David Whipp

Curriculum vitæ

Education

2003–2008 **Ph.D., Geology**, *University of Michigan*, Ann Arbor, Michigan, USA.

1998–2002 **B.S., Geology (Physics minor)**, *University of Michigan*, Ann Arbor, Michigan, USA.

Professional experience

2017–present **Associate professor**, *Institute of Seismology, Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland.

2013–2016 **Assistant professor**, *Institute of Seismology, Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland.

2013–2018 **Adjunct of the Faculty of Graduate Studies**, *Dept. of Earth Sciences, Dalhousie University*, Halifax, Nova Scotia, Canada.

2009–2012 **Postdoctoral fellow**, *Dept. of Oceanography, Dalhousie University*, Halifax, Nova Scotia, Canada.

2008–2009 **Postdoctoral fellow**, *Géosciences Rennes, University of Rennes 1*, Rennes, France.

2007 **Geoscientist (intern)**, *ExxonMobil Exploration Company*, Houston, Texas, USA.

2003–2008 **Research assistant**, *Dept. of Geological Sciences, University of Michigan*, Ann Arbor, Michigan, USA.

Publications

In preparation/review

D. M. Whipp and T. A. Ehlers. Quantification of landslide frequency and sediment residence time in the Nepal Himalaya. (in revision).

Peer-reviewed articles (* = Student lead author)

K. R. Landry*, I. Coutand, **D. M. Whipp**, D Grujic, and J. K. Hourigan. Late Neogene tectonically driven crustal exhumation of the Sikkim Himalaya: Insights from inversion of multithermochronologic data. *Tectonics*, 35(3):833–859, March 2016. doi: 10.1002/2015TC004102. URL `http://dx.doi.org/10.1002/2015TC004102`.

D. M. Whipp, C. Beaumont, and J. Braun. Feeding the 'aneurysm': Orogen-parallel mass transport into Nanga Parbat and the western Himalayan syntaxis. *Journal of Geophysical Research: Solid Earth*, 119(6):5077–5096, June 2014. doi: 10.1002/2013JB010929. URL `http://dx.doi.org/10.1002/2013JB010929`.

M. A. Murphy, M. H. Taylor, J. Gosse, C. R. P. Silver, **D. M. Whipp**, and C. Beaumont. Limit of strain partitioning in the Himalaya marked by large earthquakes in western Nepal. *Nature Geoscience*, 7(1):38–42, 2014. doi: 10.1038/ngeo2017. URL `http://dx.doi.org/10.1038/ngeo2017`.

I. Coutand, **D. M. Whipp**, D. Grujic, M. Bernet, M. G. Fellin, B. Bookhagen, K. R.

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Landry, S. K. Ghalley, and C. Duncan. Geometry and kinematics of the Main Himalayan Thrust and Neogene crustal exhumation in the Bhutanese Himalaya derived from inversion of multithermochronologic data. *Journal of Geophysical Research: Solid Earth*, 119(2):1446–1481, February 2014. doi: 10.1002/2013JB010891. URL `http://dx.doi.org/10.1002/2013JB010891`.

D. M. Whipp, T. A. Ehlers, J. Braun, and C. D. Spath. Effects of exhumation kinematics and topographic evolution on detrital thermochronometer data. *Journal of Geophysical Research: Earth Surface*, 114(F4), December 2009. doi: 10.1029/2008JF001195. URL `http://dx.doi.org/10.1029/2008JF001195`.

T. F. Schildgen, T. A. Ehlers, **D. M. Whipp**, M. C. van Soest, K. X. Whipple, and K. V. Hodges. Quantifying canyon incision and Andean Plateau surface uplift, southwest Peru: A thermochronometer and numerical modeling approach. *Journal of Geophysical Research: Earth Surface*, 114(F4), December 2009. doi: 10.1029/2009JF001305. URL `http://dx.doi.org/10.1029/2009JF001305`.

D. M. Whipp and T. A. Ehlers. Influence of groundwater flow on thermochronometer-derived exhumation rates in the central Nepalese Himalaya. *Geology*, 35(9):851–854, September 2007. doi: 10.1130/G23788A.1. URL `http://dx.doi.org/10.1130/G23788A.1`.

