**Dan H. Shugar, Ph.D.**

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**Professional Appointments**

2019-present Director, Environmental Science Program, University of Calgary, AB

2019-present Associate Professor, Dept of Geoscience, University of Calgary, AB

2016-2018 Adjunct Assistant Professor, Dept of Earth & Space Sciences, University of Washington, WA

2015-2018 Assistant Professor, Interdisciplinary Arts & Sciences, University of Washington Tacoma, WA

2011-2015 Hakai/MITACS Postdoctoral Fellow, Dept of Geography, University of Victoria, BC

**Education**

2011 Ph.D., Earth Sciences, Simon Fraser University, BC (Dissertation: Rock avalanches on glaciers)

2005 M.Sc., Physical Geography, University of Guelph, ON (Dissertation: Dynamics and evolution of coherent flow structures over dunes, Rio Paraná, Argentina)

2003 B.Sc., Physical Geography, Carleton University, ON (Undergraduate thesis: Ground ice in peat, central Yukon Territory (Highest Honours))

**Honours**

* Recipient, Grove Karl Gilbert Award for Excellence in Geomorphological Research, American Association of Geographers (2022)
* Fellow, Royal Canadian Geographical Society (elected Nov, 2020)
* Early Career Research Excellence Award, University of Calgary Faculty of Science (2021)
* Nominated for University of Calgary Student’s Union Teaching Excellence Award (Feb, 2021)
* Nominated for University of Washington Tacoma Distinguished Research Award (Feb, 2018)
* Olav Slaymaker Award (Best student presentation), Canadian Geomorphology Research Group (2005)

**Research Contributions:**

[Google Scholar](https://scholar.google.com/citations?user=a1VRPXcAAAAJ); *h-index: 23; total citations:* 2176(as of *Oct 4, 2022)*

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| --- | --- | --- |
| Contribution | Refereed | Non-refereed |
| Journal articles | 39 (+6 in review) | 3 |
| Book chapters  | 2 |  |
| Publication in conference proceedings | 5 |  |
| Editorials, reviews, reports |  | 5 |
| Invited conference presentation (author or coauthor) |  | 15 |
| Submitted conference oral presentation |  | 34 |
| Submitted conference poster presentation |  | 45 |
| Invited Talks at universities/ company /Institutes |  | 44 |

**Peer-reviewed Journal Articles** (Ωstudent author; \*postdoc)

**In Review**

1. Clague, J.J., and **Shugar D.H**. Impacts of loss of cryosphere in the high mountains of Northwest North America. *Quaternary*.
2. Dunham, A.M., Kiser, E., Kargel, J.S., Haritashya, U.K., Watson, C.S., and **Shugar, D.H.** The influence of ground shaking on the distribution and size of co-seismic landslides from the Mw 7.6 2005 Kashmir earthquake. *Bulletin of the Seismological Society of America*.
3. Lesi, M., Nie, Y., **Shugar, D.H.,** Wang, J., Deng, Q., Chen, H., Fan, J. Landsat and Sentinel-derived glacial lake dataset in the China-Pakistan Economic Corridor from 1990 to 2020. *Earth System Science Data*.
4. Nouri, M., Rashidi, A., Namin, M.M., and **Shugar, D.H.**, Submarine landslide tsunami hazard assessment for the Western Makran based on a deterministic approach. *Natural Hazards*.
5. Sharp, M.A.Ω, **Shugar, D.H.,** and Flowers, G.E. Amplification of surface topography during surges of Tweedsmuir Glacier. *Journal of Geophysical Research – Earth Surface*.
6. Smith, W., Dunning, S.A., Ross, N., Telling, J., Bessette-Kirton, E.K., **Shugar, D.H.,** Coe, J.A., Geertsema, M. Revising rock avalanche magnitudes and frequencies in glacial environments. *Geomorphology*.

