

Alexander H. Jarosch

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EDUCATION

- 2004–2007 • **University of Iceland**, Iceland, PhD in Geophysics awarded on May 25th, 2007.
- 1995–2003 • **University of Innsbruck**, Austria, MSc in Physics (Magister rerum naturalium) awarded on September 26th, 2003. Studies in Physics, Geophysics, Astronomy and Film Studies.
- 2001–2002 • **University of Iceland**, Iceland, Exchange Student in Earth Science.

PROFESSIONAL EXPERIENCE and SERVICES

Employment

- 2013–2013 • **Research Associate Professor** in Glaciology at the Institute of Earth Sciences, University of Iceland, Iceland.
- 2013 • **Postdoctoral Researcher** at the Icelandic Met Office, Iceland.
- 2011–2013 • **Postdoctoral Researcher** at the Centre for Climate and Cryosphere, Institute of Meteorology and Geophysics, University of Innsbruck, Austria.
- 2010 • **Independent Postdoctoral Researcher** affiliated with the University of Innsbruck, Austria.
- 2007–2009 • **Postdoctoral Researcher** at the Department of Earth and Ocean Sciences, University of British Columbia, Canada.

Administration and Service

- 2016 • **Rules and Regulations Working Group Member** for the Institute of Earth Sciences, University of Iceland.
- 2015 • **Scientific Steering Committee Chair** for the International Glaciological Society Symposium on Hydrology of Glaciers and Ice Sheets, Höfn in Hornafjörður, Iceland, 21-26 June 2015.
- 2015–2016 • **Chief Editor** for the Annals of Glaciology volume 72.
- 2014–2016 • **Science Committee Member** for the School of Engineering and Natural Sciences, University of Iceland.

Teaching

- 2013 • **Geophysical Inversion**. University of Iceland.
- 2013–2014 • **Continuum Mechanics and Heat Transfer (focus on fluid dynamics)**. University of Iceland.
- 2011–2012 • **Glaciological modelling (focus on ice dynamics)**. University of Innsbruck. Austria.
- 2010 • **Techniques of scientific work**. University of Innsbruck. Austria.
- 2004–2006 • **Introduction to Geophysics**. Teaching Assistant, University of Iceland. Iceland.
- 2003 • **Physics and Mathematics coaching**. Tutor, NHK - Nachhilfe Köll, Austria.

Field work campaigns

- 2014– • **Ice dynamics**. Ongoing campaign to monitor the dynamics of Breiðamerkurjökull, Iceland. Two new GNSS stations to monitor surface motion have been deployed.
- 2007–2009 • **Glaciological field work**. 7 weeks in 4 campaigns as part of a small, unsupported research team. Assisted with mass balance, surface mapping and radar surveys; designed and implemented over-winter GPS strain grid with initially 5 towers. Remotely located field site, Donjek Range, Yukon, Canada.
- 2006 • **Radio echo sounding**. Measuring the bedrock topography and ice thickness at the southern outlet glaciers of Vatnajökull using GPS and radio echo sounding. Iceland.
- 2004–2006 • **Ice surface velocity measurements**. Six field campaigns on the Vatnajökull ice cap. Main assignment: Kinematic and static GPS measurements of surface velocity stakes and topographic profiling. Assisting in steam drilling of surface velocity stakes. Iceland.

