

Cornelis Weemstra

Curriculum Vitae

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PERSONAL INFORMATION

Date of Birth 28 Augustus 1984
Place of Birth IJsselham, Overijssel, The Netherlands
Nationality Dutch
Drivers license B, 2003

PROFESSIONAL EXPERIENCE

- 10/16 – present **Assistant Professor**, *Delft University of Technology*, Delft, The Netherlands.
Tenure-track position seismo-acoustics in the context of a collaboration with the Royal Netherlands Meteorological Institute (KNMI)
- 04/14 – 09/16 **Post-doctoral researcher**, *Delft University of Technology*, Delft, The Netherlands.
Achievements:
- Application of seismic interferometry by multidimensional deconvolution to ambient-seismic surface-wave recordings.
 - Further development of seismic interferometry by multidimensional deconvolution (different boundary conditions).
 - Time-lapse monitoring of a geothermal reservoir using ambient-seismic noise.
- 07/13 – 10/13 **Researcher**, *ETH*, Zürich, Switzerland.
Ph.D. position in the European Commission funded initial training network QUEST. (continuation)
- 01/13 – 01/13 **Visiting researcher**, *University Pierre and Marie Curie*, Paris, France.
Visit to Institut des Sciences de la Terre de Paris (ISTeP). Collaborated with dr. Félicie Korostelev to apply tomography using phase-velocity estimates inferred from ambient-seismic noise recordings on and around the Arabian peninsula (two co-authored peer-reviewed articles).
- 09/11 – 12/11 **Visiting researcher**, *Colorado School of Mines*, Golden, Colorado.
Visit to the Center for Wave Phenomena (CWP). Collaborated with Prof. dr. Roel Snieder, who is a world-leading seismologist and an expert in seismic interferometry (two first-author peer-reviewed articles).
- 07/10 – 06/13 **Researcher**, *Spectraseis*, Zürich, Switzerland.
Ph.D. position in the European Commission funded initial training network QUEST.
Goal: Assess the ability to estimate subsurface attenuation using recordings of ambient-seismic noise (see ‘academic qualifications’ below).
- 09/09 – 12/09 **Researcher**, *Spectraseis*, Zürich, Switzerland.
Internship with Spectraseis as part of my M.Sc. degree. Spectraseis is an SME and provides services focused on the petroleum industry (upstream).
- 12/08 – 07/09 **Researcher**, *KNMI*, De Bilt, The Netherlands.
M.Sc. Research conducted at the seismological division of the Royal Dutch Meteorological Institute (see ‘academic qualifications’ below).

- 05/07 – 07/09 **Data quality controller**, KNMI, De Bilt, The Netherlands.
Part-time employed by the ORFEUS data center.
Responsibilities:
- Gathering and processing of European off-line earthquake data
 - Organization of the ORFEUS Workshop on Seismic Tomography

ACADEMIC QUALIFICATIONS

- 07/10 – 06/14 **Ph.D. Geophysics**, *ETH Zürich*, Switzerland.
Thesis: On the attenuation of the ambient-seismic field.
Supervisors: Dr. Lapo Boschi and Prof. dr. Domenico Giardini.
- 09/07 – 02/10 **M.Sc. Geophysics**, *Utrecht University*, The Netherlands.
(*GPA: 4.0 out of 4.0 and appraisal 'with distinction'*)
Thesis: Infrasound analysis of I18DK, northwest Greenland (GPA: 4.0 out of 4.0).
Supervisors: Prof. dr. Láslo Evers (KNMI) and dr. Hanneke Paulssen.
- 09/02 – 08/07 **B.Sc. Earth Sciences**, *Utrecht University*, The Netherlands.
Thesis: Paleostress directions in the subsurface of the NE-Netherlands based on fault analysis (GPA: 3.43 out of 4.0).
Supervisor: Dr. Hans de Bresser.
- 08/96 – 05/02 **Atheneum (pre-university secondary education)**, *Wolvega*, The Netherlands.
profiles: Nature & Technology, and Nature & Health.