**2007-2022**

1. Cooke, S.J., Galassi, D.M.P., Gillanders, B.M., Landsman, S.J., Hammerschlag, N., Gallagher, A., Eliason, EJ., Kraft, C., Taylor, M., Crisafulli, C.M., **Shugar, D.H.,** and Lennox, R.J. Accepted. Consequences of “natural” disasters on aquatic life and habitats. *Environmental Reviews*.
2. Byers, A.C., **Shugar, D.H.,** Chand, M.B., Portocarrero, C., Shrestha, M., Rounce, D., and Watanabe, T. 2022. Three recent and lesser-known glacier-related flood mechanisms in high mountain environments. *Mountain Res. and Dev*, 42(2):A12-22. doi: 10.1659/MRD-JOURNAL-D-21-00045.1.
3. Dunham, A.M., Kiser, E., Kargel, J.S., Haritashya, U.K., Watson, C.S., **Shugar, D.H.,** Hughes, A., and DeCelles, P.G. 2022. Topographic control of ground motions and landslides from the 2015 Gorkha earthquake. *Geophysical Research Letters, 49,* e2022GL098582. doi: 10.1029/2022GL098582
4. Geertsema, M…**Shugar, D.H.,** ΩSharp, M., and 29 others. 2022. A deglacial hazard cascade exemplified by the landslide, tsunami and outburst flood at Elliot Creek, Southern Coast Mountains, British Columbia, Canada. *Geophysical Research Letters*, 49: e2021GL096716. doi: 10.1029/2021GL096716
5. Li, D., Lu, X., Walling, D.E., Zhang, T., Steiner, J.F., Wasson, R.J., Harrison, S., Nepal, S., Nie, Y., Immerzeel, W.W., **Shugar, D.H.,** Koppes, M., Lane, S.N., Zeng, Z., Sun, X., Yegorov, A., and Bolch, T. 2022. Climate-driven landscape instability threatens hydropower dams and reservoirs in High Mountain Asia. *Nature Geosci.* doi: 10.1038/s41561-022-00953-y
6. Van Wyk de Vries, M., Bhushan, S., Jacquemart, M., Deschamps-Berger, C., Berthier, E., Gascoin, S., Shean, D.E., **Shugar, D.H.,** and Kääb, A. 2022. Pre-collapse motion of the February 2021 Chamoli rock-ice avalanche, Indian Himalaya. *Natural Hazards and Earth System Science*, 22, 3309-3327. Doi: 10.5194/nhess-22-3309-2022
7. Kargel, J.S., Upadhyay, K., Maxwell, A., Ramos, A.G.M., Harrison, S., **Shugar, D.H.,** and Haritashya, U.K. 2021. Climate change, land use change, and mountain disasters. *Georgetown J. of Intl. Affairs* (online only).
	1. <https://gjia.georgetown.edu/2021/08/23/part-i-climate-change-land-use-change-and-mountain-disasters/>
	2. <https://gjia.georgetown.edu/2021/09/01/part-ii-climate-change-land-use-change-and-mountain-disasters/>
8. Sattar, A., Haritashya, U.K., Kargel, J.S., Leonard, G.J., **Shugar, D.H.,** and Chase, D.V. 2021. Lake outburst process chain modeling and downstream hazard assessment. *J. Hydrol.*, 598: 126208. doi: 10.1016/j.jhydrol.2021.126208
9. **Shugar, D.H.,** and 52 others. 2021. A massive rock-ice avalanche caused the 2021 hazard cascade at Chamoli, Indian Himalaya. *Science*, 373:300-306. doi: 10.1126.science.abh4455
	1. Press coverage in CBC, The Independent (UK), BBC, Times of India, etc
	2. AltMetric score ~1070
10. Bloom, C.K., MacInnes, B., Higman, B., **Shugar, D.H.,** Venditti, J.G., Richmond, B., Bilderback, E.L., Stark,C.P. 2020*.* Catastrophic landscape modification from a massive landslide tsunami in Taan Fiord, Alaska. *Geomorphology*, 353: 107029. doi: 10.1016/j.geomorph.2019.107029
11. **Shugar, D.H.,** ΩBurr, A., Haritashya, A.K., Kargel, J.S., Watson, C.S., Kennedy, M.C., Bevington, A.R., Betts, R.A., Harrison, S., and Strattman, K. 2020. Rapid worldwide growth of glacial lakes since 1990. *Nature Climate Change*, 10: 939-945. doi: 10.1038/s41558-020-0855-4
	1. Press coverage in New York Times, CarbonBrief, BBC, The Guardian, CBC, Der Spiegel, etc
	2. AltMetric score >1200
12. Watson, C.S., Kargel, J.S., **Shugar, D.H.,** Haritashya, U.K., and Schiassi, E. 2020. Mass loss from calving and melting of icebergs in Himalayan proglacial lakes. *Frontiers Earth Sci.*, 7: 342. doi: 10.3389/feart.2019.00342
13. Brideau, M.A., **Shugar, D.H.,** Bevington, A., Willis, M., and Wong, C. 2019. Evolution of the 2014 Vulcan Creek landslide-dammed lake, Yukon, Canada, using field and remote survey techniques. *Landslides,* 16: 1823-1840. doi: 10.1007/s10346-019-01199-3
14. Byers, A., Rounce, D., **Shugar, D.H.,** Lala, J.M., Byers, E.A., and Regmi, D. 2019. A rockfall-induced glacial lake outburst flood, upper Barun valley, Nepal. *Landslides*, 16: 533-549. doi: 10.1007/s10346-018-1079-9
15. Kirschbaum, D.L., Watson, C.S., Rounce, D.R., **Shugar, D.H.,** Kargel, J.S., Haritashya, U.K., Amatya, P., Shean, D., Anderson, E.R., and Jo, M. 2019. Remote sensing of cascading hazards over High Mountain Asia. *Frontiers Earth Sci.*, 7: 197. doi: 10.3389/feart.2019.00197
16. Schiassi, E., Furfaro, R., Kargel, J.S., Watson, C.S., **Shugar, D.H.,** and Haritashya, U.K. 2019. GLAM BioLith-RT for GMELT Toolbox: A semi-analytical tool for remote sensing of lake water characterization. *Frontiers Earth Sci.,* 7: 267. doi: 10.3389/feart.2019.00267
17. Dufresne, A., Geertsema, M., **Shugar, D.H.**,...ΩBonno, D., and 10 other authors. 2018. **Sedimentology and geomorphology of a large tsunamigenic landslide, Taan Fiord, Alaska**. Sed. Geology, 364: 302-318. doi: 10.1016/j.sedgeo.2017.10.004
18. ΩEamer, J.B.R., **Shugar, D.H.**, Walker, I.J., Neudorf, C., Lian, O. Eamer, J., Bryce, J., Biln, L. 2018. **Late Quaternary landscape evolution in a region of stable postglacial relative sea-levels, British Columbia central coast**. Boreas, 47:738-753. doi: 10.1111/bor.12297
