Douglas J. Brinkerhoff

CONTACT
INFORMATION

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RESEARCH
INTERESTS

Numerical Glaciology:
- Dynamical modelling
- Bayesian statistics
- Inverse methods

Field Glaciology:
- Ice-ocean interaction
- Thermodynamics
- Ice rheology

Geomorphology:
- Glacier-sediment interactions
- Sediment transport
- Landscape evolution modelling

EDUCATION

University of Alaska Fairbanks, Fairbanks, AK

Ph.D., Geophysics, December 2017
- Thesis: *Bayesian methods in glaciology*
- Advisers: Asst. Prof. Andy Aschwanden and Prof. Martin Truffer

University of Montana, Missoula, MT

M.S., Computer Science, December 2011
- Thesis: *Variational methods in ice sheet modelling*
- Adviser: Prof. Jesse Johnson

B.S., Geology, December 2009
- *Summa cum Laude*, With High Honors
- Minor in mathematics
- Honors Thesis: *Sediment transport following dam removal in a freestone river*
- Adviser: Associate Prof. Andrew Wilcox

ACADEMIC
APPOINTMENTS

Research Assistant Professor   September 2017 to Present
University of Montana

Data Assimilation Specialist   January 2012 to August 2014
University of Montana
- Supervisor: Jesse Johnson
- Development and implementation of inverse methods for ice sheet models

REFEREED
JOURNAL
PUBLICATIONS

[1] **Brinkerhoff, D. J.**, M. Truffer, and A. Aschwanden (2017), Sediment transport drives tidewater glacier periodicity, *Nature Communications*, **8**(90), doi:10.1038/s41467-017-00095

[2] Farinotti, D., **D. J. Brinkerhoff**, +32 others (2017), How accurate are estimates of glacier thickness?, *The Cryosphere*, **11**, 949–970 doi:10.5194/tc-11-949-2017

[3] **Brinkerhoff, D. J.**, A. Aschwanden, and M. Truffer (2016), Bayesian inference of subglacial topography using mass conservation, *Frontiers*, 1–27, doi:10.3389/feart.2016.00008.

[4] **Brinkerhoff, D. J.**, C. R. Meyer, E. Bueler, M. Truffer, and T. Bartholomaus (2016), Inversion of a glacier hydrology model. *Annals of Glaciology*, **57**(72), doi:10.1017/aog.2016.3.

[5] **Brinkerhoff, D. J.** and Jesse V. Johnson (2015), Dynamics of thermally induced ice streams simulated with a higher-order flow model, *Journal of Geophysical Research*, **120**(9), doi:10.1002/2015JF003499.

[6] **Brinkerhoff, D. J.** and Jesse V. Johnson (2015), A stabilized finite element method for calculating balance velocities in ice sheets, *Geoscientific Model Development*, **8**, 1275–1283, doi:10.5194/gmd-8-1275-2015.

[7] Meierbachtol, T. W., J. Harper, J. V. Johnson, N. Humphrey, and **D. J. Brinkerhoff** (2015), Thermal boundary conditions on western Greenland: Observational constraints and impacts of the modeled thermomechanical state, *Journal of Geophysical Research*, **120**(3), doi:10.1002/20141JF003375.

[8] **Brinkerhoff, D. J.** and Jesse V. Johnson (2013), Data assimilation and prognostic whole ice-sheet modelling with the variationally derived, higher-order, open source, and fully parallel ice sheet model VarGlaS. *The Cryosphere*, **7**(4), doi:10.5194/tc-7-1161-2013.

[9] **Brinkerhoff, D. J.**, T. W. Meierbachtol, Jesse V. Johnson, and Joel T. Harper (2011), Sensitivity of the frozen/melted basal boundary to peturbations of basal traction and geothermal heat flux: Isunnguata Sermia, western Greenland, *Annals of Glaciology*, **52**(59), doi:10.3189/172756411799096330.

