



---

# Frederik J Simons, Ph. D.

fjsimons@princeton.edu / www.frederik.net

---

<b>ADDRESS</b>	Department of Geosciences Guyot Hall 321b Princeton, NJ 08544	<i>Faculty Assistant:</i> Ms. Lisa Lonstein, (609) 258-1589 lonstein@princeton.edu
<b>POSITIONS</b>	2019–present	<i>Associate Department Chair of the Department of Geosciences;</i>
	2017–present	<i>Professor of Geosciences;</i>
	2013–2017	<i>Associate Professor of Geosciences, with tenure;</i>
	2006–2013	<i>Assistant Professor of Geosciences, Princeton University;</i>
	2016–2020	<i>Executive Committee Member, Program in Archaeology;</i>
	2018–present	<i>Associated Faculty, Princeton Environmental Institute;</i>
	2012–present	<i>Associated Faculty, Program in Applied &amp; Computational Mathematics;</i>
	2010–2013	<i>Dusenbury Preceptor of Geological and Geophysical Sciences, Princeton U.</i>
	2018	<i>Member, Institute for Advanced Study (Astrophysics);</i>
	2010–2021	<i>Visiting Fellow, KU Leuven (Earth &amp; Environmental Sciences);</i>
	2014–2015	<i>Visitor, Institute for Advanced Study (Astrophysics &amp; Cosmology);</i>
	2013	<i>Visitor, U. Cambridge (Bullard Laboratories);</i>
	2012	<i>Visitor, U. L. Bruxelles (Applied Mathematics);</i>
	2011	<i>Visiting Fellow, University College London (Statistical Science);</i>
	2010	<i>Visitor, V. U. Brussel (Mathematics);</i>
	2009	<i>Visiting Professor, Institut de Physique du Globe de Paris (Planetary Science);</i>
	2008	<i>Visiting Professor, Eidgenössische Technische Hochschule Zürich (Geophysics).</i>
	2004–2007	<i>Lecturer of Geophysics, University College London (UCL).</i>
	2002–2004	<i>Beck Postdoctoral Teaching Fellow, Council on Science &amp; Technology;</i> <i>Hess Postdoctoral Fellow, Geosciences Department, Princeton University.</i>
	2002	<i>Postdoctoral Research Associate;</i>
	1996–2002	<i>Research &amp; Teaching Assistant, Earth, Atmospheric &amp; Planetary Sciences,</i> <i>Massachusetts Institute of Technology (MIT).</i>
	Summer 2001	<i>Research Intern, Shell International Exploration &amp; Production, Houston, TX.</i>
	Summer 1996	<i>Research Assistant, KU Leuven, Belgium.</i>
<b>DEGREES</b>	1996–2002	Massachusetts Institute of Technology, Cambridge, MA; <i>Doctor of Philosophy with thesis in Geophysics.</i>
	1992–1996	KU Leuven, Belgium; <i>Kandidaat &amp; Licentiaat with thesis in Geology;</i> <i>Grootste onderscheiding (summa cum laude).</i>
	1980–1992	Onze-Lieve-Vrouwecollege Jesuit School, Antwerpen, Belgium; <i>Humaniora, Latin &amp; Greek. Primus perpetuus.</i>

**RESEARCH** I am a geologically inspired, geophysically educated, computationally motivated and mathematically minded *geoscientist* interested in the seismic, mechanical, thermal and magnetic properties of the Earth's lithosphere — and of the terrestrial planets and moons. I enjoy analyzing complex, large, and heterogeneous geophysical data sets, and design theoretical and computational inverse methods and statistical techniques to be able to do so — especially for partially observed processes modeled on a sphere. No amount of sophistication can cure a fundamental data limitation: I am developing floating hydrophones to open up the sparsely instrumented oceanic domains for global tomography.