PUBLICATIONS

Refereed journal articles

- 02-2017 • Williamson, S. N., Hik, D. S., Gamon, J. A., **Jarosch, A. H.**, Anslow, F. S., Clarke, G. K. C., Rupp, T. S., 2017. *Spring and summer monthly MODIS LST is inherently biased compared to air temperature in snow covered sub-Arctic mountains*, Remote Sensing of Environment, 189, 14-24, doi:10.1016/j.rse.2016.11.009
- 01-2017 • Sørensen, L. S., **Jarosch, A. H.**, Aðalgeirsdóttir, G., Barletta, V. R., Forsberg, R., Pálsson, F., Björnsson, H., Jóhannesson, T., 2017. *The effect of signal leakage and glacial isostatic rebound on GRACE-derived ice mass changes in Iceland*, Geophysical Journal International, 09(1), 226-233, doi:10.1093/gji/ggx008
- 07-2016 • Gudmundsson M. T., Jonsdóttir K., Hooper A., Holohan E. P., Halldórsson S. A., Ófeigsson B. G., Cesca S., Vogfjörð K. S., Sigmundsson F., Högnadóttir T., Einarsson P., Sigmarsson O., **Jarosch A. H.**, Jónasson K., Magnússon E., Hreinsdóttir S., Bagnardi M., Parks M. M., Hjörleifsdóttir V., Pálsson F., Walter T. R., Schöpfer M. P. J., Heimann S., Reynolds H. I., Dumont S., Bali E., Gudfinnsson G. H., Dahm T., Roberts M. J., Hensch M., Belart J. M. C., Spaans K., Jakobsson S., Gudmundsson G. B., Fridriksdóttir H. M., Drouin V., Dürig T., Aðalgeirsdóttir G., Riishuus M. S., Pedersen G. B. M., van Boeckel T., Oddsson B., Pfeffer M. A., Barsotti S., Bergsson B., Donovan A., Burton M. R., Aiuppa, A., 2016. *Gradual caldera collapse at Bárðarbunga volcano, Iceland, regulated by lateral magma outflow*, Science, 353, 6296, aaf8988, doi:10.1126/science.aaf8988
- 05-2016 • Flowers G. F, **Jarosch A. H.**, Belliveau P. T. A. P., Fuhrman L. A., 2016. *Short-term velocity variations and sliding sensitivity of a slowly surging glacier*, Annals of Glaciology, 72, 2016, doi:10.1017/aog.2016.7
- 12-2015 • Marzeion B., Leclercq P. W., Cogley J. G., **Jarosch A. H.**, 2015. *Brief Communication: Global reconstructions of glacier mass change during the 20th century are consistent*, The Cryosphere, 9, 2399-2404, doi:10.5194/tc-9-2399-2015
- 04-2015 • Clarke G. K. C., **Jarosch A. H.**, Anslow F. S., Radić V., Menounos B., 2015. *Projected deglaciation of western Canada in the twenty-first century*, Nature Geoscience, 8, 372-377, doi:10.1038/NGEO2407
- 01-2014 • Marzeion B., **Jarosch A. H.**, Gregory J. M., 2014. *Feedbacks and mechanisms affecting the global sensitivity of glaciers to climate change*, The Cryosphere, 8, 59-71, doi:10.5194/tc-8-59-2014.
- 02-2013 • **Jarosch A. H.**, Schoof C. G., Anslow F. S., 2013. *Restoring mass conservation to shallow ice flow models over complex terrain*, The Cryosphere, 7, 229-240, doi:10.5194/tc-7-229-2013.
- 06-2013 • Clarke G. K. C., Anslow F. S., **Jarosch A. H.**, Radić V., Menounos B., Bolch T., Berthier E., 2012. *Ice volume and subglacial topography for western Canadian glaciers from mass balance fields, thinning rates, and a bed stress model*. Journal of Climate, e-View, doi:10.1175/JCLI-D-12-00513.1.
- 10-2012 • Marzeion B., **Jarosch A. H.**, Hofer M., 2012. *Past and future sea-level change from the surface mass balance of glaciers.*, The Cryosphere, 6, 1295-1322, doi:10.5194/tc-6-1295-2012.
- 04-2012 • **Jarosch A. H.**, Gudmundsson M. T., 2012. *A numerical model for meltwater channel evolution in glaciers.*, The Cryosphere, 6, 493-503, doi:10.5194/tc-6-493-2012.
- 01-2012 • Marzeion B., Hofer M., **Jarosch A. H.**, Kaser G., Mölg T., 2012. *A minimal model for reconstructing interannual mass balance variability of glaciers in the European Alps.*, The Cryosphere, 6, 71-84, doi:10.5194/tc-6-71-2012.
- 01-2012 • **Jarosch A. H.**, Anslow F. S., Clarke G. K. C., 2012. *High-resolution precipitation and temperature downscaling for glacier models.*, Climate Dynamics, 38, 391-409, doi:10.1007/s00382-010-0949-1.
- 04-2009 • Clarke G. K. C., Berthier E., Schoof C. G., **Jarosch A. H.**, 2009. *Neural networks applied to estimating subglacial topography and glacier volume.*, Journal of Climate, 22, 2146-2160, doi:10.1175/2008JCLI2572.11.
- 04-2008 • **Jarosch A. H.**, 2008. *Ice tools: a Full Stokes Finite Element Model for Glaciers*, Computers and Geosciences 34/8, 1005-1014, doi:10.1016/j.cageo.2007.06.012.
- 03-2008 • **Jarosch A.**, Gudmundsson M. T., Högnadóttir P., Axelsson G., 2008. *Progressive cooling of the hyaloclastite ridge at Gjalp, Iceland, 1996 - 2005*, Journal of Volcanology and Geothermal Research 170/3-4, 218-229, doi:10.1016/j.jvolgeores.2007.10.01.
- 04-2007 • **Jarosch A. H.**, Gudmundsson M. T., 2007. *Numerical studies of ice flow over subglacial geothermal heat sources at Grímsvötn, Iceland, using Full Stokes equations*, Journal of Geophysical Research, Earth Surface, 2007, 112, F02008, doi:10.1029/2006JF000540.

