

Name: Flavien Beaud (he/him/his)  
Nationality: Swiss and French  
Contact: 2201 York Avenue  
V6K 1C5 Vancouver, BC  
Canada  
flavien.beaud@gmail.com  
[Website](#) [Google Scholar](#) [Orcid ID](#): 0000-0002-0687-8741

RESEARCH INTERESTS:

Geomorphology; glaciology; bedrock erosion; landscape evolution; interaction between cryosphere and other Earth systems

CURRENT POSITION:

02.2020-07.2022 Swiss National Science Foundation Mobility Postdoctoral Fellow (1.5 years) at the University of British Columbia. Supervisor: Dr. Michele Koppes.

PAST POSITION:

12.2017-11.2019 Swiss National Science Foundation Mobility Postdoctoral Fellow (1.5 years) and Caltech Postdoctoral Fellow (0.5 year) at the California Institute of Technology.

EDUCATION:

Ph.D. 04.2011-09.2017 Earth Sciences, Simon Fraser University. Title: Numerical investigations of subglacial hydrology as direct and indirect driver of glacial erosion. Supervisor: Prof. Gwenn Flowers; Co-advisers: Prof. J. G. Venditti and Prof. M. Koppes.  
M.Sc. 09.2008-10.2010 Earth Sciences, Major in Geology and Geochemistry, ETH-Zürich (Swiss Federal Institute of Technology in Zürich). Title: The influence of hydrology on spatial patterns of glacial erosion. Supervisor: Prof. Frédéric Herman.  
B.Sc. 09.2005-09.2008 Environmental Sciences and Engineering, EPF-Lausanne (Swiss Federal Institute of Technology in Lausanne).

APPROVED RESEARCH PROJECTS

09.2012–12.2016 Swiss National Cooperative for the Disposal of Radioactive Waste, collaboration to better understand the role of subglacial hydrology in glacial erosion and inform on the future Swiss nuclear waste burial site (\$75 000 CDN over four years).  
12.2017–08.2019 Swiss National Science Foundation Early Mobility Postdoctoral Fellowship (115 000 CHF for 1.5 years, SNSF funding was effective from 01.12.2017 to 31.05.2018 and 01.09.2018 to 31.08.2019).  
02.2020–07.2022 Swiss National Science Foundation Early Mobility Postdoctoral Fellowship (112 000 CHF for 1.5 years).  
08.2020–07.2023 co-Investigator: NSF Arctic Natural Sciences, Collaborative Research: Initiation, Propagation, and Termination: Understanding coupled hydrologic and glacier dynamic instabilities from the surge of Turner Glacier. NSF proposal; PI: Dr. Elyn Enderlin; co-PIs: Dr Dylan Mykesell and Dr. Tim Bartholomaus. Role: Research Scientist with Dr. Bartholomaus at the University of Idaho, Moscow (Budget for UoI: 671 486 USD over 3 years).

PEER-REVIEWED PUBLICATIONS

Beaud, F., G.E. Flowers, J.G. Venditti, 2018, Modeling sediment transport in ice-walled subglacial channels and its implications for esker formation and proglacial sediment yields, *Journal of Geophysical Research – Earth Surface*, 123(12), p. 3206-3227 <https://doi.org/10.1029/2018JF004779>.<sup>1</sup>

---

<sup>1</sup> This article is the object of a commentary article by Neil Arnold in the *Journal of Geophysical Research—Earth Surface*, <https://doi.org/10.1029/2019JF005001>.

- Beaud, F., J.G. Venditti, G.E. Flowers, M. Koppes, 2018, Excavation of subglacial bedrock channels by seasonal meltwater flow, *Earth Surface Processes and Landforms*, Vol. 43, Issue 9, p. 1960–1972, doi:10.1002/esp.4367. <sup>2</sup>
- Beaud, F., G. E. Flowers, J. G. Venditti, 2016, Efficacy of bedrock erosion by subglacial meltwater flow, *Earth Surface Dynamics*, Vol. 4, p. 125–145, <https://doi.org/10.5194/esurf-4-125-2016>. <sup>3</sup>
- Beaud, F., G. E. Flowers, S. Pimentel, 2014 Seasonal-scale abrasion and quarrying patterns from a two-dimensional ice-flow model coupled to distributed and channelized subglacial drainage, *Geomorphology*, Vol. 219, p. 176-191, <https://doi.org/10.1016/j.geomorph.2014.04.036>.
- Herman F., F. Beaud, J.-D. Champagnac, J.-M. Lemieux, P. Sternai, 2011, Glacial hydrology and erosion patterns: A mechanism for carving glacial valleys, *Earth and Planetary Science Letters*, Vol. 310, Issues 3-4, p. 498-508, <https://doi.org/10.1016/j.epsl.2011.08.022>.<sup>4</sup>