**AWARDS**

2022	Vladimir Keilis-Borok Medal for <i>Mathematical Geophysics</i> , IUGG;
2014–2019	Fellow of the Faculty of Sciences, KU Leuven;
2018	Distinguished Lecturer, Seismological Society of America & IRIS;
2016	Outstanding Reviewer, Geophysical Journal International;
2012	National Science Foundation CAREER Award;
2008	Prix quadriennal <i>Charles Lagrange</i> , Académie Royale de Belgique;
2005	<i>Nuffield</i> Foundation Newly Appointed Lecturer Award;
2004	Editors' Citation for Excellence in Refereeing, JGR-Planets, AGU;
2002	<i>Beck</i> Fellowship, Council on Science & Technology, Princeton;
2001	Outstanding Student Paper Award, Seismology Section, AGU;
1998	<i>Victor J. DeCorte</i> Fellowship, MIT;
1997, 1998	Teaching Assistant Excellence Awards, EAPS, MIT;
1997	Biennial prize for an M. Sc. thesis in Geology, KU Leuven;
1996–2001	<i>Fulbright</i> Fellowship, Commission for Educational Exchange;
1996–1997	Honorary Fellowship, Belgian-American Educational Foundation;
1996–1997	Ambassadorial Scholarship, Rotary International Foundation;
1994	Scholarship, Scottish Universities' International Summer School,
1993	Competitive Scholarship, KU Brussel, <i>for summer semesters on (post-)modernist English literature, U. Edinburgh.</i>

**TEACHING**

2007–2022	<i>Data, Models &amp; Uncertainty in the Natural Sciences</i> , Princeton GEO422;
2019–2022	<i>Earth: Crops, Culture, and Climate</i> , with A. Maloof, Princeton FRS161;
2008–2022	<i>Fundamentals of the Geosciences</i> , with multiple others, Princeton GEO505/506;
2008–2021	<i>Global (also: Introductory) Geophysics</i> , Princeton GEO320/371/700/PHY371;
2015–2017	<i>State of the Earth: Shifts and Cycles</i> , with A. Maloof, Princeton FRS135/124;
2011–2013	<i>Earth's Environments, Ancient Civilizations</i> , with A. Maloof, Princeton FRS;
2007–2009	<i>Earth's Changing Surface &amp; Climate</i> , with A. Maloof, Princeton FRS;
2012	<i>Origin and Evolution of the Lithosphere</i> , with B. Schoene, Princeton GEO556;
2005–2006	<i>Global Seismology</i> , UCL GEOL3031;
2005–2006	<i>Earth &amp; Planetary System Science</i> , with Lidunka Vočadlo, UCL GEOL4003;
2006	<i>The Deep Earth</i> , with David P. Dobson, UCL GEOL4005;
2005	<i>Global Tectonics</i> , with Gerald P. Roberts, Birkbeck College;
2003–2006	<i>Field Instructor, Active Tectonics</i> , with Robert A. Phinney, Princeton FRS;
2004	<i>Lab Instructor, Earthquakes, Volcanoes &amp; Hazards</i> , Princeton GEO 210;
2016 & 2020	<i>Guest Lecturer, Introduction to Archaeology</i> , with D. Vischak, Princeton ART401;
2016	<i>Guest Lecturer, Software Engineering Sci. Comp.</i> , with J. Stone, Princeton APC524;
2013	<i>Guest Lecturer, Introduction to Archaeology</i> , with J. Smith, Princeton ART291;
2002	<i>Guest Lecturer, Introductory Seismology</i> , Princeton GEO 424;
2002	<i>Guest Lecturer, Elements of Seismology</i> , MIT 12.501/12.201;
2001	<i>Tutor, Advanced Placement Physics</i> , Cambridge Rindge & Latin School;
2000	<i>Instructor</i> , Boston Math Circle.