MAIN SCIENTIFIC ACHIEVEMENTS

- 11 Peer-reviewed articles (of which three first author and three second author)
 - 8 expanded abstracts
 - 4 invited talks
 - Second best presentation QUEST workshop 2012
 - 10 Oral presentations at conferences
 - 12 Poster presentations at conferences
- (A detailed list of my scientific contributions can be found below)

TEACHING EXPERIENCE

- 01/13 – present Informal role as **supervisor of Ph.D. students** Félicie Korostelev (UPMC, Paris), Emanuel Kaestle (UPMC, Paris), and Fabian Lindner (ETH, Zürich)
- 08/17 – present Involved in the **redesign of the MSc track *Petroleum engineering and Geosciences*** (which will probably be named GeoEnergy Engineering in the future)
- 04/17 – present **Coordinator and lecturer** of the applied geophysics part of the 1st year's B.Sc. course *Introduction to applied geophysics and remote sensing*
- 01/15 – present **Supervision of the M.Sc. projects** of: Raied Al Sadan, Beichen Lin, Rahmantara Trichandi, Janneke de Laat, Christopher Kevinly, and Johnno van IJsseldijk (all at Delft University of Technology)
- 08/15 – 08/15 **Examination committee member** in seven applied geophysics M.Sc. thesis defenses [Delft University of Technology (1) & ETH Zürich(6)]
- 01/12 – 04/12 **Teaching assistant** ProMAX 3D Seismic Processing M.Sc. Course (applied geophysics master, ETH Zürich)
- 01/07 – 06/07 **Tutor** at an additional lessons institute for high school students
- 09/06 – 11/06 **Teaching assistant** B.Sc. course Mathematics (Utrecht University)

SELECTION OF OTHER (NON-)ACADEMIC ACTIVITIES

- 12/15 – 08-16 **Special section editor** for a special section on ambient noise in the SEG journal *Interpretation*.
- 11/15 – present **Comittee member** of the working group education of the labour party (PVDA), Utrecht.

- 10/15 – 10/15 **Reviewer of a Continuing-Education Course** at the SEG Annual meeting, New Orleans, LA, USA.
- 07/12 – present **Reviewer:** JASA, GJI, JGR, Interpretation.
- 07/12 – 06/13 **Organization of the weekly group meetings** of our research group at ETH.
- 09/06 – 08/08 **Member of the advisory body** of the Utrecht Geological Student Society (U.G.V.).
- 08/07 – 06/08 **Graduate School board member** at the Faculty of Geosciences, Utrecht University.
Main responsibility: promotion of the interests of research-master students.
- 10/06 **Organization of the Geo-industrial student excursion**, Stavanger, Norway.
Main Responsibilities: Contacts with a number of relevant companies and Treasury
- 09/05–09/06 **Full-time treasurer of the Utrecht Geological Student Society (U.G.V.)**.
Main responsibilities: Treasury (annual turnover of approximately €250 000) and organization of a four week (geological) student excursion to Indonesia for 22 students.
Memberships: AGU, EGU, SEG.

SKILLS

COMPUTER SKILLS

Operating Systems: Linux, Mac OS X, Microsoft Windows
Specialized Software: ProMAX 3D, Petrel E&P, ArcInfo
Office software (suites): Adobe Photoshop, Microsoft office, LibreOffice, Vim
Programming languages: Matlab, Fortran, Perl, Python, L^AT_EX, PHP, bash, HTML, GMT (plotting)
Parrallel computing: MPI, OpenMP

LANGUAGES

Highly proficient at English and Dutch (native)
Good command of German
Basic command of French and Spanish

HOBBIES AND OTHER INTERESTS

Sports: Football (on a weekly basis), road bicycle racing, skiing, running
Leisure: reading, music, gardening, travelling, card/board games

PUBLICATIONS

Peer-reviewed Articles

F. Lindner, C. Weemstra, F. Walter, and C. Hadziioannou. Towards monitoring the englacial fracture state using virtual-reflector seismology. *Geophysical Journal International*, 214(2):825–844, 2018.

