

## **CAROLINE BEGHEIN, UCLA**

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### **Education**

2003: Ph.D. Geophysics, University of Utrecht, The Netherlands

1998: M.Sc. (D.E.A.) Geophysics, Institute de Physique du Globe, Paris, France

1997: B.Sc. Physics, University de Liège, Belgium

### **Honors and awards**

2016 IRIS/SSA Distinguished Lecturer

2014 Recognized among 100 notable professors at top research universities by [onlinephdprogram.org](http://onlinephdprogram.org)

2009 UCLA Assistant Professor Career Development Award

2005 EGU Arne Richter Award for Outstanding Young Scientists

2003 Ph.D. Cum Laude

1997 B.Sc. with High Honors

### **Employment**

*July 2015-present*

Associate Professor, Dept. of Earth and Space Sciences, UC Los Angeles, CA, USA

*December 2007-June 2015*

Assistant Professor, Dept. of Earth and Space Sciences, UC Los Angeles, CA, USA

*May 2006-December 2007*

Postdoctoral Research Associate, School of Earth & Space Exploration, Arizona State University, Tempe, AZ, USA

*January 2004-December 2005*

Postdoctoral Scholar (2004) and Fellow (2005), Dept. of Earth, Atmospheric, and Space Sciences, Massachusetts Institute of Technology, Cambridge, MA, USA

*November 1998-October 2003*

Research Assistant (Ph.D. student), Faculty of Geosciences, Utrecht University, Utrecht, NL

### **Other Appointments**

*February 18, 2014-March 7, 2014*

Visiting Investigator, Dept. of Terrestrial Magnetism, Carnegie Institution for Science, Washington, DC

### **Peer-Reviewed Publications and Non-Refereed Contributions** (\*denotes student author)

1. \*Xing, Z. and **Beghein, C.**, 2015, "A Bayesian Approach to Assessing the Importance of Crustal Corrections in Global Anisotropic Surface Wave Tomography", *Geophys. J. Int.*, 203(3),1832-1846

## CAROLINE BEGHEIN – curriculum vitae

2. \*Yuan, K. and **Beghein, C.**, 2014, "Three-dimensional variations in Love and Rayleigh wave azimuthal anisotropy for the upper 800 km of the mantle", *J. Geophys. Res.*, 119 (4), 3232-3255, doi:10.1002/2013JB010853 (+ 11 pages Auxiliary Material)
3. **Beghein, C.**, \*Yuan, K., Schmerr, N., and \*Xing, Z., 2014, "Changes in seismic anisotropy shed light on the nature of the Gutenberg discontinuity", *Science*, 343(6176), 1237-1240, doi:10.1126/science.1246724 (+ 42 pages Supplementary Material)
4. \*Yuan, K., and **Beghein, C.**, 2013, "Seismic anisotropy changes across upper mantle phase transitions", *Earth and Planetary Science Letters*, 374, 132-144, doi: 10.1016/j.epsl.2013.05.031 (+ 25 pages Supplementary Material)
5. \*Stubailo, I., **Beghein, C.**, and Davis, P., 2012, "Structure and anisotropy of the Mexico subduction zone based on Rayleigh-wave analysis and implications for the geometry of the Trans-Mexican Volcanic Belt", *Journal of Geophysical Research-Solid Earth*, 117, B5, B05303, doi:10.1029/2011JB008631
6. **Beghein, C.**, 2010, "Radial anisotropy and prior petrological constraints: a comparative study", *Journal of Geophysical Research*, 115, B03303, doi: 10.1029/2008JB005842
7. **Beghein, C.**, Snoke, J.A., and Fouch, M.J., 2010, "Depth Constraints on Azimuthal Anisotropy in the Great Basin from Rayleigh Wave Phase Velocity Maps", *Earth and Planetary Science Letters*, 289, 467-478, doi:10.1016/j.epsl.2009.11.036
8. **Beghein, C.**, Snoke, J.A., and Fouch, M.J., 2010, "Anisotropy in the Great Basin from Rayleigh Wave Phase Velocity Maps", in 2010 IRIS Core Programs Proposal, Vol. II, Lithosphere, Lithosphere/Asthenosphere Boundary, p. II-165
9. **Beghein, C.**, 2010, "Effect of Prior Petrological Constraints on Global Upper Mantle Models of Radial Anisotropy", in 2010 IRIS Core Programs Proposal, Vol. II, Upper Mantle Structure and Dynamics, p. II-183
10. **Beghein, C.**, Resovsky, J., and van der Hilst, R.D., 2010, "Global Mantle Anisotropy and the Coupling of Free Oscillations", in 2010 IRIS Core Programs Proposal, Vol. II, Whole Mantle Structure, p. II-246
11. **Beghein, C.**, Resovsky, J., and van der Hilst, R.D., 2008, "The signal of mantle anisotropy in the coupling of normal modes", *Geophysical Journal International*, 175, 1209-1234, doi:10.1111/j.1365-246X.2008.03970.x
12. Yao, H., **Beghein, C.**, and van der Hilst, R.D., 2008, "Surface-wave array tomography in SE Tibet from ambient seismic noise and two-station analysis: II - Crust and upper mantle structure", *Geophysical Journal International*, 173(1), 205-219, doi:10.1111/j.1365-246X.2007.03696.x