## FUNDING

- NSF, *A long-lived deep-water CORS for seafloor geodesy* [OCE-2220363], 2022–2023.
- NSF, *Through the ocean to the mantle: Seismic study of the Pacific...* [EAR-1917058], 2019–2023.
- NSF, *A seismic synthesis model for the Eastern North American...* [EAR-1736046], 2017–2022.
- NSF, *Reproducible research & educational software for geoscience...* [EAR-1550732], 2016–2019.
- NSF, *New perspectives on the continental lithosphere* [EAR-1150145], 2012–2017.
- NSF, *Phased testing at sea of the Son-O-Mermaid prototype* [EAR-1318416], 2013–2016.
- NSF, *Mapping the evolution of Antarctica's mass balance* [PLR/EAR-1245788], 2013–2016.
- NSF, *Making the most of GRACE* [EAR-1014606], 2010–2013.
- NSF, *Mechanical anisotropy from gravity/topography coherence* [EAR-0710860], 2007–2012.
- NSF, *Banana-doughnut traveltimes tomography* [EAR-0105387], 2007–2009.
- NASA, *Structure & evolution of the Martian crustal magnetic field* [NNX14AM29G], 2014–2017.
- NASA, *Structure and evolution of the Venusian lithosphere* [NNX11AQ45G], 2011–2014.
- NOAA, *Terrestrial ice mass loss and the sea-level budget* [NA08OAR4320752], 2015–2016.
- NOAA, *Mapping Antarctica's mass loss in space and time* [NA08OAR4320752], 2013–2014.
- ESF, *Conference grant* [MYRES-II], 2006.
- HEFCE, *Equipment grant for observational seismology* [SRIF3], 2005.
- NERC, *Development of MERMAID* [NE/D521449/1], 2005–2008.
- Nuffield Foundation, *Development of autonomous mid-column hydrophones* [NAL/01087/G], 2005.
- DNO, *Waveform inversion of land-based seismic data*, 2019–2022.
- KAUST, *Waveform and tomographic inversion for natural and induced seismic events*, 2017–2021.
- TOTAL USA, *Full-waveform inversion...: Moving beyond the proof-of-concept*, 2017–2022.
- TOTAL USA, *Full-waveform inversion of passive seismic data*, 2015–2017.
- MathWorks, *SLEPIAN: Code & course development for research and education*, 2015–2016.
- Princeton Environmental Institute, *GuyotPhysics: Princeton as an urban science node*, 2016.
- Princeton Environmental Institute, *Mapping Earth's ice mass balance in space and time*, 2015.
- Princeton Geosciences Phillips Fund, *GuyotPhysics: Purchase of a broadband seismometer*, 2016.
- Princeton Geosciences Phillips Fund, *Development of the Son-O-Mermaid instrument*, 2012.
- Princeton 250th Fund, *State of the Earth: Shifts and Cycles* [FRS 135/124], 2015–2017.
- Princeton 250th Fund, *Earth's Environments, Ancient Civilizations* [FRS 171/187], 2011–2013.
- Princeton 250th Fund, *Earth's Changing Surface & Climate* [FRS 145/149], 2008–2010.

SEMINARS *I have given invited seminars on 212 occasions since my first appearance in 1999. A complete listing is available at <http://geoweb.princeton.edu/people/simons/vita2.html#invited>.*

*Invited Lectures in Academic Geosciences Departments (asterisks indicate named lectures):*

- 2022 [4] Seoul National University, Ocean University of China (2×), Institut de Physique du Globe de Paris
- 2021 [2] Colorado State University, Colorado School of Mines\* [*Carl Heiland Lecture*],
- 2020 [8] U. C. Berkeley, Penn State U., Caltech, U. Louisiana Lafayette, MIT, U. Bristol, U. Cambridge, U. Oxford
- 2019 [2] ISTERre, Université Grenoble Alpes, McGill Space Institute, Montréal
- 2018 [1] Laboratoire de Géophysique, Papeete
- 2017 [3] King Abdullah U. Science Technol., King Fahd U. Petrol. Miner., U. T. Austin\* [*Edwin Allday Lecture*]
- 2016 [5] U. Science Technol. China, Zhejiang U. (2×), Wuhan U. (2×)
- 2015 [3] Institut de Physique du Globe de Paris, Peking University, Georgia Inst. of Technology
- 2014 [3] Purdue U., KIGAM South Korea, U. C. San Diego Scripps Inst. Oceanography
- 2013 [2] U. Cambridge, U. Chicago
- 2012 [7] U. Toronto, Virginia Tech, U. Oxford, ETH Zürich, MIT, Woods Hole Oceanographic Inst., Rutgers U.
- 2011 [5] Princeton U., Dublin Inst. Adv. Study, U. Cambridge, MIT, Harvard U.
- 2010 [5] Woods Hole Oceanographic Inst., KU Leuven, U. Siegen, U. C. Los Angeles, U. Southern Calif.
- 2009 [7] Cornell U. (2×), U. Michigan\* [*William T. Smith Lecture*], U. Michigan, Columbia U. Lamont-Doherty Earth Observatory, U. C. Santa Cruz, SUNY Stony Brook
- 2008 [3] U. College London, U. Edinburgh, ETH Zürich
- 2007 [1] U. Illinois Urbana-Champaign\* [*Richard L. Hay Lecture*]
- 2006 [5] U. College London, Carnegie Inst. Washington, Imperial College London, U. Cambridge, U. Oxford
- 2005 [8] U. C. San Diego Scripps Inst. Oceanography, U. Leicester, Harvard U., Princeton U., Stanford U. (2×), U. Southampton Oceanography Centre, U. College London
- 2004 [3] U. Leeds, U. C. Berkeley, U. Chicago
- 2003 [6] Washington U. St. Louis, Princeton U. (2×), Harvard U., U. College London, Penn State U.
- 2002 [5] U. C. Berkeley, Calif. Inst. Technology, U. C. San Diego Scripps Inst. Oceanography, Carnegie Inst. Washington, Princeton U.
- 2001 [3] U. Québec Montréal, Shell Rijswijk, Shell Houston
- 2000 [6] KU Leuven, U. Leeds, U. Oxford, Royal Holloway U. London, Brown U.
- 1999 [2] U. Québec Montréal, Inst. Physique du Globe de Paris