TECHNICAL
REPORTS

[10] *Contributor to*: The Greenland Analogue Project: Yearly Report 2011 (2012), *Swedish Nuclear Fuel and Waste Management Co.*

[11] *Contributor to*: The Greenland Analogue Project: Yearly Report 2010 (2011), *Swedish Nuclear Fuel and Waste Management Co.*

SELECTED
CONFERENCE
PROCEEDINGS

[12] **Brinkerhoff, D. J.** , Martin Truffer, and Andy Aschwanden, Sediment dynamics drive tidewater glacier periodicity (2016), Abstract C53E-05 presented at 2016 Fall Meeting, AGU, San Francisco, CA.

[13] **Brinkerhoff, D. J.** , Martin Truffer, and Andy Aschwanden, Sediment dynamics drive tidewater glacier periodicity (2016), presented at Northwest Glaciologists' Meeting, October 2016, Seattle, WA.

[14] **Brinkerhoff, D. J.** , Andy Aschwanden, and Martin Truffer, Bayesian inference of subglacial topgraphy (2015), presented at Northwest Glaciologists' Meeting, October 2015, Portland, OR.

[15] **Brinkerhoff, D. J.** , Colin Meyer, Martin Truffer, Ed Bueler, and Tim Bartholomaus, Inversion of a glacier hydrology model (2015), presented at International Glaciological Society symposium on subglacial hydrology, Hofn, Iceland

[16] **Brinkerhoff, D. J.** and Jesse V. Johnson (2013), VarGlaS, a next generation ice sheet model, Community Climate System Model Land Ice Working Group annual meeting, Boulder, CO.

[17] Johnson, Jesse V., **D. J. Brinkerhoff**, Sophie Nowicki, Joel Plummer, and Kevin Sack (2012), Estimation and propagation of errors in bed measurement, presented at 2012 Fall Meeting, AGU, San Fransisco, CA.

[18] Harper, Joel T., Neal Humphrey, Jesse Johnson, Toby Meierbachtol, **D. J. Brinkerhoff**, and Claire Landowski (2010), Integrating Borehole Measurements with Modeling of Englacial and Basal Conditions, Western Greenland (Invited), Abstract C42A-03 presented at 2010 Fall Meeting, AGU, San Francisco, CA.

[19] **Brinkerhoff, D. J.** , Toby W. Meierbachtol, Jesse V. Johnson, and Joel T. Harper (2010), Modelled dynamic sensitivity of Isunnguata Sermia, Western Greenland to the perturbation of basal boundary conditions, Abstract C23B-0605 presented at 2010 Fall Meeting, AGU, San Francisco, CA.

[20] Johnson, Jesse V., **D. J. Brinkerhoff**, and Glen Granzow (2010), Metrics for assessing ice sheet model performance, Land Ice/Paleoclimate Joint Session, CCSM Annual Meeting, Breckenridge, CO.

[21] **Brinkerhoff, D. J.** , Toby W. Meierbachtol, Jesse V. Johnson, and Joel T. Harper (2010), Sensitivity of the frozen-melted basal boundary to perturbations of basal traction: Isunnguata Sermia, western Greenland, International Glaciological Society Symposium, Columbus, OH.

[22] **Brinkerhoff, D. J.** and Andrew C. Wilcox (2009), Downstream response of depositional channel-forms to dam removal, Clark Fork River, Montana, Abstract No. 38-7 presented at GSA Annual Meeting, Portland, OR.

[23] Wilcox, Andrew C., **D. J. Brinkerhoff**, and Leonard S. Sklar (2009), Geomorphic evolution of the Clark Fork River, Montana, in the first two years following the breaching of Milltown dam, Abstract No. 225-3 presented at GSA Annual Meeting, Portland, OR.

