

## CURRICULUM VITAE — TARJE NISSEN-MEYER

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### Education

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2007      **Ph.D. Geophysics**, Department of Geosciences, *Princeton University*, Princeton, USA  
2004      **M.A. Geosciences**, Department of Geosciences, *Princeton University*  
2001      **Diplom (B.Sc. & M.Sc.)**, Inst. of Geophysics, *Ludwig-Maximilians-Universität*, München, Germany  
1999      **Visiting Student**, physics & geophysics, *McGill University*, Montreal, Canada

### Employment

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2013 -      **Associate Professor of Geophysics** and Fellow of Wolfson College, *Oxford University*, UK  
2013 -      **Adjunct Associate Research Scientist**, Lamont-Doherty Observatory, *Columbia University*, USA  
2010 - 2013      **Senior Research Scientist & Lecturer**, Institute of Geophysics, *ETH Zurich*, Switzerland  
2008 - 2010      **Postdoctoral Research Associate**, Department of Geosciences, *Princeton University*, USA  
2007 - 2008      **Postdoctoral Scholar**, Seismological Laboratory, *California Institute of Technology*, USA  
2002 - 2007      **Research and teaching assistant**, Department of Geosciences, *Princeton University*, USA  
2004      **Summer intern**, *Shell Exploration and Production Company*, New Orleans, USA

### Teaching

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2014 -      **Lecturer**, *Structural seismology*, University of Oxford  
2014 -      **Lecturer**, *Advanced Vector Calculus*, University of Oxford  
2014 -      **Lecturer**, *Mathematics for Materials and Earth Sciences*, University of Oxford  
2014 -      **Lecturer**, *Theoretical global seismology*, University of Oxford  
2011 - 2013      **Coordinator**, *Colloquium*, Institute of Geophysics, ETH Zurich  
2010 - 2013      **Instructor**, *Seismology of the spherical Earth*, Institute of Geophysics, ETH Zurich  
2004, 2005      **Preceptor**, *A Guided Tour of the Solar System*, Geosciences / Astrophysics, Princeton University  
2004, 2006      **Lab Instructor & Grader**, *Earthquakes, Volcanoes and Other Hazards*, Geosciences, Princeton University

### Invited teaching & tutorials

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Sep. 2014      *Advanced imaging of the lithosphere*, International PhD workshop, **University of Copenhagen**, Denmark  
Aug. 2014      *AxiSEM: Global broadband wavefields*, ELSI summer school, **Tokyo Tech**, Japan  
Jul. 2013      *AxiSEM: Global broadband wavefields*, CIG-QUEST workshop, **Univ Fairbanks Alaska**, USA  
Sep. 2009      *SPECFEM: 3D wave propagation*, Computational Geosciences workshop, **Novosibirsk State Univ**, Russia

### Supervising

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Postdocs      Piero Basini (2010-2012)  
Ph.D.      Kuangdai Leng (Oxford, 2014-); Max Rietmann (Lugano, 2012-2014); Ludwig Auer, Martin v. Driel (ETH, 2011-2014), Andrea Colombi, Percy Galvez (ETH, 2010-2013); Y. Luo, H. Zhu (Princeton, 2008-2009) Kasra Hosseini, Simon Stähler (LMU München, 2010-2013); Stefanie Hempel (Münster, 2011-2013)  
M.Sc., B.Sc.      Andrea Tesoniero (2011); Silvia Salas Romero (2012); Niloufar Abolfathian (2013)  
Group      Weekly meetings in global seismology (5-15 members with L. Boschi, A. Fichtner, 2010-)  
             Bi-weekly meetings in earthquake physics (5-15 members with L. Dalguer, 2010-)  
Users      I manage queries from research at 50 institutions worldwide using my numerical methods  
Examiner      *PhD* Philip Knaute (Cambridge, 2014); Thomas O'Toole (Oxford, 2013); Andrea Colombi (ETH, 2013)  
             *1st year PhD* Sean Lim (Mathematics, Oxford, 2014), Ludwig Auer (2012), Martin van Driel (2012), Andre Nuber (2012), Percy Galvez (2011), Andrea Colombi (2011), ETH  
             *M.Sc.* Miriam Gordon (2014), Oxford; Silvia Salas Romero (2012), Andrea Tesoniero (2011), ETH