Non-refereed reports and other publications

- 06-2011 • **Jarosch A. H.**, Anslow F. S., Shea J., 2011. *A versatile tower platform for glacier instrumentation: GPS and Eddy Covariance Measurements*. Extended Abstract Series, IMAU Workshop on the use of automated measuring systems on glaciers, March 2011, Pontresina, Switzerland.
- 12-2005 • **Jarosch A. H.**, Gudmundsson M. T., Högnadóttir Th., 2005. *Gjalp 2003-2005: Depression Development, Ice Flux and Heat Output*. Jarðvísindastofnun Háskólans, RH-20-2005. 19pp.
- 09-2004 • **Jarosch A. H.**, Denoth A., 2004. *Alpine and maritime snow covers: similarities and differences in water distribution*. Proceedings of the ISSW 2004, Jackson Hole, USA.

PUBLICATIONS (continued)

- 08-1997 • Kerber, F.; Armsdorfer, B.; Bacher, A.; Bengler, W.; Bruckner, S.; Eisendle, E.; Furlan, E.; Gajdosik, M.; Gratl, H.; Gröbner, H.; Grömer, G. E.; Hartl, H.; **Jarosch, A.**; Kapferer, W.; Kausch, W.; Kimeswenger, S.; Koller, J.; Nordmeyer, G.; Limmert, H.; Saurer, W.; Schmeja, S.; Span, N.; Stampfer, B.; Weinberger, R.; Wiedemair, C., 1997. *Comet Hale-Bopp over Innsbruck*. Astronomische Gesellschaft Abstract Series, 13, 171.