C. Weemstra, K. Wapenaar, and K. N. van Dalen. Reflecting boundary conditions for interferometry by multidimensional deconvolution. *Journal of the Acoustical Society of America*, 142(4):2242–2257, 2017.

C. Weemstra, D. Draganov, E. N. Ruigrok, J. Hunziker, M. Gomez, and K. Wapenaar. Application of seismic interferometry by multidimensional deconvolution to ambient seismic noise recorded in Malargüe, Argentina. *Geophysical Journal International*, 208(2):693–714, 2017.

F. Korostelev, S. Leroy, D. Keir, C. Weemstra, L. Boschi, I. Molinari, A. Ahmed, G. W. Stuart, F. Rolandone, K. Khanbari, and A. Al-Lazki. Magmatism at continental passive margins inferred from Ambient-Noise Phase-velocity in the Gulf of Aden. *Terra Nova*, 28(1):19–26, 2016.

E. D. Kästle, R. Soomro, C. Weemstra, L. Boschi, and T. Meier. Two-receiver measurements of phase velocity: cross-validation of ambient-noise and earthquake-based observations. *Geophysical Journal International*, 207:1493–1512, 2016.

C. Weemstra, R. Snieder, and L. Boschi. On the estimation of attenuation from the ambient seismic field: inferences from distributions of isotropic point scatterers. *Geophysical Journal International*, 203:1054–1071, 2015.

F. Korostelev, C. Weemstra, S. Leroy, L. Boschi, D. Keir, Y. Ren, I. Molinari, A. Ahmed, G. W. Stuart, F. Rolandone, K. Khanbari, J. O. S. Hammond, J. M. Kendall, C. Doubre, I. A. Ganad, B. Goitom, and A. Ayele. Magmatism on rift flanks: Insights from ambient noise phase velocity in Afar region. *Geophysical Research Letters*, 42:2179–2188, 2015.

L. Boschi and C. Weemstra. Stationary-phase integrals in the cross-correlation of ambient noise. *Reviews of Geophysics*, 53:411–451, 2015.

C. Weemstra, W. Westra, R. Snieder, and L. Boschi. On estimating attenuation from the amplitude of the spectrally whitened ambient seismic field. *Geophysical Journal International*, 197:1770–1788, 2014.

C. Weemstra, L. Boschi, A. Goertz, and B. Artman. Seismic attenuation from recordings of ambient noise. *Geophysics*, 78(1):Q1–Q14, 2013.

L. Boschi, C. Weemstra, J. Verbeke, G. Ekstrom, A. Zunino, and D. Giardini. On measuring surface wave phase velocity from station-station cross-correlation of ambient signal. *Geophysical Journal International*, 192:346–358, 2013.

Expanded Abstracts

J. de Laat, C. Weemstra, A. Verdel, P. Jousset, G. P. Hersir, and H. Blanck. Systematic detection and correction of instrument-related time shifts using seismic interferometric surface waves. In *80th Conference and Exhibition, EAGE, Expanded Abstracts*, 2018.

C. Weemstra, A. Obermann, A. Verdel, B. Paap, H. Blanck, E. Á. GuǺrnason, G. P. Hersir, P. Jousset, and Ó. Sigurdsson. Time-lapse seismic imaging of the Reykjanes geothermal reservoir. In *Proceedings of the European Geothermal Congress*, Strassbourg, 2016. European Geothermal Energy Council (EGEC).

A. Verdel, H. Wedemeijer, B. Paap, V. Vandeweyer, C. Weemstra, P. Jousset, S. Franke, H. Blanck, K. Águstsson, and G. P. Hersir. Reykjanes ambient noise reflection interferometry. In *Proceedings of the European Geothermal Congress*, Strassbourg, 2016. European Geothermal Energy Council (EGEC).