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13. Sambridge, M., **Beghein, C.**, Simons, F.J., and Snieder, R., 2006, "How do we understand and visualize uncertainty?", *The Leading Edge*, 25, 542-546, doi: 10.1190/1.2202654
14. **Beghein, C.**, Trampert, J., and van Heijst, H.J., 2006, "Radial anisotropy in reference models of the mantle", *Journal of Geophysical Research*, 111, B02303, doi:10.1029/2005JB003728
15. **Beghein, C.**, and Trampert, J., 2004, "Probability density function for radial anisotropy from fundamental mode surface wave data and the Neighbourhood algorithm", *Geophysical Journal International*, 157(3), 1163-1174, doi:10.1111/j.1365-246X.2004.02235.x
16. **Beghein, C.**, and Trampert, J., 2004, "Probability density functions for radial anisotropy: implications for the upper 1200 km of the mantle", *Earth and Planetary Science Letters*, 217(1-2), 151-162, doi:10.1016/S0012-821X(03)00575-2
17. **Beghein, C.**, and Trampert, J., 2003, "Robust normal mode constraints on inner core anisotropy from a model space search", *Science*, 299, 552-555, doi: 10.1126/science.1078159
18. **Beghein, C.**, Resovsky, J., and Trampert, J., 2002, "P and S tomography using normal mode and surface wave data with a neighbourhood algorithm", *Geophysical Journal International*, 149(3), 646-658, doi:10.1046/j.1365-246X.2002.01684.x

### Teaching

Upper division undergraduate classes: "Physics of Earth" and "Applied Geophysics" (UCLA); "Essentials of Geophysics" (MIT); "Mathematics for Geophysicists" (Utrecht University as teaching assistant);

Lower division undergraduate class: "Earthquakes" (UCLA); "Mathematics III" (Utrecht University as teaching assistant);

Graduate level classes (UCLA): "Physics and Chemistry of the Earth and Planetary interior", "Large scale structure of the Earth's Interior", and "Lithosphere-asthenosphere boundary".

### Mentoring Activities

*Graduate students:* Kaiqing Yuan (PhD 2014), Zheng Xing (Fall 2011-present), Igor Stubailo (co-advised w/Paul Davis, 2008-2011, PhD 2015), Erik Weidner (Fall 2016-present), Haotian Xu (Fall 2016-present)

*Undergraduate students:* Grace Parker (Fall 2013-Spring 2014, B.S. 2014 – now graduate student at UCLA, Engineering); Helen Feng (Fall 2009-Spring 2010, B.S. 2010 – 2016 PhD from WHOI/MIT)

### Field Experience

Applied Geophysics field trip in Peru (UCLA ESS 136A, 2 weeks in May 2009); Installation of an array of broadband seismometers across two transects of the High Lava Plains, Oregon (June 2006 & June 2007 - 4 weeks total); PASSCAL training in Socorro, NM (April 2007)

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### Outreach Activities

Participation via interviews to research project on transnational mobility and career trajectory of academics (Fall 2014 and Winter 2015)

IRIS Webinar, available on YouTube (Winter 2014); Press release after 2014 Science paper (Winter 2014)

Earthquake preparedness presentation at UCLA Krieger center for Early Care and Education (2012); Presentation on earthquakes for Village Glen West High School (2009), Immaculate Heart High School (2009), and Nightingale Middle School (2010)

### Other Professional Activities

Curriculum committee, UCLA, Fall 2008-Spring 2013, Fall 2014-present

IRIS GSN Standing Committee, 2010-2012; EarthScope Transportable Array Working Group, 2009-2011