K. W. Huntington, T. A. Ehlers, K. V. Hodges, and **D. M. Whipp**. Topography, exhumation pathway, age uncertainties, and the interpretation of erosion rates from thermochronometer data. *Tectonics*, 26(4), August 2007. doi: 10.1029/2007TC002108. URL `http://dx.doi.org/10.1029/2007TC002108`.

D. M. Whipp, T. A. Ehlers, A. E. Blythe, K. W. Huntington, K. V. Hodges, and D. W. Burbank. Plio-Quaternary exhumation history of the central Nepalese Himalaya: 2. Thermokinematic and thermochronometer age prediction model. *Tectonics*, 26(3), 2007. doi: 10.1029/2006TC001991. URL `http://dx.doi.org/10.1029/2006TC001991`.

Awards and honors

2014 **Exceptional Reviewer for journal *Lithosphere***, *Geological Society of America*.

2007 **Outstanding Graduate Student Instructor Award**, *Rackham Graduate School*, University of Michigan, Ann Arbor, Michigan, USA.

2007 **Outstanding Graduate Student Instructor Award**, *Dept. of Geological Sciences*, University of Michigan, Ann Arbor, Michigan, USA.

2006 **Outstanding Student Paper Award**, *Tectonophysics Section*, American Geophysical Union Fall Meeting.

2003 **Camp Davis Field Geologist Award**, *Dept. of Geological Sciences*, University of Michigan, Ann Arbor, Michigan, USA.

Grants and fellowships

Research funding (over 5000 €)

pending **Academy Project**, *Academy of Finland*, Finland, €599 371. Sole PI.
Extracting the Record of mountain Erosion processes COntained in River Detritus (E-RECORD)

2014–2018 **Academy Project**, *Academy of Finland*, Finland, €451 763. Sole PI.
What controls deformation in a 'bent' 3D orogen? The effects of spatially variable rock strength, erosion and mass transport on the tectonics of the Bolivian Andes

2014–2017 **Three-Year Research Project**, *University of Helsinki*, Helsinki, Finland, €145 000. Sole PI.

What controls strain partitioning at obliquely convergent ocean-continent margins? 3D dynamics of crustal deformation along the western Andean margin

2010–2012 **ACEnet Research Fellowships Program**, *Atlantic Canada Computational Excellence Network (ACEnet)*, Canada, $40 000 [CAD]. Co-PI with C. Beaumont.

3-D plateau formation and evolution from numerical model experiments

Infrastructure

2016 **Faculty of Science internal infrastructure funding**, *University of Helsinki*, Helsinki, Finland, €90 000. Sole PI.

Geosciences high-performance computing cluster (geo-hpcc)

2014 **Dept. of Geosciences and Geography internal infrastructure funding**, *University of Helsinki*, Helsinki, Finland, €120 000. Sole PI.

Computational infrastructure for Earth Sciences

Computing allocations

2016 **PRACE Preparatory Access**, *Partnership for Advanced Computing in Europe (PRACE)*, Brussels, Belgium, 200,000 core-hours. Sole PI.

Nested DOUAR: Coupling high and low resolution finite element models to solve 3D geologic problems

2012 **Compute Canada National Resource Allocation**, *Compute Canada*, Toronto, Ontario, Canada, 109 core-years. Co-PI with J. Allen and C. Beaumont.

Modelling the three-dimensional dynamics of geologic systems: From sub-sea salt to the Himalayan peaks

Invited talks

2017 **European Geosciences Union General Assembly**, *Session TS7.8: Mountain building processes, from top to bottom: the Zagros-Himalaya-Tibet orogenic system*, Vienna, Austria.

2016 **American Geophysical Union Fall Meeting**, *Session T42B: Sedimentary Basin Records of Convergent Orogenic Systems*, San Francisco, CA, USA.

University of Potsdam, *Colloquium talk, Institute of Earth and Environmental Science*, Potsdam, Germany.

2014 **American Geophysical Union Fall Meeting**, *Session EP23G: From High Peaks to Level Plains: Using Thermochronometry to Study the Evolving Geosphere*, San Francisco, CA, USA.

2013 **University of Tübingen**, *Earth System Dynamics Research Group seminar, Dept. of Geosciences*, Tübingen, Germany.

2011 **Joseph Fourier University**, *Grand séminaire, Institut des Sciences de la Terre*, Grenoble, France.

2009 **Geological Society of America Annual Meeting**, *Session T46: Linking Shallow to Deep Crustal Processes in Arc and Collisional Orogens*, Portland, OR, USA.