19. Haeussler, P.J.,...**Shugar, D.H.**, and 8 other authors. 2018. **Submarine deposition of a subaerial landslide in Taan Fiord, Alaska.** J. Geophys. Res. – Earth Surface, 123:2443-2463. doi: 10.1029/2018JF004608
20. Haritashya, U.K., Kargel, J.S., **Shugar, D.H.,** & 7 others. 2018. **Evolution and controls of large glacial lakes in the Nepal Himalaya.** Remote Sensing, 10: 798. doi: 10.3390/rs10050798
21. Harrison, S., Kargel, J., Huggel, C., Reynolds, J., **Shugar, D.,** & 10 other authors. 2018. **Climate change and the global pattern of moraine-dammed glacial lake outburst floods.** The Cryosphere, 12: 1195-1209. doi: 10.5194/tc-12-1195-2018
	1. Blog write-up hosted on Earth Institute at Columbia University, GlacierHub, ClimateWire
22. Higman, B., **Shugar, D.H.**,...ΩBonno, D., and 29 other authors. 2018. **Glacier retreat and the largest landslide-triggered marine tsunami since 1958.** Sci. Reports, 8: 12993 doi: [10.1038/s41598-018-30475-w](https://doi.org/10.1038/s41598-018-30475-w)
	1. Press coverage in Washington Post, The Independent (UK), CBC, Der Spiegel, etc
	2. AltMetric score ~530
23. **Shugar, D.H.**, Clague, J.J., and McSaveney, M.J. 2018. **Late Holocene activity of Sherman and Sheridan glaciers, Prince William Sound, Alaska.** Quat. Sci. Rev., 194: 116-127. Doi: 10.1016/j.quascirev.2018.07.016
24. **Shugar, D.H.**, Colorado, K.A., Clague, J.J., Willis, M., and Best, J.L. 2018. **Boundary - Mapping and visualizing climatically changed landscapes at Kaskawulsh Glacier and Kluane Lake, Yukon.** J. Maps, 15:19-30. doi: 10.1080/17445647.2018.1467349
25. ΩEamer, J.B., **Shugar, D.H.,** Walker, I.J., Lian, O.B., and Neudorf, C.M. 2017. Distinguishing depositional setting for sandy deposits in coastal landscapes using grain shape. *J. Sedimentary Res.*, 87: 1-11.
26. ΩEamer, J.B., **Shugar, D.H.,** Walker, I.J., Lian, O.B., Neudorf, C.M., and Telka, A.M. 2017. A unique late Pleistocene glacial re-advance during retreat of Cordilleran Ice Sheet. *Quat. Res.*, 87: 468-481
27. **Shugar, D.H.,** Clague, J.J., Best, J.L., Schoof, C., Willis, M.J., Copland, L., and Roe, G.H. 2017. River piracy and drainage basin reorganization driven by climate-led glacier retreat. *Nature Geosci.*. 10: 370-375. doi: 10.1038/ngeo2932
	1. Press coverage in New York Times, Guardian, Washington Post, Globe and Mail, CBC, etc.
	2. AltMetric score ~1330, which is the highest for any Nature Geoscience paper of similar age, and 150th for all papers of similar age published in all fields (~320,000 articles)
	3. Nature News & Views article written about the study.
28. Kargel, J.S. Leonard, G.J., **Shugar, D.H.**, Haritashya, U.K., & 60 others. 2016. Geomorphic and geologic controls of geohazards induced by Nepal’s 2015 Gorkha earthquake. *Science*, 351: 140. Doi: 10.1126/science.aac8353
	1. Press coverage in BBC, Popular Science, etc.
29. Neudorf, C., Lian, O.B., Walker, I.J., **Shugar, D.H.,** ΩEamer, J.B.R., and Griffin, L.C. 2015. Toward a luminescence chronology for coastal dune and beach deposits on Calvert Island, British Columbia central coast, Canada. *Quat. Geochronology*, 30: 275-281.
30. McLaren, D., Fedje, D., Hay, M., Mackie, Q., Walker, I.J., **Shugar, D.H.,** ΩEamer, J.B.R., Lian, O.B., and Neudorf, C.2014*.* A postglacial sea-level hinge on the central Pacific coast of Canada*. Quat. Sci. Rev.*, 97: 148-169.
31. **Shugar, D.H.,** Walker, I.J., Lian, O.B., ΩEamer, J.B., Neudorf, C., McLaren, D., and Fedje, D. 2014*.* Post-glacial sea-level change along the Pacific coast of North America*. Quat. Sci. Rev.*, 97: 170-192.
32. Walker, I.J., and **Shugar, D.H.,** 2013. Secondary flow deflection in the lee of transverse dunes with implications for dune morphodynamics and migration. *Earth Surf. Proc. & Landforms,* 38: 1642-1654*.*
33. **Shugar, D.H.,** Rabus, B.T., Clague, J.J., and Capps, D.M. 2012. The response of Black Rapids Glacier, Alaska, to the Denali earthquake rock avalanches. *J. Geophys. Res. - Earth Surface*. *117*, F01006.
34. **Shugar, D.H.,** and Clague, J.J. 2011. The geomorphology and sedimentology of rock avalanches on glaciers. *Sedimentology*, 58: 1762-1783.
35. Capps, D.L., Rabus, B.T., Clague, J.J. and **Shugar, D.H.** 2010. Identification and characterization of alpine subglacial lakes using interferometric synthetic aperture Radar (InSAR), Brady Glacier, Alaska, USA. *J. Glaciology*, 56: 861-870.
36. **Shugar, D.H.,** Rabus, B.T., and Clague, J.J. 2010. Elevation changes (1949-1995) of Black Rapids Glacier, Alaska, derived from a multi-baseline InSAR DEM and historical maps. *J. Glaciology*, 56: 625-634.
37. **Shugar, D.H.,** Kostaschuk, R., Best, J.L., Lane, S.N., Parsons, D.R., Orfeo, O., and Hardy, R.J. 2010. On the relationship between flow and suspended sediment transport over the crest of a sand dune, Rio Paraná, Argentina. *Sedimentology,* 57: 252-272.
38. Kostaschuk, R., **Shugar, D.H.,** Best, J.L., Parsons, D.R., Lane, S.N. Hardy, R.J., and Orfeo, O. 2009*.* Suspended sediment transport and deposition over a dune: Rio Parana, Argentina. *Earth Surf. Proc. & Landforms,* 34: 1605-1611.
39. **Shugar, D.H.,** Kostaschuk, R., Ashmore, P., Desloges, J., and Burge, L. 2007. *In-situ* jet testing of the erosional resistance of cohesive streambeds. *Can. J. Civil Eng.*, 34: 1192-1195.