*Invited Lectures in Various Other Departments, and Outreach Events:*

- 2023 [1] Princeton Clubs of the Pacific
- 2022 [2] U-NOW Day Nursery [*Geology Rocks!*] The International Environmetrics Society [*Webinar Series on Data Science for Environmental Sciences (DSES)*]
- 2020 [1] Littlebrook Elementary [*Science Expo Online*]
- 2019 [2] Littlebrook Elementary [*Science Expo*], U-NOW Day Nursery [*Geology Rocks!*]
- 2018 [9] Southwestern Oregon Community College, Hatfield Marine Science Center, Denver Museum of Nature & Science, American Museum of Natural History, U-NOW Day Nursery [*Geology Rocks!*], Littlebrook Elementary [*Science Expo*], Oregon Museum of Science & Industry, TOTAL Exploration & Production, Houston Museum of Natural Science
- 2017 [6] Earth Educators' Rendezvous [*Education*], U-NOW Day Nursery [*Geology Rocks!*], DataRescue Princeton, Littlebrook Elementary [*Science Expo*], Princeton Day of Action Symposium, Princeton-PPPL-APS Conference for Undergraduate Women in Physics
- 2016 [5] Princeton Speaks MATLAB [*Research Computing*], From Zero to MATLAB in Four Days [*KU Leuven Doctoral Summer School*], Earth Educators' Rendezvous [*Education*], U-NOW Day Nursery [*Geology Rocks!*], Littlebrook Elementary [*Science Expo*]
- 2015 [7] New York U. Courant Institute [*Mathematics*], ExxonMobil @ Princeton University [*E-affiliates Meeting*], Carleton College SERC [*Education*], KU Leuven [*Astronomy*], U-NOW Day Nursery [*Geology Rocks!*], Littlebrook Elementary [*Science Expo*], Austrian Academy of Sciences [*Acoustics Research Institute*], Harbin Institute of Technology [*Mathematics*]
- 2014 [6] British Geological Survey (Edinburgh), Littlebrook Elementary [*4th Grade*], ExxonMobil Corporate Strategic Research (Clinton), Princeton U. [*McGraw Center*], Purdue U. [*Applied Mathematics*], Stanford U. [*Applied Mathematics*]
- 2013 [2] Concordia Science & Astronomy Club [*Plainsboro*], Princeton U. [*Colonial Club*]
- 2012 [1] Princeton U. [*Environmental Affairs Forum*]
- 2011 [1] Princeton U. [*Program in Applied & Computational Mathematics*]
- 2010 [1] NASA Goddard Space Flight Center [*Planetary Geodynamics*]
- 2009 [2] The College of New Jersey [*Physics*], Ohio State U. [*Geodesy*]
- 2006 [3] Imperial College London [*Mathematics*], U. Stuttgart [*Geodesy*], Birkbeck College London [*Astrobiology*]
- 2005 [1] Birkbeck College London [*Astrobiology*]
- 2004 [5] Cold Spring Harbor Laboratory, New York U. Courant Institute [*Harmonic Analysis & Signal Processing*], U. Kaiserslautern [*Oberseminar Geomathematik*] (3×)
- 2003 [1] Princeton U. [*Program Integrative Information, Comput. & Application Sciences*]
- 2002 [1] Princeton U. Time-Frequency Seminar [*Applied & Computational Mathematics*]