#### SELECTED CONFERENCE PRESENTATIONS AND SEMINARS

##### Invited conference abstract:

- Beaud, F., M. P. Lamb, T. Ulizio. A Laboratory Experiment of Ice Melt by Pressurized Turbulent Water Flow. Abstract No. 358939 presented at the annual meeting of the Geological Society of America, October 26<sup>th</sup> 2020 (virtual meeting).
- Beaud, F., G.E. Flowers, J.G. Venditti. Implications of sediment transport by subglacial water flow for interpreting contemporary glacial erosion rates. Abstract No. EGU2017-18137 presented at the annual meeting of the EGU, Vienna, Austria, 23-28 April 2017.

##### Published conference abstracts:

- Beaud, F., I. Delaney, S. Aati, S. Adhikari, J.-P. Avouac, Constraining a generalized glacier slip relationship using high spatiotemporal resolution data of a surging glacier. Abstract No. 764660, presented at the annual meeting of the AGU, December 16<sup>th</sup> 2020 (virtual meeting).
- Beaud, F., V. C. Tsai, M. P. Lamb, Investigation of subglacial water flow and sediment transport combining numerical modeling and seismic noise monitoring. Abstract No. 80A2939, Oral presentation, IGS International Symposium on Glacial Erosion and Sedimentation, Madison, Wisconsin, May 12<sup>th</sup> to 17<sup>th</sup> 2019. ([Presentation](#))
- Beaud, F. How do glaciers evacuate sediment?, SoCal Geomorphology Symposium, Caltech, Pasadena, May 5<sup>th</sup> 2018.
- Beaud, F., G.E. Flowers, J.G. Venditti. Numerical modelling of esker formation in semi-circular subglacial channels. Abstract No. EGU2017-18148 presented at the 2017 annual meeting of the EGU, Vienna, Austria, 23-28 April 2017<sup>5</sup>.
- Beaud, F., G.E. Flowers, J.G. Venditti, M. Koppes. Gradual excavation of tunnel valleys and inner gorges by subglacial meltwater erosion. Abstract No. 75994 presented at the 2015 fall meeting, AGU, San Francisco, California, 14-18 December.
- Beaud, F., G.E. Flowers, J.G. Venditti. Numerical modelling of bedrock erosion by sediment transporting subglacial water, IGS International Symposium on Hydrology of Ice sheets and Glaciers, Höfn, Iceland, 22-26 June 2015.
- Champagnac, J.-D., Delunel, R., Kubik, P., Mériaux, A.-S., Beaud, F. Postglacial erosion rates from the Western Alps inferred from cosmogenic nuclides measurements. Abstract no. EGU2013-7715 presented at the annual meeting of the EGU, Vienna, Austria, 7–13 April 2013.
- Beaud, F, G.E. Flowers. Sensitivity of modelled sliding and erosion rates to non-steady basal hydraulic conditions, IGS Symposium Glaciers and ice sheets in a warming climate, Fairbanks, AK, June 2012.

---

<sup>2</sup> This article was the highlight of ESP&L papers in the bi-annual newsletter of the British Society for Geomorphology ([BSG December 2018 newsletter](#))

<sup>3</sup> This article was chosen as a highlight article by the editorial board of *Earth Surface Dynamics* ([https://www.earth-surface-dynamics.net/highlight\\_articles.html](https://www.earth-surface-dynamics.net/highlight_articles.html)).

<sup>4</sup> This article was the object of a press release by the Agence Télégraphique Suisse (Swiss National News Agency) and the study was featured in two Swiss newspapers, *Le Temps* (on 2012/03/22) and *Walliser Bote* (on 2012/03/23).

<sup>5</sup> This poster was awarded an Outstanding Student Poster Award at the 2017 EGU annual meeting (<https://www.egu.eu/awards-medals/ospp-award/2017/flavien-beaud/>).