**Book Chapters, Proceedings, Reports, etc**

1. Deline, P., Hewitt, K., **Shugar, D.H.,** andReznichenko, N.2021. Rock avalanches onto glaciers. In: Davies, T.R. & Rosser, N. (Eds) *Landslide Hazards, Risks, and Disasters,* 2nd Edition. Elsevier. pp 269-333.
2. Emmer, A., Cook, S.J., Frey, H., and **Shugar, D.H**. 2021. Editorial: Geohazards and risks in high mountain regions. *Frontiers Earth Sci.*, 9. doi: 10.3389/feart.2021.754260
3. Higman, B., Geertsema, M., **Shugar, D.H.**, Lynett, P., and Dufresne, A. 2019. The 2015 Taan Fiord landslide and tsunami. *Alaska Park Science*, 18, 7-16
4. **Shugar, D.H.,** Kane, I. 2019. An adventure in predatory publishing: the contents of two medicine cabinets. *Nature*, 568: 316. doi: 10.1038/d41586-019-01207-5
5. Kargel, J.S., Haritashya, U.K., **Shugar, D.H.,** Bishop, M., and Furfaro, R. 2018. High mountain hazard hotspots in seismically and volcanically active cryosphere regions. *NASA White Paper*.
6. **Shugar, D.H.,** and Clague, J.J. 2018.**Changing glaciers, changing rivers**.In: Parrott, L., Robinson, Z., and Hik, D. (Eds) State of the Mountains Report. *Alpine Club of Canada.* pp. 4-11.
	1. Press coverage in Motherboard/VICE, CBC, Edmonton Star, The Guardian (UK), etc
7. Shrestha, A.B., Bajracharya, S.R., Kargel, J.S., Khanal, N.R., Karki, A., Collins, B.D., **Shugar, D.H.,** & 16 others. 2016. The Impact of Nepal’s 2015 Gorkha Earthquake-Induced Geohazards. International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, 36pp.
8. **Shugar, D.H.** 2016. Book review: Geology Underfoot in Western Washington. *Pacific Northwest Quarterly*, 107: 38-39.
9. Brideau, M.-A., **Shugar, D.H.,** and Wong, C., 2016. Preliminary investigation of the 2014 Vulcan Creek landslide dam, Kluane National Park and Reserve, Yukon. Paper 3902, *69th Canadian Geotechnical Conference*, Vancouver, BC, 8 p.
10. Phillips, M.R., Burn, C.R., Wolfe, S.A., Morse, P.D., Gaanderse, A.J., O'Neill, H.B., **Shugar, D.H.**,and Gruber, S. 2015. Improving water content description of ice-rich permafrost soils. *Proceedings, GeoQuebec 2015*. Quebec City, QC, 7p.
11. **Shugar, D.H.** 2014. Bathymetric and geophysical surveys of the southern end of Kluane Lake. In: MacFarlane, K.E., Nordling, M.G., and Sack, P.J. (Eds) *Yukon Exploration and Geology 2013*. Yukon Geological Survey, Whitehorse, pp. 221-231.
12. Deline, P., Hewitt, K., Reznichenko, N., and **Shugar, D.H.**2014. Rock avalanches onto glaciers. In: Davies, T.R. (Ed) *Landslide Hazards and Disasters*. Elsevier, pp. 263-319.
13. **Shugar, D.H.,** Clague, J.J., and Giardino, M., 2013. A quantitative assessment of the sedimentology and geomorphology of rock avalanche deposits. In: Catani, F., Margottini, C., Trigila, A., and Iadanza, C. (Eds) *Landslide Science and Practice, Vol 4: Global Environmental Change*. Springer-Verlag, pp. 321-326.
14. **Shugar, D.,** Kostaschuk, R., Best, J., Parsons, D., Lane, S., Hardy, R., and Orfeo, O., 2007. Sediment dynamics over a dune in the Rio Paraná. In: Paola, C., Parker, G., and García, M.H. (Eds) *Workshop on Morphodynamic Processes in Large Lowland Rivers*. Santa Fe, Argentina, 3p.
15. Parsons, D.R., Best, J.L., Lane, S.N., Hardy, R.J., Kostaschuk, R.A., **Shugar, D.H.,** and Orfeo, O., 2006. Morphology, flow and sediment transport over a natural 3D dune field: Rio Paraná, Argentina. In: Ferreria, R.M., Alves, E.C., Leal, J.G., and Cardos, A.H. (Eds) *RiverFlow 2006: Intl. Conference on Fluvial Hydraulics*. Lisbon. Taylor & Francis Group, London, pp. 997-1004.