Joseph Fourier University, *Seminar talk, Laboratoire de géodynamique des chaînes alpines*, Grenoble, France.

2007 **Dalhousie University**, *Department seminar, Dept. of Earth Sciences*, Halifax, Nova Scotia, Canada.

Conference activity

Organization

2017 **Session chair**, *NetherMod 2017 - XV International Workshop on Numerical Modelling of Mantle and Lithosphere Dynamics*, Putten, Netherlands.
"Global modelling of early and recent Earth"

2016 **Session co-convener**, *Nordic Geological Winter Meeting*, Helsinki, Finland.
"Dynamics and evolution of the lithosphere from Archean to present"
"Interactions between climate, erosion and tectonics"

2014 **Steering committee**, *Lithosphere 2014 symposium*, Turku, Finland.

2013 **Session co-chair**, *28th Himalayan Karakorum Tibet Workshop and 6th International Symposium on Tibetan Plateau Joint Conference*, Tübingen, Germany.
"Crustal Doming, Exhumation and Lateral Extrusion"

2010 **Session co-convener**, *Geological Society of America Annual Meeting*, Denver, Colorado, USA.
"Orogeny: From rigid plates to diffuse lithospheric deformation", one of several sessions celebrating the 30th anniversary of the Structural Geology and Tectonics Division of the GSA

Conference presentations (past 3 years; * = Student lead author)

J. Schütt* and **D. M. Whipp**. 3D dynamics of crustal deformation along the western Andean margin. NetherMod 2017 - XV International Workshop on Numerical Modelling of Mantle and Lithosphere Dynamics, Putten, Netherlands, 27–31 August, 2017.

D. M. Whipp and C. Beaumont. Strain partitioning in arcuate orogens: Analytical predictions and numerical experiments based on the Himalayan arc. NetherMod 2017 - XV International Workshop on Numerical Modelling of Mantle and Lithosphere Dynamics, Putten, Netherlands, 27–31 August, 2017.

L. Kaislaniemi and **D. M. Whipp**. What controls deformation in a bent three-dimensional orogen? An example from the Bolivian Andes. DRT 2017 - 21st International Conference on Deformation Mechanisms, Rheology and Tectonics, Inverness, Scotland, 30 April–4 May, 2017.

M. Nettesheim*, T. Ehlers, and **D. M. Whipp**. Subduction and Slab Advance at Orogen Syntaxes: Predicting Exhumation Rates and Thermochronometric Ages with Numerical Modeling. *Geophysical Research Abstracts*, 19, EGU2017-13042, 2017.

J. Schütt* and **D. M. Whipp**. 3D dynamics of crustal deformation driven by oblique subduction: Northern and Central Andes. *Geophysical Research Abstracts*, 19, EGU2017-11940, 2017.

D. M. Whipp and C. Beaumont. Orogen-parallel mass transport along the arcuate Himalaya into Nanga Parbat and the western Himalayan syntaxis. *Geophysical Research Abstracts*, 19, EGU2017-15505, 2017 (**invited**).

D. M. Whipp, I. Coutand, B. Bookhagen, and D. Grujic. Interpreting records of tectonic and erosional processes using detrital thermochronology: An example from the Bhutan Himalaya. Abstract T42B-05 presented at 2016 Fall Meeting, AGU, San Francisco, Calif., USA, 12–16 Dec, 2016 (**invited**).

I. Kukkonen, E. Koivisto, and **D. M. Whipp**. Helsinki University Kumpula Campus Drill Hole Project. *Lithosphere 2016 - Ninth Symposium on the Structure, Composition and Evolution of the Lithosphere in Finland. Programme and Extended Abstracts, Espoo, Finland, November 9–11, 2016*, Institute of Seismology, University of Helsinki, 2016.

L. Kaislaniemi and **D. M. Whipp**. What controls deformation in a bent three-dimensional orogen? GeoMod 2016 conference, Montpellier, France, 17–20 October, 2016.

J. Schütt* and **D. M. Whipp**. Controls on continental strain partitioning above an oblique subduction zone, Northern Andes. GeoMod 2016 conference, Montpellier, France, 17–20 October, 2016.

N. Blomqvist* and **D. M. Whipp**. Comparing global-scale topographic and climatic metrics to long-term erosion rates using ArcSwath, an efficient new ArcGIS tool for swath profile analysis. *Geophysical Research Abstracts*, 18, EGU2016-6447, 2016.