Conference presentations - oral

- 12-2015 • **Jarosch A. H.**: *Explicit Numerical Modeling of Heat Transfer in Glacial Channels*. American Geophysical Union, Fall Meeting 2015, San Francisco, USA. 2015.
- 06-2015 • **Jarosch A. H.** *Heat transfer in englacial channels: new insights from explicit numerical simulations of turbulent flow*. International Glaciological Society, Symposium on the Hydrology of Glaciers and Ice Sheets, Höfn, Iceland. 2015.
- 12-2014 • **Jarosch A. H.**: *Observing the Calving Dynamics of Breiðamerkurjökull, Iceland, with Repeat UAV Aerial Photogrammetry*. American Geophysical Union, Fall Meeting 2014, San Francisco, USA. 2014.
- 10-2014 • **Jarosch A. H.**: *Bárðabunga and Breiðamerkurjökull: exciting times for glaciology*. International Glaciological Society Nordic Branch Meeting, Mýrdalur, Iceland. 2014.
- 10-2013 • **Jarosch A. H.**, Jóhannesson T.: *Current crustal deformation in Iceland in connection to past glacier changes; an adjoint sensitivity study*. International Glaciological Society Nordic Branch Meeting, Lammi, Finland. 2013.
- 05-2013 • **Jarosch A. H.**, Aðalgeirsdóttir G., Auriac A., Björnsson H., Guðmundsson S., Hreinsdóttir S., Hooper A., Jóhannesson T., Lund B., Magnússon E., Ófeigsson B. G., Pálsson F., Schmidt P., Sigmundsson E., Sturkell E.: *Use of glacial isostatic rebound history to constrain changes in ice volume in Iceland since the Little Ice Age*. International Association of Geodesy Symposium: Reconciling Observations and Models of Elastic and Viscoelastic Deformation due to Ice Mass Change, Illulissat, Greenland. 2013.
- 10-2012 • **Jarosch A. H.**, Marzeion B.: *Evaluation of climate reconstruction methods based on glacier geometry records*. International Glaciological Society Nordic Branch Meeting, Stockholm, Sweden. 2012.
- 06-2012 • **Jarosch A. H.**, Marzeion B.: *Glacier geometries and their usability for climate reconstruction*. International Glaciological Society, Symposium on Glaciers and Ice Sheets in a Warming Climate, Fairbanks, USA. 2012.
- 08-2011 • **Jarosch A. H.**: *The Relevance of Regional Glacier Models for Understanding the Third Pole*. 3rd Third Pole Environment Workshop, Reykjavík, Iceland. 2011.
- 04-2011 • **Jarosch A. H.**: *A numerical meltwater-channel evolution model for glaciers*. European Geosciences Union, General Assembly 2011, Vienna, Austria. 2011.
- 03-2011 • **Jarosch A. H.**, Anslow F. S., Shea J. M.: *A versatile tower platform for glacier instrumentation: e.g. GPS and Eddy Covariance Measurements*. IASC Workshop, Pontresina, Switzerland. 2011.
- 04-2009 • **Jarosch A. H.**, Anslow F. S., Clarke G. K. C.: *High Resolution Alpine Glacier Modelling: Do Ice Dynamics Matter?*. European Geosciences Union, General Assembly 2009, Vienna, Austria. 2009.
- 12-2008 • **Jarosch A. H.**, Anslow F. S., Clarke G. K. C., Radić V.: *Southern British Columbia Glacier Behavior Over the Past 29 Years*. American Geophysical Union, Fall Meeting 2008, San Francisco, USA. 2008.
- 08-2008 • **Jarosch A. H.**: *The Role of Ice Dynamics in Glaciovolcanism*. IAVCEI 2008, Reykjavík, Iceland, 2008. (invited)
- 05-2008 • **Jarosch A. H.**, Danby R. K., Hik D. S., Clarke G. K. C.: *Modelling the Present and Future Distribution of Alpine Tundra Ecosystems in Southwest Yukon, Canada*. Canadian Geophysical Union, Banff, Canada, 2008.
- 05-2008 • **Jarosch A. H.**, Anslow F. S., Flower, G. E., Wheler B. A., Clarke G. K. C.: *High-resolution regional glacier modelling using NARR data forcing*. Canadian Geophysical Union, Banff, Canada, 2008.
- 12-2007 • **Jarosch A. H.**, Clarke G. K. C., Danby R. K., Hik D. S.: *Climate Forced Alpine Tundra Ecosystem Dynamics: A Model Approach*. American Geophysical Union, Fall Meeting 2007, San Francisco, USA. 2007.
- 07-2007 • **Jarosch A. H.**, Gudmundsson M. T.: *Simulating the evolution of the ice surface depression formed during the subglacial Gjálp eruption, Iceland, 1996, using full Stokes ice models*. IUGG XXIV 2007, Perugia, Italy.
- 07-2007 • **Jarosch A. H.**, Gudmundsson M. T., Högnadóttir Þ, Axelsson G.: *Cooling of the Hyaloclastite Ridge at Gjálp, Iceland, 1996 - 2006*. IUGG XXIV 2007, Perugia, Italy.
- 06-2007 • **Jarosch A. H.**, Gudmundsson M. T., Högnadóttir, Þ, Axelsson, G.: *Cooling of the Hyaloclastite Ridge at Gjálp, Iceland, 1996 - 2006*. 2nd Volcano-Ice Interaction on Earth and Mars Conference (Vii2), Vancouver, Canada. 2007.
- 12-2006 • **Jarosch A. H.**, Gudmundsson M. T.: *Glacier Response to Geothermal Heat Sources; a Numerical Case Study at the Grímsvötn Caldera, Iceland*. American Geophysical Union, Fall Meeting 2006, San Francisco, USA. 2006.
- 12-2006 • Gudmundsson M. T., **Jarosch A. H.**, Högnadóttir Th.: *Ten Years Record of Decreasing Heat Output From the Hyaloclastite Ridge Formed in the 1996 Gjálp eruption*. American Geophysical Union, Fall Meeting 2006, San Francisco, USA. 2006.
- 06-2006 • **Jarosch A. H.**, Gudmundsson M. T.: *Heat output and distribution of heat sources at the Subglacial Gjálp Volcano, Iceland, inferred from numerical ice flow models*. International Glaciological Society, Symposium on Earth & Planetary Ice-volcano interactions, Reykjavík, Iceland. 2006.