**Public/University Seminars** (44 invited talks)

* **Shugar, D.H**. 2022. What has EO done for us anyway? Snapshots of steep terrain and glaciers. Internal Earth Week seminar for Planet Labs, San Francisco.
* **Shugar, D.H**. 2021. Mountain hazards cascades in North America and High Mountain Asia.University of Calgary, Gallagher Lecture Series, Canada
* **Shugar, D.H.** 2021. What happened at Chamoli? University of Nevada, Las Vegas, USA
* **Shugar, D.H.** 2021. What happened at Chamoli? University of Illinois, USA
* **Shugar, D.H.** 2021. What happens to rivers when you turn up (or down) the taps? ETH, Zurich, Switzerland
* **Shugar, D.H.** 2021. What happens to rivers when you turn up (or down) the taps? GSC Atlantic, Canada
* **Shugar, D.H.** 2020. What’s happening to the world’s glacial lakes? Arizona State University, USA
* **Shugar, D.H.** 2020. Where are the world’s glacial lakes? Simon Fraser University, Canada
* **Shugar, D.H.** 2020. Where (and how big) are the world’s glacial lakes? Alberta Environment and Parks, Office of the Chief Scientist Science Seminar, Canada
* **Shugar, D.H.** 2019. Where (and how big) are the world’s glacial lakes? University of Calgary, Canada
* **Shugar, D.H.** 2019. Changing glaciers, changing landscapes. Arctic on the Edge symposium, University of Calgary, Canada
* **Shugar, D.H.** 2019. Where are the world’s glacial lakes? University of Toronto Mississauga, Canada
* **Shugar, D.H.** 2018. Changing glaciers, changing rivers: an update from the St Elias Mountains. Yukon Science Institute, Destruction Bay, YT, Canada
* **Shugar, D.H.** 2018. Changing glaciers, changing rivers: an update from the St Elias Mountains. Yukon Science Institute, Haines Junction, YT, Canada
* **Shugar, D.H.**, 2018. The evolving hazards landscape in western North America. Simon Fraser University, Burnaby, Canada
* **Shugar, D.H.**, 2018. Rapid Geomorphic Change in mountain environments. University of Calgary, Canada
* **Shugar, D.H.** and Lipovsky, P., 2018. Changing glaciers, changing rivers: an update from the St Elias Mountains. Yukon Science Institute, Whitehorse, YT, Canada
* **Shugar, D.H.**, 2018. A tale of two glaciers: rapid geomorphic evolution in the face of climate change. University of Victoria, Canada
* **Shugar, D.H.** 2017. Inspector Kaskawulsh and the Case of the Disappearing River. ‘Sigma Gamma Epsilon National Honor Society’ seminar series, University of Puget Sound, Tacoma, USA
* **Shugar, D.H.** 2017. Inspector Kaskawulsh and the Case of the Disappearing River. ‘Thursday Nights at the Zoo’ seminar series, Point Defiance Zoo, Tacoma, USA
* **Shugar, D.H.**, 2017. Rapid Geomorphic Change in the high mountains. University of Northern British Columbia, Prince George, Canada
* **Shugar, D.H.,** 2016. Induced Geohazards from the 2015 Gorkha Earthquake, Nepal. Department of Earth and Space Sciences seminar series, University of Washington, Seattle, USA
* **Shugar, D.H.,** 2016. Induced Geohazards from the 2015 Gorkha Earthquake, Nepal. USGS Washington Water Science Center seminar series, Tacoma, USA
* **Shugar, D.H.,** 2016. Mapping sea level change in the Pacific Northwest. Marine Geology and Geophysics seminar series, University of Washington, Seattle, USA
* **Shugar, D.H.,** 2015. Mapping sea level change in the Pacific Northwest. University of Washington ‘Water Seminar’, Seattle, USA
* **Shugar, D.H.,** 2014. 18,000 years of sea-level change in Pacific North America. Geography Department seminar series, Durham University, UK
* **Shugar, D.H.,** 2014. 18,000 years of sea-level change in Pacific North America. Interdisciplinary Arts and Sciences seminar series, University of Washington Tacoma, USA.
* **Shugar, D.H.,** 2014. 18,000 years of sea-level change in Pacific North America – and other stories. School of Natural Resources & Extension seminar series, University of Alaska Fairbanks, USA
* **Shugar, D.H.,** 2013. From mountains to the sea: geohazards and environmental change in western North America. Earth Sciences Department seminar series, Montana State University, Bozeman, USA
* **Shugar, D.H.,** Walker, I., Lian, O. ΩEamer, J., and Neudorf, C., 2013. 15,000 years of landscape change at Calvert Island. Hakai Institute Community Meeting, Bella Bella, Canada
* Walker, I., Lian, O., Neudorf, C., **Shugar, D.H.,** ΩEamer, J., and Griffin, L., 2013. Landscape and sea level changes on Calvert Island. Seminar series, Hakai Beach Institute, Calvert Island, Canada
* ΩEamer, J.B.R., Walker, I.J., **Shugar, D.H.**, Lian, O.B., 2012. Changing Landscape: Earth Sciences. Hakai Institute Community Meeting, Bella Bella, Canada
* Walker, I.J., Lian, O., **Shugar, D.H.,** ΩEamer, J.B.R., Mackovic, B., and Huesken, D., 2012, Exploring the prehistory of Calvert Island with grains of sand. Hakai Beach Institute seminar series, Calvert Island, Canada
* **Shugar, D.H.,** 2011. Physical geography and environmental analysis: recent trends and future directions. Geography Department seminar series, University of Guelph, Guelph, Canada
* **Shugar, D.H.,** 2011. Rock avalanches on glaciers: sedimentology, geomorphology, glaciology. Geological Survey of Norway (NGU) seminar series, Trondheim, Norway
* **Shugar, D.H.,** 2010. Black Rapids Glacier and the Denali Earthquake landslides. Macdonald Dettwiler and Associates Ltd., R&D seminar, Burnaby, Canada
* **Shugar, D.H.,** 2009. A brief history of Black Rapids Glacier, AK (1936-present). Department of Geography and Environmental Science seminar series, Carleton University, Ottawa, Canada
* **Shugar, D.H.,** 2009. On rock on ice: the sedimentology of rock avalanches on glaciers. Earth Sciences departmental seminar, Simon Fraser University, Burnaby, Canada
* **Shugar, D.H.,** and Rabus, B.T., 2009. Landslides on glaciers: insights from InSAR. Macdonald Dettwiler and Associates Ltd, R&D Open House, Burnaby, BC
* **Shugar, D.H.,** 2008. Crumbling mountains: landslides on glaciers in BC and Alaska. The Explorers Club Salt Spring Symposium. Salt Spring Island, Canada
* **Shugar, D.H.,** 2008. Flow over a dune, Parana River, Argentina. Earth Sciences departmental seminar, Simon Fraser University, Burnaby, Canada
* **Shugar, D.H.,** 2007. What I did for my summer vacation: thoughts about geography as a career choice. Seminar for grade 10 geography students, Gloucester High School, Ottawa, Canada
* **Shugar, D.H.,** Rabus, B.T., Flowers, G., and Clague, J.J., 2007. Dynamic response of a surge-type glacier to rock avalanche loading: revisiting Tarr and Martin’s earthquake advance theory. Earth Sciences departmental seminar, Simon Fraser University, Burnaby, Canada
* **Shugar, D.H.,** and Capps, D., 2006. Things that go boom in the night: glacier science and glacier scenery in the St. Elias Mountains. National Park Service ‘Ranger Talks’, Glacier Bay National Park, Gustavus, USA