M. Nettesheim*, T. Ehlers, and **D. M. Whipp**. Influence of Subducting Plate Geometry on Upper Plate Deformation at Orogen Syntaxes: A Thermomechanical Modeling Approach. *Geophysical Research Abstracts*, 18, EGU2016-4113, 2016.

J. Schütt* and **D. M. Whipp**. Controls on continental strain partitioning above an oblique subduction zone, Northern Andes. *Geophysical Research Abstracts*, 18, EGU2016-11430, 2016.

D. M. Whipp and C. Beaumont. Orogen-parallel mass transport along the arcuate Himalayan front into Nanga Parbat and the western Himalayan syntaxis. *Geophysical Research Abstracts*, 18, EGU2016-9744, 2016.

E. Koivisto, I. Kukkonen, and **D. M. Whipp**. New Master's program in Solid Earth Geophysics at the University of Helsinki: Lessons from one year of operation. 32nd Nordic Geological Winter Meeting, Helsinki, Finland 13–15 January, 2016.

I. Kukkonen, E. Koivisto, and **D. M. Whipp**. Helsinki University Kumpula Campus Drill Hole Project. 32nd Nordic Geological Winter Meeting, Helsinki, Finland 13–15 January, 2016.

J. Schütt* and **D. M. Whipp**. Controls on continental strain partitioning above an oblique subduction zone, Northern Andes. 32nd Nordic Geological Winter Meeting, Helsinki, Finland 13–15 January, 2016.

D. M. Whipp. Orogen-parallel mass transport along the arcuate Himalayan front into Nanga Parbat and the western Himalayan syntaxis. 32nd Nordic Geological Winter Meeting, Helsinki, Finland 13–15 January, 2016.

I. Coutand, **D. M. Whipp**, B. Bookhagen, and D. Grujic. Impact of Drainage Basin Geology and Geomorphology on Detrital Thermochronometric Data from Modern River Sands: A Case Study in the Bhutan Himalaya. Abstract T24B-04 presented at 2015 Fall Meeting, AGU, San Francisco, Calif., USA, 14–18 December, 2015 (**invited**).

D. M. Whipp, I. Coutand, and B. Bookhagen. Quantifying spatial variations in mountain erosion: An example from the Himalaya of Bhutan. Second Finnish National Colloquium of Geosciences, University of Helsinki, Helsinki, Finland, 4–5 March, 2015.

Teaching experience

Courses designed and taught

2013–present *Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland

- **Current Topics in Global Geophysics Research**
- **Geodynamics**
- **Introduction to Lithospheric Geodynamic Modelling** (with postdoc Lars Kaislaniemi)
- **Introduction to Quantitative Geology** (with doctoral student Henrikki Tenkanen)

- **Lithospheric Structure and Dynamics** (with Prof. Ilmo Kukkonen, Dept. of Physics)

Short courses

2016 **Introduction to lithospheric geodynamic modelling**, *Nordic Geological Winter Meeting*, Helsinki, Finland.
Co-taught with postdoc Lars Kaislaniemi

2015 **Software Carpentry Bootcamp**, *University of Helsinki*, Helsinki, Finland.
Co-taught with postdoc Joona Lehtomäki

2015 **Introduction to Lithospheric Geodynamics**, *Geological Survey of Finland*, Espoo, Finland.
Co-taught with postdoc Lars Kaislaniemi

Guest lectures

2015–present **Geological Processes/Dynamic Earth (Introductory geoscience course)**, *Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland.

2010 **Geochronology and Thermochronology**, *Dept. of Earth Sciences, Dalhousie University*, Halifax, Nova Scotia, Canada.

Assistant teaching

2003–2007 *Dept. of Geological Sciences, University of Michigan*, Ann Arbor, Michigan, USA

- **Earth Surface Processes and Soils laboratory**
- **Geology of the Rockies**, University of Michigan Camp Davis, WY, USA
- **Introduction to Geology laboratory/discussion**
- **Introduction to Oceanography laboratory**

Research supervision

Postdoctoral researchers

2015–present **Lars Kaislaniemi**, *Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland.

Doctoral students

2017–present **Matthias Nettesheim**, *Dept. of Geosciences, University of Tübingen*, Tübingen, Germany.
Co-supervised with Todd Ehlers

2014–present **Jorina Schütt**, *Dept. of Physics, University of Helsinki*, Helsinki, Finland.