P. Jousset, H. Blanck, S. Franke, M. Metz, K. Ágústsson, A. Verdel, T. Ryberg, G. P. Hersir, C. Weemstra, D. Bruhn, and Ó. Flovenz. Seismic Tomography in Reykjanes, SW Iceland. In *Proceedings of the European Geothermal Congress*, Strassbourg, 2016. European Geothermal Energy Council (EGEC).

C. Weemstra, K. Wapenaar, and K. N. Van Dalen. Reflecting boundary conditions for interferometry by multidimensional deconvolution. *SEG Technical Program Expanded Abstracts*, 34:2440–2444, 2015.

C. Weemstra and L. Boschi. The whitening of ambient seismic noise. In *Extended abstracts of the Neustadt Workshop on Noise and Diffuse Wavefields*, Neustadt a.d. Weinstrasse, 2012. Deutsche Geophysikalische Gesellschaft (DGG).

C. Weemstra, A. Goertz, and L. Boschi. Towards a method for attenuation inversion from reservoir scale ambient noise OBS recordings. *SEG Technical Program Expanded Abstracts*, 30:1592–1596, 2011.

B. Birkelo, M. Duclos, B. Artman, B. Schechinger, B. Witten, A. Goertz, C. Weemstra, and M. T. Hadidi. A passive low-frequency seismic survey in Abu Dhabi - Shaheen project. *SEG Technical Program Expanded Abstracts*, 29:2207–2211, 2010.

Invited Talks

- July 2018 **Cornelis Weemstra**, *Seismic interferometry by multidimensional deconvolution: Applications*, TIDES Advanced Training School. Prague, Czech Republic
- June 2017 **Cornelis Weemstra**, Deyan Draganov, Elmer Ruigrok, Jürg Hunziker, Martin Gomez and Kees Wapenaar, *Application of seismic interferometry by multidimensional deconvolution to ambient seismic noise recorded in Malargüe, Argentina*, MIT (Earth Resources Laboratory). Boston, MA, USA
- April 2014 **Cornelis Weemstra**, *On the attenuation of the ambient seismic surface-wave field*, Institut des Sciences de la Terre de Paris, UPMC. Paris, France
- May 2012 **Cornelis Weemstra**, Lapo Boschi, Roel Snieder, Alex Goertz and Brad Artman, *Constraining attenuation from ambient seismic noise*, Center for Wave Phenomena Annual Meeting. Breckenridge, CO, USA

Conference Presentations (Oral & Poster)

- March 2018 **Cornelis Weemstra***, Fabian Lindner, Fabian Walter and Céline Hadziioannou, *Monitoring the englacial fracture state using virtual-reflector seismology*, Nederlands Aardwetenschappelijk Congres, Oral. Veldhoven, The Netherlands
- June 2017 **Cornelis Weemstra***, Kees Wapenaar and Karel van Dalen, *Reflecting boundary conditions for interferometry by multidimensional deconvolution*, Acoustics '17 (Joint Meeting: Acoustical Society of America & European Acoustics Association), Poster. Boston, MA, USA
- March 2017 **Cornelis Weemstra***, *Application of seismic interferometry by multidimensional deconvolution to ambient seismic noise recorded in Malargüe, Argentina*, School of Geosciences, The University of Edinburgh, Oral. Edinburgh, Scotland, UK
- Dec. 2016 **Cornelis Weemstra**, Deyan Draganov*, Elmer N. Ruigrok, Jürg Hunziker, Martin Gomez, and Kees Wapenaar, *Application of seismic interferometry by multidimensional deconvolution to ambient noise recorded in Malargüe, Argentina*, AGU fall meeting, Oral. San Francisco, CA, USA
- Dec. 2016 Lapo Boschi, Emanuel Kästle*, Riaz Soomro, **Cornelis Weemstra**, and Thomas Meier, *Cross-validation of ambient-noise and earthquake-based observations of Love- and Rayleigh-wave dispersion*, AGU fall meeting, Oral. San Francisco, CA, USA