**Honours (including supervisee honours)**

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2014	<b>Selected AGU Research highlight</b> for JGR paper by Auer et al. <i>EOS Transactions</i>
2014	<b>Outstanding student presentation</b> by Krisztina Kelevitz, annual meeting of <i>European Geoscience Union</i>
2012	<b>Chair d'Excellence</b> offered (declined), <i>Géoazur, Université de Nice, Sophia-Antipolis, France</i>
2009	<b>Assistant Professorship</b> offered (declined), Dept. of Physics, <i>University of Colorado, Boulder, USA</i>
2006 - 2007	<b>Harold W. Dodds Honorary Fellowship</b> , Graduate School, <i>Princeton University</i>
2006	<b>Arnold Guyot Teaching Award</b> , Dept. of Geosciences, <i>Princeton University</i>
2005	<b>Outstanding Student Paper Award</b> (Seismology), <i>American Geophysical Union</i>
2002	<b>Dusenbury Prize</b> for high academic standing, <i>Princeton University</i>
1999	<b>Scholarship "Hochschule International"</b> to study abroad, <i>Ludwig-Maximilians-Universität</i>
1997	<b>Dean's List</b> upon "Vordiplom" (B.Sc.), Institute of Geophysics, <i>Ludwig-Maximilians-Universität</i>

**Professional services**

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2014 -	<b>Management committee</b> , substitute member, EU COST Action TIDES
2014 -	<b>Disciplinary action committee</b> , Wolfson College, Oxford Univ.
2014	<b>Discussion leader</b> , SEDI workshop, Kanagawa, Japan
2013 -	<b>Steering committee member</b> , Oxford Solid Mechanics, Oxford Univ.
2012 - 2013	<b>Project manager</b> , <i>Solid Earth</i> network, Platform for Advanced Scientific Computing, Switzerland
2012 - 2013	<b>Organizing committee member</b> , joint CIG-IRIS-QUEST workshop, July 2013, Fairbanks, Alaska, USA
2011 - 2012	<b>Elected chair</b> of over 300 (non-professorial) Earth scientists, ETH Zurich
2011 - 2012	<b>Elected representative</b> in departmental and teaching commissions, ETH Zurich
2011	<b>Principal contact for movie production</b> by eMotion Studios/NVIDIA on computational seismology
2010 - 2011	<b>Principal scientific coordinator</b> , 2nd QUEST workshop (EU FP7 training network), Iceland
2010 - 2013	<b>Co-leader</b> , work package "Inverse theory", EU initial training network QUEST
2010 - 2013	<b>Shareholder</b> , Brutus supercomputer, ETH Zurich
2010 - 2013	<b>IT coordinator</b> (software licensing, website, budget), Seismology & Geodynamics Group, ETH Zurich
2010	<b>Interviewee</b> , ETH Life Magazine article on "Petaquake" high-performance computing
2008 - ...	<b>Outstanding student paper evaluation committee</b> , AGU (SEDI, Seismology)
2008 - ...	<b>Proposal reviewer</b> , NSF, U.S. Dept. of Energy, Netherlands Organisation for Scientific Research
2007 - ...	<b>Journal reviewer</b> , GJI, EPSL, Geophysics, Comp. Mod. Eng. Sc., Int. J. Comp. Math.
2006	<b>Session convener</b> , American Geophysical Union Fall Meeting
2005 - 2006	<b>Organizer</b> of solid-earth science seminar series, Princeton University
2005 - 2006	<b>Elected departmental representative</b> , Princeton Graduate Student Government
2004 - 2007	<b>Vice-president</b> , Council of International Graduate Students, Princeton University
2003 - 2007	<b>Cluster administrator</b> departmental Linux cluster, Princeton University
1999 - 2000	<b>Elected student representative</b> , Faculty of Geosciences, LMU Munich

**External funding (peer-reviewed)**

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2014 - 2018	<b>EU Horizon 2020 Marie-Curie European Training Network WAVES</b> , Paris, PhD position (co-PI)
2014 - 2018	<b>EU Horizon 2020 COST Action program TIDES</b> , Bologna (co-PI)
2014 - 2017	<b>NERC Capital Call The Volatile Legacy of the Early Earth</b> , Bristol (co-PI)
2013 - 2015	<b>Swiss Science Foundation grant</b> , PhD position, Finite-frequency tomography, Switzerland (PI)
2013 - 2015	<b>Co-design grant</b> , PhDs & postdocs, Platform for Advanced Scientific Computing, Switzerland (co-PI)
2012 - 2015	<b>Swiss Science Foundation grant</b> , PhD position, GPS seismology, Zurich, Switzerland (co-PI)
2012 - 2015	<b>Swiss Science Foundation grant</b> , PhD positions, exploration seismology, Zurich, Switzerland (partner)
2012 - 2013	<b>HP2C/PASC grant</b> , computational scientist positions, Switzerland (PI)
2012 - 2013	<b>OCRF Competitive Research Grant</b> , research funds, supervirtual interferometry, Saudi Arabia (co-PI)
2011 - 2013	<b>Swiss Science Foundation</b> , Ph.D. funds, global tomography, Zurich, Switzerland (co-PI)
2011 - 2012	<b>Swiss National Supercomputing Center</b> , 6 Mio. CPU hours, Manno, Switzerland (PI)
2009 - 2010	<b>INSU/CNRS Feasibility of Born theory</b> , Paris, France (co-PI)
2007 - 2009	<b>National Science Foundation</b> , EAR-0105387: tomography, Princeton, USA (collaborator)