Flavien Beaud, Ph.D.  
Curriculum Vitæ

Beaud, F., Herman F., Champagnac J.-D. The influence of hydrology on spatial patterns of glacial erosion, Swiss Geosciences Meeting, November 2010.  
Champagnac J.-D., Sternai, P., Herman F., Guralnik, B., Beaud, F. Fracture density as a controlling factor of postglacial fluvial incision rate, Granite Range, Alaska., Swiss Geosciences Meeting, November 2010.

Selected Seminar presentations:

Beaud, F., M. P. Lamb, T. Ulizio. A Laboratory Experiment of Ice Melt by Pressurized Turbulent Water Flow, Simon Fraser University EASC 25<sup>th</sup> Anniversary Seminar Series, Burnaby, BC, March 12<sup>th</sup> 2020.  
Beaud, F., M. P. Lamb, T. Ulizio. A Laboratory Experiment of Ice Melt by Pressurized Water Flow, Scripps Polar Seminar, SCRIPPS Institution for Oceanography, La Jolla, CA, October 24<sup>th</sup> 2019 ([pdf](#)).  
Beaud, F., G.E. Flowers, J.G. Venditti. Sediment transport and bedrock erosion caused by subglacial water flow: Implications paleo-landforms and pro-glacial sediment yields, NASA Jet Propulsion Laboratory, Sea Level and Ice group seminar, February 27<sup>th</sup> 2019.  
Beaud, F., G.E. Flowers, J.G. Venditti. How do glaciers produce and evacuate sediment?, Environmental Sciences and Engineering Seminar, Caltech, January 9<sup>th</sup> 2019.  
Beaud, F., G.E. Flowers, J.G. Venditti, M. Koppes. Subglacial meltwater action: the missing mechanism of glacial erosion. April 14<sup>th</sup> 2016, Earth Science Department Seminar, SFU.  
Beaud, F., G.E. Flowers, J.G. Venditti, M. Koppes. Excavation of tunnel valleys and inner gorges by subglacial meltwater erosion. March 1<sup>st</sup> 2016, Invited by Prof. Bernard Hallet, Glaciology group, Department of Earth and Space Sciences, University of Washington, Seattle WA.

ACKNOWLEDGEMENTS IN PEER-REVIEWED PAPERS FOR SIGNIFICANT FIELDWORK CONTRIBUTION

Crompton, J. W., Flowers, G. E., & Stead, D. (2018). Bedrock fracture characteristics as a possible control on the distribution of surge-type glaciers. *Journal of Geophysical Research: Earth Surface*, 123, 853–873, <https://doi.org/10.1002/2017JF004505>  
Crompton, J. W. and G. E. Flowers (2016), Correlations of suspended sediment size with bedrock lithology and glacier dynamics, *Annals of Glaciology*, 57(72), [doi: 10.1017/aog.2016.6](https://doi.org/10.1017/aog.2016.6)  
Crompton, J. W., G. E. Flowers, D. Kirste, B. Hagedorn and M. J. Sharp (2015), Clay mineral precipitation and low silica in glacier meltwaters explored through reaction-path modelling, *Journal of Glaciology*, Vol. 61, No. 230, 1061–1078, [doi: 10.3189/2015JoG15J051](https://doi.org/10.3189/2015JoG15J051)  
Wilson, N. J., G. E. Flowers, and L. Mingo (2014), Mapping and interpretation of bed-reflection power from a surge-type polythermal glacier, Yukon, Canada, *Annals of Glaciology*, 55(67), [doi: 10.3189/2014AoG67A101](https://doi.org/10.3189/2014AoG67A101)  
Wheler, B. A., A. H. MacDougall, G. E. Flowers, E. I. Petersen, P. H. Whitfield & K. E. Kohfeld (2014), Effects of Temperature Forcing Provenance and Extrapolation on the Performance of an Empirical Glacier-Melt Model, *Arctic, Antarctic, and Alpine Research*, 46:2, 379-393, [doi: 10.1657/1938-4246-46.2.379](https://doi.org/10.1657/1938-4246-46.2.379)  
Wilson, N. J., G. E. Flowers, and L. Mingo (2013), Comparison of thermal structure and evolution between neighboring subarctic glaciers, *Journal of Geophysical Research: Earth Surf.*, 118, 1443–1459, [doi:10.1002/jgrf.20096](https://doi.org/10.1002/jgrf.20096)

MENTORING:

06.2019-08.2019	REX mentoring
06.2019-08.2019	Supervision of a summer research undergraduate student at Caltech, Denise Garcia. Project duration: 17.06.2019 until 22.08.2019. Help student write a research proposal and guide them through a research project, write interim reports and give a final presentation.
04.2011-09.2014	Supervision of undergrad field assistants while conducting field work during summer months