- Oct. 2016 **Cornelis Weemstra***, *Systematic detection and correction of instrumental time shifts using seismic interferometry*, IMAGE General Assembly & Technical Meeting, Oral.
Oslo, Norway
- Sept. 2016 **Cornelis Weemstra***, Anne Obermann, Arie Verdel, Bob Paap, Hanna Blanck, Egill Árni Guðnason, Gylfi Páll Hersir, Philippe Jousset and Ómar Sigurdsson, *Time-lapse seismic imaging of the Reykjanes geothermal reservoir*, European Geothermal Congress, Oral.
Strasbourg, France
- Sept. 2016 Arie Verdel*, Harrie Wedemeijer, Bob Paap, Vincent vandeweyer, **Cornelis Weemstra**, Philippe Jousset, Steven Franke, Hanna Blanck, Kristján Ágústsson and Gylfi Páll Hersir, *Reykjanes ambient noise reflection interferometry*, European Geothermal Congress, Oral.
Strasbourg, France
- Sept. 2016 Philippe Jousset*, Hanna Blanck, Steven Franke, Malte Metz, Kristján Ágústsson, Arie Verdel, Trond Ryberg, Gylfi Páll Hersir, **Cornelis Weemstra**, David Bruhn and Ólafur Flovenz, *Seismic Tomography in Reykjanes, SW Iceland*, European Geothermal Congress, Oral.
Strasbourg, France
- Apr. 2016 **Cornelis Weemstra***, Deyan Draganov, Elmer N. Ruigrok, Jürg Hunziker, Martin Gomez, and Kees Wapenaar, *Seismic interferometry by multidimensional deconvolution applied to ambient noise recorded in Malargüe, Argentina*, EGU General Assembly, Oral.
Vienna, Austria
- Apr. 2016 **Cornelis Weemstra***, Anne Obermann, Hanna Blanck, Arie Verdel, Bob Paap, Egill Árni Guðnason, Gylfi Páll Hersir, Philippe Jousset, Ómar Sigurdsson, *Time-lapse seismic imaging of the Reykjanes geothermal reservoir*, EGU General Assembly, Poster.
Vienna, Austria
- Mar. 2016 **Cornelis Weemstra***, Deyan Draganov, Elmer N. Ruigrok, Jürg Hunziker, Martin Gomez, and Kees Wapenaar, *Improved surface-wave response from ambient noise in Malargüe, Argentina, using seismic interferometry by multidimensional deconvolution*, DGG, Oral.
Münster, Germany
- Oct. 2015 **Cornelis Weemstra***, Karel N. van Dalen and Kees Wapenaar, *Reflecting boundary conditions for interferometry by multidimensional deconvolution*, SEG Annual Meeting, Oral.
New Orleans, LA, USA
- Oct. 2015 **Cornelis Weemstra***, *Seismic interferometry by multidimensional deconvolution*, Seismo Seminar Utrecht University, Oral.
Utrecht, The Netherlands
- May 2015 **Cornelis Weemstra***, Deyan Draganov and Elmer N. Ruigrok, *Improved surface-wave response from ambient noise in Malargüe, Argentina, using seismic interferometry by multidimensional deconvolution*, Workshop on passive imaging and monitoring in wave physics : from seismology to ultrasound, Poster.
Cargèse, Corsica, France
- Dec. 2014 Philippe Jousset*, Kristján Ágústsson, Arie Verdel, Hanna Blanck, Stefán A. Stefánsson, Kemal Erbas, Fiorenza Deon, Ögmundur Erlendsson, Egill Árni Guðnason, Sebastien Specht, Gylfi Páll Hersir, Sæunn Halldórsdóttir, **Cornelis Weemstra**, Steven Franke, David Bruhn, Olafur G Flovenz, Hörður Tryggvason and Guðmundur Ómar Friðleifsson, *Imaging geothermal systems associated with oceanic ridge: first analysis of records from a dense seismic network deployed within and around the Reykjanes high-temperature area, SW-Iceland*, AGU fall meeting, Oral.
San Francisco, CA, USA
- Dec. 2014 Félicie Korostelev*, **Cornelis Weemstra**, Lapo Boschi, Sylvie Leroy, Yong Ren, Graham Stuart, Derek Keir, Frederique Rolandone, Abdulhakim Ahmed, Ismail Al Ganad, Khaled Khanbari, Cecile Doubre, James Hammond, Mike Kendall, *Crustal Structure of the Gulf of Aden Continental Margins, from Afar to Oman, by Ambient Noise Seismic Tomography*, AGU fall meeting, Poster.
San Francisco, CA, USA