**Research Grants, Fellowships and Awards**

**Current Research Grants and Awards (>$5,000, CAD unless otherwise noted)**

* 2022-2024 NSERC Research Tools and Instruments “A helicopter-borne radar system for Canadian glacier mass assessment”; co-I of five senior personnel; $149,189.
* 2022-2023 Yukon Geological Survey “Geologic History and Hazard Assessment of the Sunnydale Slide”; Joint application with MSc student; $21,047.
* 2022-2024 University of Calgary Eyes High Postdoctoral Scholar (Matching Program). $50,000.
* 2021-22 Polar Continental Shelf Program “Tweedsmuir Glacier and the end of Alsek River’s migratory sockeye salmon run”; Sole PI; $44,164.
* 2021-24 Canada Foundation for Innovation John R. Evans Leaders Fund “High-resolution mapping of the Earth's surface”; Sole PI; $603,980.
* 2020-25 NSERC Discovery Grant “Evolution and morphodynamics of proglacial environments”; Sole PI; $187,500.
* 2020-23 NSERC Discovery Accelerator Supplement “Evolution and morphodynamics of proglacial environments”; Sole PI; $120,000.
* 2020-23 Tula Foundation “Environmental Change in the Owikeno Lake Watershed”; Co-I of three senior personnel; $279,000 (Shugar $161,000).
* 2021-22 UK Natural Environment Research Council ‘Urgency Grant’. “Rapid adjustments to catchment sediment yield following a catastrophic rock-ice avalanche and debris flow, Uttarakhand, India”. Collaborator on team of four senior personnel; £46,540.
* 2021-22 UK Natural Environment Research Council ‘Urgency Grant’. “How efficient is organic carbon burial in marine fjords after extremely large and infrequent glacial outburst floods”. Collaborator on team of 14 senior personnel; £65,000.

**Past Research Grants and Awards (>$5,000)**

* 2020-22 Anonymous Donor/Foundation “Will climate change lead to a return of sockeye salmon in Alsek River?”; Anonymous Donor; Sole PI; $10,000.
* 2021-22 Mitacs-UKRI UK-Canada Doctoral Exchange Scheme “Next-generation forecasting of hazards offshore from river deltas” Co-I of two senior personnel; £15,000.
* 2021-22 Polar Continental Shelf Program “Tweedsmuir Glacier and the end of Alsek River’s migratory sockeye salmon run”; Sole PI; $31,351.
* 2020-21 Alpine Club of Canada Environment Grant “Will sockeye salmon return to the upper Alsek watershed under a changing climate?”; Sole PI; $5,000.
* 2020-21 Mitacs-UKRI UK-Canada Doctoral Exchange Scheme “Modelling glacial overdeepenings and future lake locations for the western Canadian Cordillera” Co-I of two senior personnel; £15,500.
* 2020-21 Polar Continental Shelf Program “Tweedsmuir Glacier and the end of Alsek River’s migratory sockeye salmon run”; Sole PI; $32,000.
* 2019-20 Polar Continental Shelf Program “Prospecting for a buried paleo-channel, Tweedsmuir Glacier, northern British Columbia”; Sole PI; $14,400.
* 2015-18 NSF Major Research Instrumentation “Acquisition of a shallow-water autonomous multibeam hydrographic surveying system”; Sole PI; $250,990 USD.
* 2016-18 NASA Understanding Changes in High Mountain Asia “Interlinked Glacier Dynamics, Lakes, Mountain Hazards, and Critical Vulnerabilities in the Himalaya”; Co-I of 4 senior personnel; $698,486 USD (Shugar $77,528).
* 2017-18 University of Washington Tacoma Scholarship and Teaching Funds “Geomorphology of a coastal lake, British Columbia”; Sole PI; $5,000 USD.
* 2016-18 University of Washington Royalty Research Fund “Morphology, flow and sediment transport in the proglacial Slims River, Yukon, Canada”; Sole PI; $38,840.
* 2016-17 NSF Geomorphology and Landuse Dynamics “The 2015 Taan Fiord landslide tsunami: An interdisciplinary study of cause & effect”; Co-I of 6 senior personnel; $323,630 USD (Shugar $34,761).
* 2016-17 National Geographic Society/Waitt Foundation “Natural hazard processes facing mountain villages in Sapta Koshi basin, eastern Nepal”; Co-I of 6 senior personnel; $15,000 USD.
* 2013-14 Yukon Geological Survey “High-resolution bathymetric mapping and hazards identification, Kluane Lake, Yukon Territory”; Sole PI; $10,000.
* 2012-13 Mitacs Elevate Postdoctoral Fellowship “Holocene sea-level history and environmental change, Calvert Island, BC”; $122,500.
* 2011-12 UK Royal Society Newton International Postdoctoral Fellowship (Oxford University) “Field characterization of dust emissions for climate modelling: turbulence as erosivity driver”; £66,000; Declined the offer.
* 2011-13 Pacific Institute for Climate Solutions “Assessing the potential aquatic habitat value of streams responding to a changing climate”; Co-I of 3 senior personnel; $50,000.
* 2006-09 NSERC Postgraduate Scholarships ‘D’; Graduate Fellowship “Large catastrophic landslides on glaciers, Coast and St. Elias Mountains”; $63,000.