PUBLICATIONS (continued)

- 03-2006 • **Jarosch A. H.**, Gudmundsson M. T.: *Properties of Subglacial Heat Sources estimated by Numerical Studies of Ice Flow*. Natural Science Symposium 2006, Reykjavík, Iceland. 2006.

Conference presentations - poster

- 04-2017 • **Jarosch A. H.**: *A numerical glance into subglacial channel evolution*. European Geosciences Union, General Assembly 2017, Vienna, Austria. 2017.
- 12-2015 • **Jarosch A. H.**: *Repeat UAV Observations of the Calving Front of Breiðamerkurjökull, Iceland*. American Geophysical Union, Fall Meeting 2015, San Francisco, USA. 2015.
- 12-2010 • **Jarosch A. H.**: *From Supraglacial to Englacial: Evolution of Meltwater Channels*. American Geophysical Union, Fall Meeting 2010, San Francisco, USA. 2010.
- 04-2009 • **Jarosch A. H.**, Schoof C. G.: *A new Shallow Ice Scheme for Alpine Glaciers*. European Geosciences Union, General Assembly 2009, Vienna, Austria. 2009.
- 04-2006 • **Jarosch A. H.**, Gudmundsson M. T.: *Full Stokes ice models as a tool to estimate heat source properties underneath ice*. European Geosciences Union, General Assembly 2006, Vienna, Austria. 2006.
- 04-2006 • **Jarosch A. H.**, Gudmundsson M. T.: *Progressiv cooling of the subglacial Gjalp hyaloclastite ridge: 1996 - 2005*. European Geosciences Union, General Assembly 2006, Vienna, Austria. 2006.
- 04-2005 • **Jarosch A. H.**, Gudmundsson M. T.: *Numerical Studies of Glacier Surface Evolution above a subglacial Heat Source*. European Geosciences Union, General Assembly 2006, Vienna, Austria. 2005.
- 09-2004 • **Jarosch A. H.**, Denoth, A.: *Alpine and maritime snow covers: similarities and differences in water distribution*. International Snow Science Workshop 2004, Jackson Hole, USA. 2004. (presented by A. Denoth)

Theses

- 2007 • **Jarosch A. H.**, *Full Stokes Ice Models and Geothermal Heat Sources - Numerical Simulations of Volcano-Ice Interaction*, PhD Thesis, University of Iceland, Iceland, 2007.
- 2003 • **Jarosch A. H.**, *Vertical Distribution of Liquid Water: A Comparative Study of Snow Covers in Maritime and Alpine Climates*, Master Thesis, University of Innsbruck, Austria, 2003.

Software

- 2006- • **icetools**: A Full Stokes finite element model for ice flow. One of the first open source models of its kind, developed actively since 2006. Freely available at icetools.sourceforge.net.

PROFESSIONAL SKILLS

Languages

- **German**: mother tongue.
- **English**: fluent in spoken and written English.
- **Icelandic**: conversational basics in Icelandic.

Computer skills

- **Programming languages**: Python (especially NumPy and SciPy), Matlab, Fortran, C.
- **Markup languages**: Latex, HTML, XML.
- **Databases**: SQL.
- **Parallel computing**: Built a diskless, dual Gigabit network, 64bit cluster with 5 nodes, based on [Gentoo](http://gentoo.org) Linux in 2006. Administrating software used: [Torque](http://torque.mcs.anl.gov)(OpenPbs), MPICH, and a Linux kernel based software RAID.
- **Professional software/libraries**: [Fenics](http://fenicsproject.org), [Paraview](http://www.paraview.org)(VTK), [PyNGL](http://pyngl.org), [PETSc](http://petsc.org), [Getfem++](http://getfem++.org),