Thesis committee chair: Kaiqing Yuan (UCLA EPSS, PhD 2015); Zheng Xing (UCLA EPSS)

Thesis committee member: Robin Mostardi (UCLA Astronomy), Igor Stubailo (UCLA EPSS, PhD 2015), Anne Strader (UCLA EPSS, PhD 2014), Luis Antonio Dominguez-Ramirez (UCLA ESS, PhD 2012), Paul Cox (UCLA ESS, MSc 2013)

Organizer and convener of AGU 2014 Fall Meeting session "The Mantle Transition Zone: its Role in Earth's Thermo-Chemical Evolution" (INVITED organizer)

Organizer of AGU 2012 Fall Meeting session "The Mantle Transition Zone and its Role in Thermo-Chemical Convection" (INVITED organizer)

Organizer and convener of AGU 2010 Fall Meeting session "DI05. Seismic Anisotropy in the Mantle: Progress, Prospects, and Pitfalls"

Reviewer for UCLA *Council on Research Research Enabling Grant* applications 2010

Panel reviewer for the *Texas Higher Education Coordinating Boards* 2009 Norman Hackerman Advanced Research Program (NHARP)

Peer referee for *Science, Nature Geoscience, Geophysical Journal International, Journal of Geophysical Research Solid Earth, Physics of the Earth and Planetary Interiors, Earth and Planetary Science Letters, Geology, Tectonophysics, Geophysical Research Letters, Frontiers of Earth Science, BSSA*

Peer reviewer for the American National Science Foundation (NSF-OCE, Marine Geosciences Section; *NSF-CMG, Instruments and Facilities; NSF Geophysics; NSF CSEDI; EarthScope program; NSF Postdoctoral Fellowship*)

AGU Fall Meeting 2008 Session Chair

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Member of the *Earth Science Women Network* since 2008, *Seismological Society of America* since 2009, *American Geophysical Union* since 2001

### Invited Presentations

- 2014: AGU Fall Meeting; UCLA Department of Earth, Planetary, and Space Sciences colloquium (May); Carnegie Institution for Science, Department of Terrestrial Magnetism (March); IRIS webinar (February); Princeton University, Solid Earth brown bag seminar (February); Niels Bohr Institute, University of Copenhagen, Denmark (January)
- 2013: AGU Fall Meeting, session DI31 and session DI11; 1st Southern California Deep Earth Dynamics Symposium, USC
- 2012: University of Edinburgh, *School of Geosciences seminar*; University of Liverpool, *School of Environmental Sciences seminar*; Caltech, *Seismo Lab Seminar*; University of Illinois Urbana-Champaign
- 2010: Scripps Institution of Oceanography, *Earth Section Seminar Series*; University of Southern California, *Structural Seismology Seminar Guest Lecturer*; 12th Symposium of SEDI, *Study of the Earth's Deep Interior*, Santa Barbara, CA; UCLA IGPP seminar; EarthScope *Transportable Array Working Group* webinar
- 2009: AGU Fall Meeting; University of Leeds (UK), *School of Earth and Environment*; UCLA *Seismology Seminar*
- 2008: University of California at Berkeley, *Berkeley Seismological Laboratory Seminar Series*; UCLA *Earth and Space Sciences Colloquium*; Caltech, *Seismo Lab Seminar*
- 2007: University of Texas at Austin, *Department of Geological Sciences Seminar*; University of Texas at Austin, *Institute for Geophysics Seminar*; University of Northern Arizona, *Flagstaff Earth Science Seminar Series*; UCLA *Earth and Space Sciences Colloquium*; UCLA *Seismology Seminar*
- 2006: University of Southern California, *Earth Sciences Department Seminar*; Université du Québec à Montréal, *Département des sciences de la Terre et de l'atmosphère*
- 2005: Pennsylvania State University, *Department of Geosciences Colloquium*; University of Leeds (UK), *School of Earth and Environment*; Boise State University, *Department of Geosciences*; University of Michigan, *Department of Geological Sciences Seminar*
- 2004: *Mathematical Geophysics and Uncertainty in Earth Models* Summer School, Colorado School of Mines; Caltech, *Seismo Lab Seminar*; Princeton University, *Department of Geosciences Brownbag Seminar*
- 2003: Oxford University *Department of Earth Sciences*; Utrecht University, *Integrated Geodynamic Seminar*
- 2002: Yale University, *Department of Geology and Geophysics*