of large, heterogeneous sediment inputs through river networks. National Chung Hsing University. March, 2018. Taichung, Taiwan.

51. **Belmont, P.** (2017) The past, present and potential futures of the Minnesota River System. Talk for public audience at the Minnesota River Congress. November, 2017. Jordan, Minnesota.

50. **Belmont, P.** (2017) Purpose-built participatory modeling: linking science and stakeholders to evaluate water quality improvement strategies. Department of Geosciences, Idaho State University. October, 2017. Pocatello, Idaho.

49. **Belmont, P.** (2017) Restoring water quality in an intensively managed agricultural landscape. Maynooth University, Department of Geography. March 2017, Maynooth, Ireland.

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. Foufoula-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. November, 2014. 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. Foufoula-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 Foufoula-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.,** Foufoula-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

Belmont, P. (2024) A new framework to assess climate action in higher education. Spring Runoff Conference, Utah State University.

Langstroth, C., Murphy, B. P., & Belmont, P. (2024). Constraining Decadal-Scale Erosion of Post-Wildfire Debris Flow Deposits. In Geological Society of America Abstracts (Vol. 56, p. 402407).

Gillard, N., **Belmont, P.**, Murphy, B.P. (2018) Effects of post-wildfire changes in hydrology and sediment transport on fish habitat across western United States. American Geophysical Union Fall meeting. December 2018. Washington D.C.

Fisher, A.C.N., **Belmont, P.**, MacDonald, L.H. (2018) Evaluating Sediment Rating Curves in Rivers Draining Redwood Forests to Investigate Trends in Sediment Production and Transport. American Geophysical Union Fall meeting. December 2018. Washington D.C.

Hansen, A., Rabotyagov, S., Dalzell, B.J., Cho, S.J., Dolph, C., Hawthorne, P., Czuba, J.A., **Belmont, P.**, Kling, C., Finlay, J.C., Kumarasamy, K., and Foufoula-Georgiou, E. (2018) Multi-Model Optimization of Field and In-Channel Management Actions in Agricultural Watersheds to Reduce Nitrate, Phosphorus, and Sediment Loads. American Geophysical Union Fall meeting. December 2018. Washington D.C.

Jones, J., **Belmont, P.**, Wilcock, P.R. (2018) Disturbance and recovery at multiple temporal scales – Diamond Fork River, Utah. American Geophysical Union Fall meeting. December 2018. Washington D.C.

Murphy, P.B., Yocom, L., **Belmont, P.** (2018) Beyond the 1984 perspective: western wildfire and water security. American Geophysical Union Fall meeting. December 2018. Washington D.C.

Huntly, N., **Belmont, P.**, Flint, C., Gordillo, L., Howe, P.D., Lutz, J.A., Null, S.E., Reed, S., Rosenberg, D.E., Wang, S.Y. (2017) A Program to Prepare Graduate Students for Careers in Climate Adaptation Science. American Geophysical Union Fall meeting. December 2017. New Orleans, LA.

Wilcock, P.R., Cho, S.J., Gran, K.B., **Belmont, P.**, Hobbs, B.F., Heitkamp, B., Marr, J.D.G. (2017) Mud, models, and managers: Reaching consensus on a watershed strategy for sediment load reduction. American Geophysical Union Fall meeting. December 2017. New Orleans, LA.

Lauer, J.W., Echterling, C., Lenhart, C.F., Rausch, R., **Belmont, P.** (2017) Channel Width Change as a Potential Sediment Source, Minnesota River Basin. American Geophysical Union Fall meeting. December 2017. New Orleans, LA.

Belmont, P., Vaughan, A.A., Fisher, A.C.N. (2017) Geomorphic versus land use controls on suspended sediment rating curves. American Geophysical Union Fall meeting. December 2017. New Orleans, LA.

Jones, J., **Belmont, P.**, Wilcock, P.R. (2017) Geomorphic Change Induced by 100 years of Flow Alteration on the Diamond Fork River, Central Utah. American Geophysical Union Fall meeting. December 2017. New Orleans, LA.

Murphy, B. P., Czuba, J. A., **Belmont, P.**, Budy, P., & Finch, C. (2017) Fish and fire: Post-wildfire sediment dynamics and implications for the viability of trout populations. American Geophysical Union Fall meeting. December 2017. New Orleans, LA.

Kelly, S.K., and Belmont, P. (2017) High Resolution Monitoring of Large River Bluff Failures and Implications for Downstream Channel Morphodynamics. American Geophysical Union Fall meeting. December 2017. New Orleans, LA.

Cullen, N., Bourke, M., **Belmont, P.** (2017) The influence of platform roughness on wave energy across a shore platform on the west coast of Ireland. European Conference for Applied Meteorology and Climatology.

Belmont, P. (2017) Purpose-built participatory modeling: Linking science and stakeholders to evaluate water quality improvement strategies. Conference of Irish Geographers. May, 2017. Cork, Ireland.

Belmont, P. and Call, B. (2017) How do river channels and their floodplains adjust to changes in flood flows? Environ 2017. April, 2017. Athlone, Ireland.

Donovan, M., **Belmont, P.**, Notebaert, B. (2016) Temporal changes in channel migration and the influence of temporal measurement-scale. American Geophysical Union Fall Meeting. December 2016. San Francisco, CA.

Notebaert, B., **Belmont, P.**, Donovan, M. (2016) River channel width change: Dynamics and scaling relationships in the upper Midwestern US. European Geosciences Union Annual Meeting. April, 2016. Vienna, Austria.

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.

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.

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.

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.

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.

Call, B., **Belmont, P.** (2015) Modeling channel-floodplain hydrologic connectivity under non-stationary conditions. American Geophysical Union Fall meeting. December 2015. San Francisco, CA.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

Marstellar, 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.