*Invited Conference Presentations (asterisks indicate keynote speeches):*

- 2022 [3] Banff BIRS *Multitaper Spectral Analysis*, Seoul CMG Conference on Mathematical Geophysics\*, Karlsruhe Institute of Technology [*Mathematics of Wave Phenomena*]
- 2021 [2] Argo 22nd *Science Team Meeting*, IRIS *Marine Seismology Symposium*
- 2020 [1] Teaching Computation Online with MATLAB, SERC Virtual Workshop
- 2019 [4] American Geophysical Union [*Fall Meeting*], Acoustical Society of America [*178th Meeting*], U. Grenoble [*Applied Inverse Problems*] (2×)
- 2018 [3] Inst. for Math. & its Applications [*Machine Learning & Computational Methods for Geoscience*] Minneapolis, *Inverse Problems: Modeling and Simulation*, Malta, Simons Found. [*Data Science & Inverse Problems in Geophysics*] Rice U.
- 2015 [4] American Geophysical Union [*Fall Meeting*], *TOPO-EUROPE\**, Antibes, *Fête Nolet*, *GéoAzur*, Sophia Antipolis, *Int. Workshop on Mathematical Geophysics*, Harbin, SIAM/AMS/MAA [*Joint Mathematics Meetings*] San Antonio (2×, talks given by A. Plattner and Y. Yuan)
- 2014 [3] Rhein-Main Arbeitskreis [*Mathematics of Computation\**] U. Siegen, Royal Society Seminar [*Science on the Sphere*] Newport Pagnell, IRIS/GSH Workshop [*Active Uses of Passive Seismic Data*] Houston, SIAM/AMS/MAA [*Joint Mathematics Meetings*] Baltimore (2×, talks given by C. Harig and A. Plattner)
- 2013 [6] OBSIP [*2013 OBS Workshop*] Redondo Beach, SPIE [*Wavelets and Sparsity XV*] San Diego, AMMCS-2013 [*Applied Mathematics, Modeling and Computational Science*] Waterloo (talk given by A. Plattner), IAHS-IAPSO-IASPEI [*Joint Assembly*] Gothenburg, SIAM [*Annual Meeting*] San Diego, *GeoMathematics\* 2013* St. Martin, SIAM/AMS/MAA [*Joint Mathematics Meetings*] San Diego
- 2012 [4] American Association of Physics Teachers (New Jersey) [*Annual Meeting\**], SSP-2012 [*IEEE Statistical Signal Processing Workshop*] (talk by A. Plattner), Bayerische Akad. Wissenschaften [*IAG-ICCT Workshop*] (talk given by C. Harig), NASA Goddard Space Flight Center [*Program for Regional Climate Assessment*]
- 2011 [6] Northwestern U. [*Mathematics in the Geosciences*], SPIE [*Wavelets and Sparsity XIV*] San Diego, IUGG [*General Assembly*] Melbourne (2×), Princeton Center for Theoretical Science [*Seismology of the Earth and Stars*], SIAM/AMS/MAA [*Joint Mathematics Meetings*] New Orleans
- 2010 [2] Princeton Center for Theoretical Science Workshop, SIAM/AMS/MAA [*Joint Mathematics Meetings*] San Francisco
- 2009 [2] SPIE [*Wavelets XIII*] San Diego, VII Hotine-Marussi Symposium Rome
- 2008 [2] U. Kaiserslautern [*Geomathematics Workshop*], Seismological Society of America [*Annual Meeting*] Santa Fe
- 2007 [6] SPIE [*Wavelets XII*] San Diego, *Int. Workshop on Modeling of Mantle Convection & Lithospheric Dynamics\** Carry-le-Rouet, *Int. Congress on Industrial & Applied Mathematics* Zürich, U. British Columbia [*Applied Inverse Problems*], U. Iceland [*Undur Veraldar\** Public Lecture], American Geophysical Union [*Fall Meeting*]
- 2005 [2] U. Kaiserslautern [*Inverse Problems Workshop*], European Geosciences Union General Assembly
- 2004 [5] Colorado School of Mines [*Mathematical Geophysics & Uncertainty*] (2×), MYRES-I Workshop\* San Diego, Rensselaer Polytechnic Inst. [*Center for Inverse Problems*], GEOTOP-UQÀM-McGill [*Congrès des Etudiants\**]

2002 [2] IEEE [*Computer Aided Seismic Analysis & Discrimination Workshop*],  
MIT [*New England Workshop on Anisotropy & Imaging*]

2001 [1] American Geophysical Union [*Spring Meeting*]

2000 [1] American Geophysical Union [*Fall Meeting*]