## *Publications (peer-reviewed)*

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- M. van Driel, T. Nissen-Meyer, 2014. *Seismic Wave Propagation in Fully Anisotropic Axisymmetric Media*, Geoph. J. Int., 199, 880-893. doi:10.1093/gji/ggu269.
- M. van Driel, T. Nissen-Meyer, 2014. *Optimized visco-elastic wave propagation for weakly dissipative media*, in print, Geoph. J. Int.
- Nissen-Meyer, T., van Driel, M., Stähler, S. C., Hosseini, K., Hempel, S., Auer, L., Colombi, A., and Fournier, A., 2014. *AxiSEM: broadband 3-D seismic wavefields in axisymmetric media*, Solid Earth, 5, 425-445, doi:10.5194/se-5-425-2014.
- Colombi, Nissen-Meyer, Boschi, Giardini, 2014. *Seismic waveform inversion for core-mantle boundary topography*. Geophys. J. Int., doi: 10.1093/gji/ggu112.
- Galvez, P., Ampuero, J.-P., Dalguer, L. Somala S., Nissen-Meyer T., 2014. *Dynamic earthquake rupture modelled with an unstructured 3D spectral element method applied to the 2011 M9 Tohoku earthquake*, Geophys. J. Int., 198 (2), 1222-1240, doi:10.1093/gji/ggu203
- Auer, Boschi, Becker, Nissen-Meyer, Giardini, 2014. *Savani: a variable-resolution whole-mantle model of anisotropic shear-velocity variations based on multiple datasets*, J. Geophys. Res., 119, 3006-3034, doi:10.1002/2013JB010773
- Bharadwaj, Nissen-Meyer, Garnero, Mai, Schuster, 2013. *Enhancing core-diffracted arrivals by Super-virtual Interferometry*, Geoph. J. Int., doi: 10.1093/gji/ggt452
- Basini, Nissen-Meyer, Boschi, Verbeke, Giardini, 2013. *The influence of non-uniform ambient noise on crustal tomography in Europe*, G-cubed, doi:10.1002/ggge.20081.
- Stähler, Sigloch, Nissen-Meyer, 2012. *Triplicated P-wave measurements for waveform tomography of the mantle transition zone*, Solid Earth, 3(2), 339-354.
- Rietmann, Messmer, Nissen-Meyer et al., 2012. *Forward and adjoint simulations of seismic wave propagation on emerging large-scale GPU architectures*, Proc. 2012 Int. Conf. for High Performance Computing - SC '12, Salt Lake City, USA.
- Colombi, Nissen-Meyer, Boschi, Giardini, 2012. *Seismic sensitivity to global boundary topography*, Geoph. J. Int., doi: 10.1111/j.1365-246X.2012.05660.x.
- D. Peter, D. Komatitsch, Y. Luo, R. Martin, N. Le Goff, E. Casarotti, P. Le Loher, F. Magnoni, Q. Liu, C. Blitz, T. Nissen-Meyer, P. Basini, J. Tromp, 2011. *Forward and adjoint simulations of seismic wave propagation on fully unstructured hexahedral meshes*, Geophysical Journal International, doi: 10.1111/j.1365-246X.2011.05044.x
- Zhu, H., Luo, Y., Nissen-Meyer, T., Morency, C., Tromp, J., 2009. *Elastic Imaging and Time-Lapse Migration Based Upon Adjoint Methods*. Geophysics, 74, WCA167-WCA177.
- Luo, Y., Zhu, H., Nissen-Meyer, T., Morency, C., and Tromp, J., 2009. *Seismic modeling and imaging based upon spectral-element and adjoint methods*, The Leading Edge, May 2009, 260-265.
- Nissen-Meyer, T., Fournier, A., Dahlen, F. A., 2008. *A 2-D spectral-element method for computing spherical-earth seismograms—II. Waves in solid-fluid media*. Geophys. J. Int., Vol. 174, issue 3, pp. 873-888.
- Nissen-Meyer, T., Fournier, A., Dahlen, F. A., 2007. *A 2-D spectral-element method for computing spherical-earth seismograms—I. Moment-tensor source*, Geoph. J. Int., 168, 1067-1093.
- Nissen-Meyer, T., Dahlen, F., Fournier, A., 2007. *Spherical-earth Fréchet sensitivity kernels*, Geoph. J. Int., 168, 1051-1066.
- Igel, H., Nissen-Meyer, T., Jahnke, G., 2002. *Wave propagation in 3-D spherical sections: Effects of subduction zones*. Phys. Earth Planet. Inter., 132, pp. 219-234.
- Other publications:** 3 book contributions (Igel et al. 2002, Nolet 2008; Fichtner 2010); about 60 international conference contributions (abstracts, posters, talks).