**Professional Service**

* Conference co-convener including American Geophysical Union (2019); Canadian Association of Geographers (Western Division) (2014); Canadian Geophysical Union (2008; 2017); Canadian Quaternary Association (2009); European Geophysical Union (2021); Geological Society of America (2014); NASA High Mountain Hazards Workshop (2016)
* Conference organizing committee: Canadian Quaternary Association (2009), SFU, Burnaby, Canada
* Director, Environmental Science Program, University of Calgary (2019-present)
	+ This role includes a wide variety of tasks, including student advising, teaching assignments, organizing new student orientation and Open Houses, organizing and facilitating ENSC program meetings, etc.
* Co-chair, UofC, Department of Geoscience Equity, Diversity, and Inclusion workgroup (2020-present)
* Member, UofC, Department of Geoscience Research and Infrastructure Committee (2020-present)
* Member, UofC, Faculty of Science, International Engagement Committee (2019-2021)
* Member, UofC, SUPPORT Research Awards Committee (2021-present)
* Canadian Geomorphological Research Group Member-at-Large (2013-present)
* Scientific Editor, *J. Glaciology* (2017-present)
* Reviewer for journals, publishers: *The Cryosphere; Canadian Journal of Earth Science; Earth Surface Processes & Landforms; Environmental Management; Geological Society of London; Geomorphology; Government of Canada - Natural Resources Canada; J. Geophysical Research; J. Glaciology; Land Degradation & Development; Landslides;* Natural Hazards and Earth System Sciences; *Nature Communications; Quaternary Research; Quaternary Science Reviews; Regional Environmental Change; Remote Sensing of Environment*
* Reviewer for funding agencies: *Geological Survey of Denmark and Greenland;* *Mitacs; National Geographic; National Science Foundation; Natural Sciences and Engineering Research Council of Canada*
* Supervisory activities
	+ Postdoctoral scholars
		- Dr Michael Tilston (Feb 2021-Jan 2023) Funded by Tula Foundation grant
		- Dr Celeste Labedz (June 2022-May 2024) Funded by UCalgary Eyes High and NSERC Discovery Accelerator Supplement
		- Dr Lewis Bailey (June 2022-May 2023), co-advised by Shugar and Dr Hubbard, Department of Geoscience
		- Dr Aram Fathian (Sept 2022-Aug 2024) Funded by UCalgary Eyes High
	+ PhD
		- Rebecca Englert (in progress), UofC Geoscience, Committee member
		- Lewis Bailey (PhD exchange summer 2021), UofC Geoscience, Exchange supervisor
		- Aram Fathian (PhD exchange), UofC Geoscience, Exchange supervisor
		- Ethan Lee (PhD exchange summer 2021), UofC Geoscience, Exchange supervisor
		- Kristina Miller (in progress), UofC Geography, Committee member
		- Sarah St Germain (defended 2021), UofC Geography, Internal examiner
		- Ben Daniels (defended 2019), UofC Geoscience, Internal examiner
		- Jordan Eamer (defended 2017), UVic Geography, Committee member
	+ MSc
		- Holly Basiuk (started fall 2022), UofC Geoscience, Supervisor
		- Tek Kshetri (started fall 2022), UofC Geoscience, Supervisor
		- Jackson Bodtker (started fall 2021), UofC Geoscience, Supervisor
		- Meghan Sharp (defended 2021), UofC Geoscience, Supervisor
		- Gryphen Goss (defended 2021), UofC Geoscience, Supervisor
		- Naomi Ochwat (defended 2019), UofC Geography, Internal examiner
	+ BSc
		- Jenna Merth (2021), UofC Environmental Science, 2nd reader
		- Liam Mesbius (2021), UofC Environmental Science, 2nd reader
		- Hannah Muncal (2021), UofC Environmental Science, 2nd reader
		- Szymon Kijak (2021) UofC Geoscience, Supervisor
		- Holly Basiuk (2020), UofC Environmental Science, Supervisor
		- Sasha Bogdanov (2020), UofC Environmental Science, 2nd reader
		- Lacey Roberts (2020), UofC Environmental Science, Co-supervisor
		- John Haas (2018), UWT Environmental Science, Supervisor
		- Doug Bonno (2018), UWT Environmental Science, Supervisor
		- Tim Lane (2018), UWT Environmental Science, Supervisor
		- Joey Bell (2017), UWT Environmental Science, Co-supervisor
		- Yon Henderson (2017), UWT Environmental Science, Supervisor
		- Katie Kennedy (2017), UWT Environmental Science, Supervisor
		- Heather Rawley (2016), UWT Environmental Science, Supervisor
	+ Research Associate
		- Aaron Burr (2018), NASA-funded, Supervisor
		- Holly Basiuk (2021, 2022), NSERC USRA, Supervisor
		- Szymon Kijak (2021), Supervisor
		- Aram Fathian (2022), Supervisor