Belmont, P. (2011) An Integrated Sediment Budget for the Le Sueur Watershed. Oral, Minnesota Water Resources Conference. St. Paul, Minnesota.

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.

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.

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.

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.

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.

Belmont, P., Viparelli, E., and Wilcock, P. (2010) Sediment Budget for Source Analysis. Oral, 9th Federal Interagency Sedimentation Conference. June 2010. Las Vegas, Nevada.

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.

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.

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

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.

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.

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.

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.

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.

Belmont, P. (2007) Landscape Evolution and Aquatic Ecology: Long-term Sediment Dynamics and Landscape Influences in Stream Ecosystems. Oral, Doctoral Dissertation, Lehigh University.

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.

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.

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.

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.

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.

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

National Association of Geoscience Teachers

American Geophysical Union

Geological Society of America

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, National Geographic, Utah Agricultural Experiment Station

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

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

2015: "Advances in Watershed Modeling of Hydrology, Sediment and Nutrients." Earth and Planetary Surface Processes Division. *Session organizer and co-chair with Karthik Kumarasamy.*

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 researchers:
John Kemper (July 2024 – present), Wildfire and sediment routing.
Scott David (May 2020 – present), Developing an automated, open-source toolkit to predict post-wildfire erosion and sediment routing.
Zhen Xi (July 2020 – present), Sediment fingerprinting in the Mississippi River Basin to inform conservation and management: database development and methodological assessment
Justin Stout (August 2020 – March 2022), Bathymetric measurements to estimate sedimentation rates in Utah reservoirs. Research Scientist, University of Canterbury, New Zealand.
Brendan Murphy (July 2016 – June 2020), Modeling post-wildfire erosion and implications for fish habitat and population viability. Current position: Assistant Professor, Simon Fraser University.
Karthik Kumarasamy (Aug 2014 – May 2017), Probabilistic modeling of water and sediment routing at the watershed scale). Current position: Arizona Department of Environmental Quality.

Visiting Scholars (name, years involved, thesis research):
Somayeh Zahabnazouri (2024-2025), Wildfire dynamics in southern Italy
Hamed Hagnazar, (2022-2023), Human-induced pollution and toxicity of river sediments in the Zarjoub and Goharroud river basins, Iran.

Current Graduate Students (name, degree, years involved, thesis research):
Dominic DaVita, MS, started August 2024, Wildfire erosion and sediment routing

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, attained PhD at University of Melbourne, employed as research associate at the University of Canterbury, New Zealand.
Michael Souffront, MS, Dec 2013, Channel adjustment and channel-floodplain sediment exchange in the Root River, southeastern Minnesota, completed PhD at Brigham Young University.
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 California Fish and Wildlife.
Bruce Call, MS, Sep 2016, Developing computational tools for automated identification of features in high resolution topography data, employed with US Geological Survey, Columbia, MO.
Angus Vaughan, MS, Sep 2016, Hydrology and sediment dynamics in the Minnesota River Basin, employed with Minnesota Pollution Control Agency.

Jabari Jones, MS, May 2018, Historical channel change caused by a century of flow alteration on Sixth Water Creek and Diamond Fork River, Utah. Pursuing a PhD in Earth Sciences at University of Minnesota.
Sara Kelly, PhD, Dec 2018, River Hydrology, Morphology, and Dynamics in an Intensively Managed, Transient Landscape, post-doctoral researcher with University of Minnesota-Duluth
Jake Stout, MS May 2019, Hydrologic and Hydraulic considerations for instream flows designed to improve ecosystem health of the Diamond Fork River, employed with US Bureau of Land Management
Mitchell Donovan, PhD, Aug 2019, The influence of measurement scale and uncertainty on interpretations of river migration, employed with AgResearch Institute, New Zealand
Natalie Gillard, MS Oct 2019, finalizing thesis revisions fall 2019, Effects of wildfire-induced hydrologic and sediment transport variability on Cutthroat trout habitat
Adam Fisher, MS Oct 2019, finalizing thesis revisions fall 2019, Factors controlling sediment rating curves in rivers draining Redwood forests of the northern California Coast Range
Sara Wall, MS Dec 2021, Predictive Models of Post-Wildfire Debris Flow Volume and Grain Size Distribution in the Intermountain West.
Alec Arditti, MS, April 2023, Developing a predictive model of post-wildfire debris flows and wood jams.
Casey Langstroth, April 2024, Reducing post-wildfire sedimentation risks to water and transportation infrastructure in Utah.

Current Undergraduate Researchers:

Past Undergraduate Researchers: Karen Delfante, Raidon Poe, Christian Stewart, Jo Garz, Mac Cutler, Adam Fisher, Shayler Levine, Patrick Adams, Tyrel Coombs, Dan Bone, Tim Beach, John Saunders, Destiny Hanson, Chris Brown, David Lloyd, Colten Elkin, Thom Jukes, Zachary Burgert

Mentoree Notable Accomplishments:
Jabari Jones (MS, 2018) awarded seed grant from National Center for Airborne Laser Swath "Assessing channel evolution and fish habitat in a highly altered watershed in Central Utah."

Sara Kelly (PhD, 2018) awarded 3 year NSF GRFP Fellowship for grant proposal "Meandering rivers: migrating towards a predictive understanding of eco-geomorphic feedbacks in channel evolution." Awarded Best Graduate Student Presentation at the Irish Geomorphology Scientific Workshop, November 2016. Awarded GSA Graduate Student Research Grant (April 2014).

Keelin Schaffrath (PhD, 2012-2016) awarded seed grant from National Center for Airborne Laser Swath Mapping for 40 km^2 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. Completed PhD at University of Melbourne and now working with Australian Rivers Institute.