David Whipp

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Institute of Seismology, Department of Geosciences and Geography
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@dave_whipp - davewhipp - YouTube channel

Education

Ph.D., Geology, University of Michigan, Ann Arbor, MI, USA. 2003-2008

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

Experience

Associate professor, Department of Geosciences and Geography, University of Helsinki, Helsinki, Finland. 2017-present

Adjunct of the Faculty of Graduate Studies, Department of Earth Sciences, Dalhousie University, Halifax, NS, Canada. 2013-2018

Assistant professor, Department of Geosciences and Geography, University of Helsinki, Helsinki, Finland. 2013-2016

Postdoctoral fellow, Department of Oceanography, Dalhousie University, Halifax, NS, Canada. 2009-2012

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

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

Research assistant, Department of Geological Sciences, University of Michigan, Ann Arbor, MI, USA. 2003-2008

Publications

Publication list also available online. Asterisks indicate student lead authors.

In review

A. Koptev, T. A. Ehlers, M. Nettesheim, and D. M. Whipp. Impact of 3D subduction geometry and upper plate rheology on localized deformation in orogen syntaxes. Earth and Planetary Science Letters, in review.

M. Nettesheim*, T. A. Ehlers, D. M. Whipp, and A. Koptev. The influence of subducting slab advance and erosion on overriding plate deformation in orogen syntaxes. Solid Earth Discuss. doi: 10.5194/se-2018-14, in review.

Journals

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. doi: 10.1002/2015TC004102, 2016. 2016

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. doi: 10.1002/2013JB010929, 2014. 2014

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. doi: 10.1038/ngeo2017, 2014.

I. Coutand, D. M. Whipp, D. Grujic, M. Bernet, M. G. Fellin, B. Bookhagen, K. R. 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. doi: 10.1002/2013JB010891, 2014.

2009

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). doi: 10.1029/2008JF001195, 2009.

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). doi: 10.1029/2009JF001305, 2009.

2007

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. doi: 10.1130/G23788A.1, 2007.

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) . doi: 10.1029/2007TC002108, 2007.

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. Thermo-kinematic and thermochronometer age prediction model. Tectonics, 26(3). doi: 10.1029/2006TC001991, 2007.

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, MI, USA.

Outstanding Graduate Student Instructor Award, Department of Geological Sciences, University of Michigan, Ann Arbor, MI, USA.

2006

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

2003

Camp Davis Field Geologist Award, Department of Geological Sciences, University of Michigan, Ann Arbor, MI, USA.

Grants and funding

Funding includes only amounts 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)

Research funding

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

Faculty of Science internal infrastructure funding, University of Helsinki, Helsinki, Finland, 90 000€. Sole PI. 2016
Geosciences high-performance computing cluster (geo-hpcc)

Department of Geosciences and Geography internal infrastructure funding, University of Helsinki, Helsinki, Finland, 120 000€. Sole PI. 2014
Computational infrastructure for Earth Sciences

Computing allocations

PRACE Preparatory Access, Partnership for Advanced Computing in Europe (PRACE), Brussels, Belgium, 200,000 core-hours. Sole PI. 2014
Nested DOUAR: Coupling high and low resolution finite element models to solve 3D geologic problems

Compute Canada National Resource Allocation, Compute Canada, Toronto, ON, Canada, 109 core-years. Co-PI with J. Allen and C. Beaumont. 2012
Modelling the three-dimensional dynamics of geologic systems: From sub-sea salt to the Himalayan peaks

Invited talks

University of Lausanne, Department seminar, Institute of Earth Sciences, Lausanne, Switzerland. 2017

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

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

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

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

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

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

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

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

Dalhousie University, Department seminar, Department of Earth Sciences, Halifax, NS, Canada. 2007

Conference activity

Organization

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

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

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

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

Session co-convener, Geological Society of America Annual Meeting, Denver, Colorado, USA. 2010
"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

Select presentations

Past 3 years. Asterisks indicate student lead authors.

A. Koptev, T. Ehlers, M. Nettesheim and D. Whipp. Impact of 3D subduction geometry and crustal rheology on deformation at orogen syntaxes: Insights from thermo-mechanical modelling. Geophysical Research Abstracts, 20, EGU2018-8463-1, 2018. 2018

M. Nettesheim*, T. A. Ehlers and D. M. Whipp. Effects of subducting plate geometry and erosion on overriding plate deformation at plate corners (syntaxes). Geophysical Research Abstracts, 20, EGU2018-13467, 2018.