*A chronological list of contributed oral presentations given at various scientific meetings is available at <http://geoweb.princeton.edu/people/simons/vita2.html#orals>. Similarly, <http://geoweb.princeton.edu/people/simons/vita2.html#posters> contains a list of contributed poster presentations.*

## ADVISING *Current Postdocs:*

Raj Moulik (Ph. D. 2016, Columbia), supported by CIG, co-advised with Jeroen Tromp;  
Mathurin Wamba (Ph. D. 2020, IPG Paris), supported by Princeton University;  
Zhaolun Liu (Ph. D. 2019, KAUST), supported by DNO, co-advised with Jeroen Tromp;  
Joel D. Simon (Ph. D. 2020, Princeton), supported by NSF, co-advised with Jessica Irving.

### *Current Graduate Students:*

Sirawitch “Pete” Pipatprathanporn (Ph. D. Geophysics, \*2025).

### *Former Postdocs:* [13]

Qiancheng Liu (Ph. D. 2019, KAUST), supported by TOTAL, now at IGG-CAS;  
Zhendong Zhang (Ph. D. 2019, KAUST), supported by KAUST, now at MIT;  
Lucia Gualtieri (Ph. D. 2014, IPG Paris), supported by KAUST, now at Stanford University;  
Dmitry Borisov (Ph. D. 2014, IPG Paris), supported by TOTAL, now at Kansas Geological Survey;  
Greg Garner (Ph. D. 2013, Penn State), *Woodrow Wilson School* STEP Fellow, now at Rutgers U.;  
Umair bin Waheed (Ph. D. 2015, KAUST), supported by TOTAL, now at KFUPM;  
Yanhua O. Yuan (Ph. D. 2016, Princeton), now at ExxonMobil Corporate Strategic Research;  
Christopher T. Harig (Ph. D. 2010, U. Colorado Boulder), now at U. Arizona;  
Alain Plattner (Ph. D. 2011, ETH Zürich), *Swiss National Fonds* Fellow, now at U. Alabama;  
Edwin S. Kite (Ph. D. 2011, U. C. Berkeley), *Hess Postdoctoral Fellow*, now at U. Chicago;  
M. Glenn Sterenborg (Ph. D. 2011, Harvard), *Canadian Institute for Advanced Research* Fellow;  
Kevin W. Lewis (Ph. D. 2009, Caltech), *Hess Postdoctoral Fellow*, now at Johns Hopkins;  
Robert E. Kopp (Ph. D. 2007, Caltech), *Woodrow Wilson School* STEP Fellow, now at Rutgers U.

### *Former Graduate Students:* [10]

Alex Burky (Ph. D. Geophysics, \*2022), co-advised with Jessica Irving;  
Terance Schuh, Huda Al-Alawi, Page Dabney (M. A. Geophysics, \*2022);  
Joel D. Simon (Ph. D. Geophysics, \*2020), now at Princeton U.;  
Fan Wu (M. A. Geophysics, \*2020), co-advised with Jeroen Tromp;  
Yanhua O. Yuan (Ph. D. Geophysics, \*2016), now at ExxonMobil Corporate Strategic Research;  
Ariane Ducellier (Ph. D. Geophysics U. Washington, 2022), co-advised with Jeroen Tromp;  
Yue Tian (Ph. D. Geophysics, \*2010), now at Chevron, co-advised with Guust Nolet;  
Dong V. Wang (M. A. Geophysics, \*2010, Ph. D. Statistics U. North Carolina Chapel Hill 2015).

### *Visiting Postdocs:* [5]

Vladimir Kazei (Ph. D. 2015, St. Petersburg State U.), supported by KAUST;  
James P. D. Moore (Ph. D. 2014, U. Oxford), supported by Earth Observatory of Singapore;  
Arthur Guillaumin (Ph. D. 2017, U. College London), supported by ERC Consolidator Grant;  
François Lavoué (Ph. D. 2014, U. Grenoble), supported by Dublin Institute for Advanced Studies;  
Lara M. Kalnins (Ph. D. 2011, U. Oxford), supported by NERC.