Masters students

2017–present **Nelli Metiäinen**, *Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland.

2014–2016 **Niclas Blomqvist**, *Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland.
Now: Geologist, Pöyry Finland Oy

Bachelors theses

2016–present **Jennifer Hällsten**, *Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland.
Co-supervised with Jorina Schütt

2016–present **Lotta Ylä-Mella**, *Dept. of Physics, University of Helsinki*, Helsinki, Finland.

Supervisory committee

2011–2016 **Janice Allen**, *Doctoral student, Dept. of Earth Sciences, Dalhousie University*, Halifax, Nova Scotia, Canada.
Now: Imperial Oil, Canada

2012–2015 **Gabe Creason**, *Masters student, Dept. of Earth Sciences, Dalhousie University*, Halifax, Nova Scotia, Canada.
Now: Ph.D. student, Oregon State University

2011–2014 **Kyle Landry**, *Masters student, Dept. of Earth Sciences, Dalhousie University*, Halifax, Nova Scotia, Canada.

Undergraduate research assistants

2016 **Miro Pütz**, *Institute of Geophysics, University of Hamburg*, Hamburg, Germany.

2014 **Niclas Blomqvist**, *Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland.

2006–2008 **Chris Spath**, *Dept. of Electrical Engineering and Computer Science, University of Michigan*, Ann Arbor, Michigan, USA.
Co-supervised with Todd Ehlers

2004 **Nick Olds**, *Dept. of Geological Sciences, University of Michigan*, Ann Arbor, Michigan, USA.
Co-supervised with Todd Ehlers

Professional service

2016–2017 **Judge**, Outstanding Student Poster and PICO Award, European Geosciences Union General Assembly, Vienna, Austria.

2013–2016 **Judge**, Outstanding Student Paper Awards, American Geophysical Union Fall Meeting, San Francisco, CA, USA.
Did not attend/judge in 2015

2013–2015 **Scientific expert in review panel**, Fennovoima nuclear power company, Helsinki, Finland.

2007–present **Referee**.

- Journals: *Basin Research*, *Chemical Geology*, *Earth and Planetary Science Letters*, *Earth Surface Processes and Landforms*, *Geological Society of America Bulletin*, *Geology*, *Geophysica*, *Journal of Geology*, *Journal of Geophysical Research - Earth Surface*, *Journal of Geophysical Research - Solid Earth*, *Lithosphere*, *Nature Communications*, *Nature Geoscience*, *Science*, *Tectonics*, *Tectonophysics*
- Research project proposals: German Science Foundation, Natural Sciences and Engineering Research Council of Canada, US National Science Foundation (Earth Sciences Postdoctoral Fellowship program, Geomorphology and Land Use Dynamics program, Tectonics program)

Departmental/university service

2017–present **Board member**, *Masters program in Geology and Geophysics*, Dept. of Geosciences and Geography, University of Helsinki, Helsinki, Finland.

2015–2017 **Department council member**, *Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland.

2014–2016 **Co-coordinator of Solid Earth Geophysics Masters program**, *Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland.

2013–present **Co-coordinator geoscience seminar**, *Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland.

2007–2008 **Graduate Student Mentor**, *Dept. of Geological Sciences, University of Michigan*, Ann Arbor, Michigan, USA.

Community outreach

2015 **Lecturer**, *Dept. of Geosciences and Geography, University of Helsinki*, Helsinki, Finland.
Introduction to my general areas of research on mountain evolution for high school students from Tampere, Finland

2013 **Presenter**, *Science Bazaar, University of Helsinki*, Helsinki, Finland.
Presentation on mountain systems to the audience of undergraduate students present for their orientation at the Kumpula Science Campus of the University of Helsinki

2007 **Guest lecture**, *Melbourne High School*, Melbourne, FL, USA.
Introduction to the geology and culture of Nepal related to reading of Jon Krakauer's *Into Thin Air* for eleventh grade English students

Languages

English	Native	
Finnish	CEFR level A1.3	*Very basic knowledge*
French	Basic knowledge	*Functional speaker and reader, limited writer*

Professional memberships

2014–present European Geosciences Union
2005–present Geological Society of America
2003–present American Geophysical Union

Personal

Birth date 9 March 1980
Citizenship USA
Family Married, two children

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