D. Whipp, H. Tenkanen, and V. Heikinheimo. Geo-Python: An open online introduction to programming in Python for geoscientists. Geophysical Research Abstracts, 20, EGU2018-15204, 2018.

L. Kaislaniemi and D. M. Whipp. What controls deformation in a bent three-dimensional orogen? An example from the Bolivian Andes. Abstract T23D-0649 presented at 2017 Fall Meeting, AGU, San Francisco, Calif., USA, 11–15 Dec, 2017. 2017

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**). 2016

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.

Teaching

Links: 🏠 = course homepage, = course GitHub page, ▶ = course YouTube channel

Courses taught

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

- Conducting scientific research 🏠
- Current Topics in Global Geophysics Research
- Geo-Python (part of Introduction to Quantitative Geology; with Henrikki Tenkanen) 🏠 ▶
- Geodynamics ▶
- Introduction to Lithospheric Geodynamic Modelling (with Lars Kaislaniemi) 🏠
- Introduction to Quantitative Geology 🏠 ▶
- Lithospheric Structure and Dynamics (with Ilmo Kukkonen)

Short courses

Low-temperature thermochronology, GeoDoc short course, University of Helsinki, Helsinki, Finland. 🏠 ▶ 2017
Co-taught with Ilmo Kukkonen and invited lecturers Cécile Gautheron, Christoph Glotzbach, and Clare Warren.

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

Software Carpentry Bootcamp, University of Helsinki, Helsinki, Finland. 2015
🏠

Co-taught with Joona Lehtomäki

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

Guest lectures

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

Geochronology and Thermochronology, Department of Earth Sciences, Dalhousie University, Halifax, NS, Canada. 2010

Assistant teaching

Department of Geological Sciences, University of Michigan, Ann Arbor, Michigan, USA 2003–2007
- 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

Supervision

Visiting researchers

Mehrnoosh Ghadimi, Department of Physical Geography, University of Tehran, Tehran, Iran. 2017-present

Postdoctoral researchers

Lars Kaislaniemi, Department of Geosciences and Geography, University of Helsinki, Helsinki, Finland. 2015-present

Doctoral students

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

Jorina Schütt, Department of Geosciences and Geography, University of Helsinki, Helsinki, Finland. 2014–2018

Masters students

Nelli Metiäinen, Department of Geosciences and Geography, University of Helsinki, Helsinki, Finland. 2017-present

Lotta Ylä-Mella, Department of Geosciences and Geography, University of Helsinki, Helsinki, Finland.
Co-supervised with Ilmo Kukkonen

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

Bachelors theses

Lotta Ylä-Mella, Department of Physics, University of Helsinki, Helsinki, Finland. 2016–2018

Jennifer Hällsten, Department of Geosciences and Geography, University of Helsinki, Helsinki, Finland. 2016–2017
Co-supervised with Jorina Schütt

Supervisory committee

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

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

Kyle Landry, Masters student, Department of Earth Sciences, Dalhousie University, Halifax, NS, Canada. 2011–2014

Undergraduate research

Leevi Tuikka, Department of Physics, University of Helsinki, Helsinki, Finland. 2017-present

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

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

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

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

Professional service

Judge, Outstanding Student Poster and PICO Award, European Geosciences Union General Assembly, Vienna, Austria. 2016-2018

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

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

Referee. 2007-present

Journals: Basin Research, Chemical Geology, Earth and Planetary Science Letters, Earth Surface Processes and Landforms, G-cubed (Geochemistry, Geophysics, Geosystems), 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)

University service

Deputy member, Department of Geosciences and Geography mangagement group, University of Helsinki, Helsinki, Finland. 2018-present

Board member, Masters program in Geology and Geophysics, University of Helsinki, Helsinki, Finland. 2017-present

Preparatory group member, BSc of Science in English degree, University of Helsinki, Helsinki, Finland.

Department council member, Department of Geosciences and Geography, University of Helsinki, Helsinki, Finland. 2015-2017

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

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

Graduate Student Mentor, Department of Geological Sciences, University of Michigan, Ann Arbor, Michigan, USA. 2007-2008

Community outreach

Lecturer, Department of Geosciences and Geography, University of Helsinki, Helsinki, Finland. 2015

Introduction to my general areas of research on mountain evolution for high school students from Tampere, Finland

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

Guest lecture, Melbourne High School, Melbourne, FL, USA. 2007
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
French: Basic knowledge

Memberships

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

Personal

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

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