**Invited talks**

- 2014 **University of Leeds**, Geophysics & Tectonics seminar, *Leeds, UK*  
**University of Vienna**, Geophysics colloquium, *Vienna, Austria*  
**Lamont-Doherty Observatory**, solid-earth seminar, *Columbia University, USA*  
**Earth-Life Science Institute**, summer school, *Tokyo Tech, Japan*  
**AOGS conference**, *Sapporo, Japan*  
**Oxford Mathematical Geoscience**, seminar, *Mathematical Institute, Oxford University*  
**Institut de Physique du Globe**, seismology seminar, *Paris, France*
- 2013 **CIG workshop “Seismic imaging”**, *Fairbanks, USA*  
**4<sup>th</sup> QUEST workshop**, *Benodet, France*  
**Seismological Society of America**, Annual meeting, *Salt Lake City, USA*  
**Ecole Normale Supérieure**, Laboratory of Earth Sciences, *Lyon, France*  
**SIAM Computational Science & Engineering ‘13**, *Boston, USA*  
**University of Copenhagen**, *Copenhagen, Denmark*
- 2012 **Université de Lausanne**, Geophysics seminar, *Lausanne, Switzerland*  
**ECCOMAS Congress**, “Waves and Computation”, *Vienna, Austria*  
**University of Oxford**, Dept. Earth Sciences, *Oxford, UK*  
**Princeton University**, Dept. Geosciences, *Princeton, USA*  
**Université de Nice**, Geoazur, *Nice, France*  
**3<sup>rd</sup> QUEST workshop**, *Tatranska Lomnica, Slovakia*  
**KAUST workshop** on Wave Propagation, *Thuwal, Saudi Arabia*  
**University of Cambridge**, Bullard Laboratories, *Cambridge, UK*
- 2011 **Universität Münster**, Seminar, *Münster, Germany*  
**Max-Planck-Institute for Solar System Research**, *Katlenburg-Lindau, Germany*  
**King Abdullah University of Science & Technology**, Seminar, *Thuwal, Saudi Arabia*
- 2010 **Universität Basel**, Numerics Seminar, Institute of Mathematics, *Basel, Switzerland*  
**1<sup>st</sup> QUEST workshop**, *Capo Caccia, Sardinia, Italy*  
**European Seismological Commission**, General Assembly, *Montpellier, France*  
**ETH Zurich**, Institute of Geophysics, *Zurich, Switzerland*  
**California Institute of Technology**, Seismolab seminar, *Pasadena, USA*
- 2009 **Russian Academy of Sciences**, Computational Geosciences Meeting, *Novosibirsk, Russia*  
**ETH Zurich**, Institute of Geophysics, *Zurich, Switzerland*  
**Workshop “Tomography with Wavelets”**, *Géoazur, Villefranche-sur-Mer, France*  
**University of Colorado**, Department of Physics, *Boulder, USA*
- 2008 **American Geophysical Union**, Fall Meeting, *San Francisco, USA*  
**33rd International Geological Congress**, Int. Union of Geol. Sciences, *Oslo, Norway*  
**Seismological Society of America**, Annual Meeting, *Santa Fe, USA*
- 2007 **Ludwig-Maximilians-Universität**, Seismology Seminar, *Munich, Germany*  
**Workshop in Computational Seismology CIG/SPICE/IRIS**, *Jackson, USA*  
**F. A. Dahlen Memorial Symposium**, Princeton University, *Princeton, USA*
- 2006 **American Geophysical Union**, Fall Meeting, *San Francisco, USA*  
**Stanford University**, Department of Geophysics, *Palo Alto, USA*  
**University of Alaska**, Arctic Region Supercomputing Center, *, USA*  
**ExxonMobil**, Upstream Research, *Houston, USA*
- 2005 **Exploration and Production Company**, Shell International, *Houston, USA*  
**CIRM “High Order Non-Oscillatory Methods for Wave Propagation”**, *Trento, Italy*

**Invited research visits**

- USA** Caltech; Harvard; Princeton; Stanford; NYU; U of Alaska; U of Utah; IRIS; Lamont; UCSA
- Europe** Université Joseph-Fourier, Grenoble; Institut du Physique de Globe, Paris (France); Ludwig-Maximilians-Universität; Universität Münster; Max-Planck Institute for Solar System Research (Germany); Universiteit Utrecht (Netherlands); Universität Basel (Switzerland)
- Asia** King Abdullah University of Science and Technology (Saudi Arabia); Russian Academy of Sciences & Novosibirsk State University, Novosibirsk (Russia); Tokyo Tech (Japan)