- July 2014 **Cornelis Weemstra***, Willem Westra, Roel Snieder and Lapo Boschi, *On estimating attenuation from the amplitude of the spectrally whitened ambient seismic field*, Joint SEG/AGU Workshop, Poster.
Vancouver, Canada
- Apr. 2013 **Cornelis Weemstra***, Willem Westra, Lapo Boschi and Julie Verbeke, *Improvement of signal-to-noise ratios of surface wave signal obtained through ambient noise correlations*, EGU General Assembly, Oral.
Vienna, Austria
- Apr. 2013 **Cornelis Weemstra***, Willem Westra, Roel Snieder, and Lapo Boschi, *The whitening of ambient seismic noise*, EGU General Assembly, Poster.
Vienna, Austria
- Nov. 2012 **Cornelis Weemstra***, Willem Westra, Roel Snieder and Lapo Boschi, *The whitening of ambient seismic noise*, Neustadt Workshop on Noise and Diffuse wavefields, Poster.
Neustadt an der Weinstrasse, Germany
- May 2012 **Cornelis Weemstra***, Lapo Boschi, Roel Snieder and Alex Goertz, *Constraining attenuation from ambient seismic noise*, 3rd QUEST workshop, Oral.
Tatranska Lomnica, Slovakia
- Dec. 2011 Julie Verbeke, **Cornelis Weemstra***, Lapo Boschi, Frédéric Deschamps, Edi Kissling and Göran Ekström, *Phase-velocity and azimuthal anisotropy under the Western Alps measured from seismic ambient noise*, AGU fall meeting, Poster.
San Francisco, CA, USA
- Dec. 2011 **Cornelis Weemstra***, Alex Goertz and Lapo Boschi, *Constraining attenuation with ambient noise-correlations of reservoir scale seismic data*, AGU fall meeting, Poster.
San Francisco, CA, USA
- Sept. 2011 **Cornelis Weemstra***, Alex Goertz and Lapo Boschi, *Towards a method for attenuation inversion from reservoir-scale ambient noise OBS recordings*, SEG Annual Meeting, Oral.
San Antonio, TX, USA
- Aug. 2011 **Cornelis Weemstra***, Alex Goertz and Lapo Boschi, *Towards a method for attenuation inversion from reservoir-scale ambient noise OBS recordings*, Statoil office, Oral.
Bergen, Norway
- July 2011 **Cornelis Weemstra***, Alex Goertz and Lapo Boschi, *Ambient noise cross-correlations applied to reservoir scale OBS-recordings*, 2nd QUEST Workshop, Poster.
Hveragerdi, Iceland
- Dec. 2010 Láslo Evers and **Cornelis Weemstra***, *Infrasound analysis of I18DK, northwest Greenland*, AGU fall meeting, Poster.
San Francisco, CA, USA
- Dec 2010 **Cornelis Weemstra***, Alex Goertz, Brad Artman and Lapo Boschi, *Ambient noise cross-correlations applied to reservoir scale OBS-recordings*, AGU fall meeting, Poster.
San Francisco, CA, USA