**Outreach and Science Communication**

Dr. Shugar has conducted hundreds of media interviews for print (*New York Times, The Guardian, Washington Post, Hindustan Times, Times of India, Der Spiegel, Globe and Mail, National Post, Geographical Magazine, Scientific American*, etc.), radio (BBC Science in Action, CBC The Current, CBC Quirks and Quarks, CBC What on Earth, Australian Broadcasting Corporation, Al Jazeera, etc.), web (Hakai Magazine, Carbon Brief, etc.), and television shows (Daily Planet). He has appeared in multiple documentaries (e.g. Icy Bay Mega Tsunami, <https://vimeo.com/200910490>) for broadcast and web and has been featured on NASA Earth Observatory’s ‘Image of the day’ on multiple occasions. Below highlights the breadth of his significant outreach:

*Discovery of Nun Cho Ga* – Dr. Shugar and two of his graduate students were part of the scientific team that recovered the mummified mammoth named Nun Cho Ga (‘big baby animal’ in Han language) near Dawson City, Yukon, in 2022. His [tweets](https://twitter.com/WaterSHEDLab/status/1540386237797650433?s=20&t=uhCEJNJlAzhoFcoq1vbzSw) about the discovery have garnered well over a million views. The story was picked up by national and international news outlets:

* [Gizmodo](https://gizmodo.com/baby-woolly-mammoth-mummy-yukon-1849137599) (a US design, technology, science and science fiction website, article interviewed Dr. Shugar and one of his students)
* [The Telegraph](https://www.thetelegraph.com/news/article/Most-intact-woolly-mammoth-baby-uncovered-in-17268981.php) (a national British daily newspaper and website; article highlights Dr. Shugar’s Tweets)
* [NBC News](https://www.nbcnews.com/science/science-news/intact-wooly-mammoth-baby-uncovered-northwestern-canada-rcna35521) (is the news division of the American broadcast television network NBC; Dr. Shugar is named in the title of the article)
* [CBC News](https://www.cbc.ca/news/canada/north/frozen-whole-baby-woolly-mammoth-yukon-gold-fields-1.6501128) (a national Canadian news outlet; UofC is mentioned)

*Chamoli landslide, India* – Dr. Shugar led a large, international team of researchers in understanding the processes that resulted in a deadly debris flow in the Indian Himalaya in 2021. He did many dozens of media interviews in the days following the disaster and following publication of his paper in *Science* several months later.

* [Twitter](https://twitter.com/WaterSHEDLab/status/1358442899713662977?s=20&t=uhCEJNJlAzhoFcoq1vbzSw) (this thread reflects outreach in the hours following disaster)
* [Twitter](https://twitter.com/WaterSHEDLab/status/1403049683577016322?s=20&t=uhCEJNJlAzhoFcoq1vbzSw) (this thread follows the publication of paper in *Science*)
* [Scientific American](https://www.scientificamerican.com/article/miniature-satellites-reveal-cause-of-deadly-uttarakhand-flood-that-devastated-hydroelectric-dams/) (is an American popular science magazine; Dr. Shugar is quoted and named)
* [Al Jazeera](https://www.aljazeera.com/features/2021/2/10/india-dam-disaster-trigger-events-warning-for-future) (is the Arabic-language media company; Dr. Shugar is named and his Tweets are highlighted)
* [BBC Science in Action](https://www.bbc.co.uk/sounds/play/w3ct1l3r) (UK media company; this is an interview with BBC)
* [CBC What on Earth](https://www.cbc.ca/news/science/what-on-earth-green-concrete-1.6069639) (a podcast produced by CBC; interview with Dr. Shugar)
* [NASA Earth Observatory](https://earthobservatory.nasa.gov/images/147973/a-deadly-debris-flow-in-india) (an online publishing outlet for NASA; Dr. Shugar is named, quoted, and cited)

*Glacial lake mapping* – Dr. Shugar led the first study quantifying the world’s glacial lakes and how they have changed over the past three decades.

* [New York Times](https://www.nytimes.com/2020/09/02/science/global-warming-glacial-lakes.html) (is an American daily newspaper based in New York City with a worldwide readership; Dr. Shugar is named and quoted)
* [CBC News](https://www.cbc.ca/news/canada/calgary/climate-change-glacial-lakes-flooding-canada-calgary-1.5706477) (a national Canadian news outlet; Dr. Shugar is named and quoted)
* [CBC What on Earth](https://www.cbc.ca/listen/live-radio/1-429-what-on-earth/clip/15797646-why-canadas-glaciers-becoming-endangered-species) (a podcast produced by CBC; interview with Dr. Shugar)

*River Piracy in Yukon* – Dr. Shugar led a ground-breaking study of a rare instance of ‘river piracy’, or stream capture, where the flow of one river was redirected into a different river due to climate change-induced glacier retreat.

* [NASA Earth Observatory](https://earthobservatory.nasa.gov/images/90116/river-piracy-in-the-yukon) (an online publishing outlet for NASA; Dr. Shugar is named and quoted)
* [ABC News](https://www.abc.net.au/news/2017-04-18/canadian-river-vanishes-in-geological-instant/8449508) (public news service produced by the Australian Broadcasting Corporation; Dr. Shugar is named and quoted)
* [BBC News](https://www.bbc.com/news/world-us-canada-39634290) (is a UK media company; Dr. Shugar is named and quoted)
* [The Guardian](https://www.theguardian.com/science/2017/apr/17/receding-glacier-causes-immense-canadian-river-to-vanish-in-four-days-climate-change) (is a British news and media website and newspaper; Dr. Shugar is named and quoted)
* [CBC The Current](https://www.cbc.ca/radio/thecurrent/the-current-for-april-19-2017-1.4074216/how-a-yukon-river-suddenly-vanished-in-4-days-1.4074268) (is a Canadian current affairs radio program; interview with Dr. Shugar about his *Nature Geoscience* publication – transcript linked)