PUBLIC LECTURES [24] **Brinkerhoff, D. J.**, Ice and mud: how sediment drives the advance and retreat of Alaska's tidewater glaciers (invited), Alaska Geophysical Society, ConocoPhilips, February 2017

GRANTS AWARDED [25] Co-I, Collaborative Research: Stability and Dynamics of Antarctic Marine Outlet Glaciers, NSF, $214,702, May 2016 to April 2019

[26] Co-I (Science PI), Using ICESat/OIB elevation and satellite-derived velocity changes to constrain time-varying basal motion, NASA 16-ICESAT2-16-0026, $524,374, March 2017 to February 2020

[27] Principal Investigator, Towards developing a sliding law for the tidewater glacier cycle, Center for Global Change Graduate Research Grant competition, $7661, July 2015 to July 2016

[28] Davidson Honors College Undergraduate Research Award, $1000, 2009

[29] UM Geosciences Undergraduate Research Support Scholarship, $1000, 2009

[30] Montana EPSCoR Undergraduate Research Award, $1000, 2009–2009

FELLOWSHIPS, SCHOLARSHIPS, AND AWARDS	[31] National Science Foundation Graduate Research Fellowship, August 2015–August 2017
	[32] National Science Foundation Graduate Research Internship Program, September 2016–August 2017
	[33] Geophysical Institute Best Student Paper Award, 2016
	[34] Alaska Space Grant Consortium Graduate Research Fellowship (declined), March 2015
	[35] Brian R. Zelenka Memorial Scholarhip, May 2016
	[36] Peter MacKeith Memorial Scholarship, May 2015
	[37] Montana Space Grant Consortium Graduate Research Fellowship, August 2009–August 2011
	[38] Montana Space Grant Consortium Undergraduate Fellowship August 2009

FIELD EXPERIENCE

- Wolverine Glacier (2017), 1 week, ground penetrating radar, mass balance
- Taku Glacier (2016), 2 weeks, ground penetrating radar, borehole instrumentation
- Antarctic Peninsula (2016), 5 weeks, time lapse photography, mooring deployment, autonomous vessel deployment
- Taku Glacier (2015), 4 weeks, hot water drilling, borehole instrumentation, active seismics
- Greenland Ice Sheet (2011), 4 weeks, hot water drilling, borehole instrumentation, GPS
- Greenland Ice Sheet (2010), 4 weeks, hot water drilling, borehole instrumentation, GPS

PROFESSIONAL SERVICE

Referee Service
- *Geophysical Research Letters*
- *Journal of Geophysical Research*
- *Journal of Glaciology*
- *Transactions on Geoscience and Remote Sensing*
- *The Cryosphere*
- *Geoscientific Model Development*

Conference Service
- Local Organizing Committee: Northwest Glaciologists' Meeting, Fairbanks, AK, 2014.

PROFESSIONAL MEMBERSHIPS

- American Geophysical Union
- International Glaciological Society
- Northwest Glaciologists

REFERENCES

Dr. Martin Truffer (e-mail: mtruffer2@alaska.edu; phone: +1-907-474-5359)
- Professor, (current graduate adviser),
University of Alaska Fairbanks,
Geophysical Institute,
903 N Koyukuk Dr, Fairbanks, AK 99775

Dr. Andy Aschwanden (e-mail: aaschwanden@alaska.edu; phone: +1-907-474-7199)
- Assistant Professor, (current graduate adviser),
University of Alaska Fairbanks,
Geophysical Institute,
903 N Koyukuk Dr, Fairbanks, AK 99775

Dr. Shad O'Neel (e-mail: soneel@usgs.gov; phone: +1-907-786-7088)
- Research Geophysicist, (research exchange supervisor),
  United States Geological Survey,
  Alaska Science Center,
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Dr. Jesse Johnson (e-mail: jesse.johnson@mso.umt.edu; phone: +1-406-243-2356)
- Professor, (MS adviser), University of Montana,
  Dept. of Computer Science,
  32 Campus Dr., Missoula, MT 59812