TEACHING:

07.2019	Attended the ABC of Course Design at Caltech provided by the Center for Teaching, Learning, and Outreach (4-hour course).
2017	TA; Physical Geology, SFU, Instructor: Dr. Reed Staples (one term)
2016	TA; Physical Geology, SFU, Instructor: Cindy Hansen (one term)
2016	TA; Physical Geology, SFU, Instructor: Kevin Cameron (one term)

Flavien Beaud, Ph.D.  
Curriculum Vitæ

- 2012 TA; Quaternary Geology, SFU, including 3-day field trip in the Channel Scablands, WA, USA, Instructor: Prof. John Clague (one term)  
2011 TA; Geohazard, SFU, Instructor: Prof. Gwenn Flowers (one term)

PEER REVIEWS:

- 2019 Journal article (1), Quaternary Science Reviews  
2017 Journal article (1), Earth and Planetary Science Letters  
2016 & 2019 Journal articles (4), Geophysical Research Letters  
2020 US National Science Foundation, 1 research proposal

CONFERENCE ORGANIZATION:

- 04.2018 First Annual SoCal Geomorphology Symposium, Caltech (1 day)  
10.2013 Annual Meeting of the Pacific Northwest Glaciologists, SFU (2 days)

PRIZES AND AWARDS:

- 06.2017 Outstanding Student Poster and PICO award at the 2017 General Assembly of the European Geosciences Union, Vienna. Poster title: Numerical modelling of esker formation in semi-circular subglacial channels ([link to award page](#)).  
2013 SFU Graduate Fellowship Award (\$6500 CDN)  
06.2012 Second place in the 'Funniest and most creative poster video' competition at the IGS International symposium on Glaciers and Ice Sheets in a Warming Climate, Fairbanks, Alaska, June 25–29 2012 ([link to video](#)).  
2012 SFU Graduate Fellowship Award (\$6500 CDN)  
2012 Travel grant to attend the International Glaciological Society International Symposium in Fairbanks, Alaska.

FIELDWORK EXPERIENCE:

- 04.2011-09.2014: Glaciology field work: mass balance measurements, ice-penetrating radar surveys, photogrammetric surveys, programming, setting up and maintaining weather stations and GPS networks, monitoring water and sediment fluxes, Donjek Range, Yukon, Canada, 4 seasons of field campaigns totaling over 30 weeks and 10 trips.  
2014, 2016: Wilderness First Aid Training Certification (50-hour training class each year)  
06-07.2010: Geomorphology and sample gathering for thermochronology and cosmogenic nuclide, St Elias Range, Alaska, USA; 3 weeks; Trip leader: Dr. Jean-Daniel Champagnac.

OUTREACH:

- 2019 Middle school outreach as part of a Polar Field Work Lecture series by the Center for Teaching, Learning and Outreach at Caltech (2 one-hour lectures).  
2018 "Chasing Glaciers: an International Quest for Answers", Lecture for the Caltech International Education Week, where I discussed how my international career path has helped me grow and develop new ideas, Caltech (one hour [lecture](#)).  
2018 Lab tours for Caltech Up-Close, Caltech, hosted two tours (1 hour each).  
2018 Hosted a film crew as part of Will Smith YouTube channel project 'The Jump' to explain the process of bedrock erosion by rivers, Caltech (1 day of preparation and filming).  
2017 Outreach for Science Alive at SFU, science summer camps for children, 2 one-hour lectures.  
2017 Participation in the 3-minute thesis competition at SFU.

RELEVANT COURSES:

- 05.2012: International Summer School in Glaciology, McCarthy, Alaska. Hosted by the Geophysical Institute of the University of Alaska Fairbanks; 10 days (Dr. Regine Hock).

COMMUNITY SERVICE:

- 09.2012-10.2016: President, Secretary and Graduate Student Representative, alternatively, of the Graduate Student Earth Sciences Caucus at SFU.  
09.2009-09.2011: Vice-President then Entertainment Assistant of the Association of French Speaking students (ETH-Zürich and University of Zürich)  
09.2006-09.2008: President of the Mountaineering Club (EPF-Lausanne)

09.2005-09.2006: Sports and Animation Manager, AGEPoly (Association Générale des Étudiants, EPFLausanne)