### *Visiting Graduate Students:* [9]

Hannah Rogers (Ph. D. 2022, U. Edinburgh); Shuyuang Zhang (Ph. D. 2023, Virginia Tech); Georg Reuber (Ph. D. 2020, University of Mainz); Yue Hu (Ph. D. 2019, University of Geosciences Wuhan); Wenying Pan (Ph. D. 2017, U. Calgary); Alice Bates (Ph. D. 2017, Australian National University); Verena Lieb (Ph. D. 2016, Deutsches Geodätisches Forschungsinstitut); Chunli Dai (Ph. D. 2015, Ohio State U.); Lei Wang (Ph. D. 2012, Ohio State U.); Liying Wei (Ph. D. 2010, Australian National U.).



*Senior Theses:* [10]

- Yuri Tamama (Geosciences, '2022): *Tectonics and Seismicity of the Tajik Basin.*
- Amy Amatya (Geosciences, '2021): *Receiver function analysis of the mantle transition zone beneath Cape Verde.*
- Tyrone Zhang (Geosciences, '2021): *Evaluating forecasting methods for precipitation using weather data collected on top of Guyot Hall.*
- Maricela Coronado (Geosciences, '2018): *Underground hydrocarbon pipelines in the United States, and their relationship to the concentration of arsenic in groundwater.*
- Anna van Brummen (Geosciences, '2017): *Calibration and noise characterization of a newly installed seismometer at Princeton University.*
- Alyson Beveridge (Geosciences, '2016): *Measuring the changing mass of glaciers on the Tibetan Plateau using time-variable gravity from the GRACE mission.*
- Weber Liu (Geosciences, '2016): *Analysis of Martian topography via a parameterized spectral approach.*
- Kathleen Ryan (Geosciences, '2014): *Precision and accuracy of low-cost Global Positioning augmentation systems.*
- Gabe Eggers (Geosciences, '2013): *A regionalized maximum-likelihood estimation of the spatial structure of Venusian topography.*
- Evan Welch (Physics, '2012): *Inversion of first order Eulerian gravitational potential perturbations for the seismic moment tensor: a normal modes approach.*

*Junior Papers:* [18]

- August Wietfeldt (Physics, '2023): *Ray-tracing in acoustic media.*
- Yuri Tamama (Geosciences, '2022): *The sounds of silence: Cultural noise on Princeton University campus during the 2020 Coronavirus lockdown.*
- Amy Amatya (Geosciences, '2021): *MERMAID float course prediction using historic Argo trajectory data.*
- Diana Chao (Geosciences, '2021). *Bathymetric analysis of the South China Sea.*
- Robert Freeman (Computer Science, '2020): *Evaluating precipitation in landscape evolution model CHILD and improving its algorithmic performance.*
- Laurie Zielinski (Geosciences, '2022): *Reproducibility of overlapping magnetometric surveys at Polis Chrysochous, Cyprus.*
- Alexander Cavoli (Geosciences, '2022): *Development of a software package to recognize cyclicities from outcrop-scale photographs.*
- Angel Fan (Geosciences, '2019): *Spherical-harmonic analysis of the Jovian gravity field.*
- Benjamin Getraer (Geosciences, '2019): *Regional forcing of Greenland ice loss 2002–2017 and Resolving and contextualizing the signal of Greenland ice loss 2014–2017.*
- Mrinalini Basu (Physics, '2015): *Modelling mass change in California with GRACE.*
- Gabe Eggers (Geosciences, '2013): *A coherent, regionalized map of Venus.*
- Garnet Abrams (Geosciences, '2012): *Gravity anomalies or optical illusions? A fine-scale survey of two New Jersey “gravity hills”.*
- Evan Welch (Physics, '2012): *Displacements from the 1-D Earth’s free oscillations.*
- Henry Chu (Operations Research, '2011): *On the inversion for lithospheric geomagnetic potential from scattered, noisy satellite data on bounded spherical domains.*
- Yifeng Wang (Geosciences, '2011): *Analysis of acoustic wave speeds in the ocean with view of deploying hydrophones for global seismic tomography and Analysis of hydroacoustic time series from the High-Frequency Acoustic Recording Package array.*
- Cristian Proistosescu (Physics, '2009): *Trace-element dendrochronology .*

*Research Specialists:* [1]

Gabe Eggers (Geosciences, '2013), now at Lunar and Planetary Institute.

*Undergraduate Research Interns:* [20]

Yuri Tamama ('2022); Aidan Blaser (Cornell, '2021); Jonah Rubin (U. Vermont, '2021); Frank Ge (Computer Science, '2021); Doris Li (Computer Science, '2021); William Ughetta (Computer Science, '2021); Peter Mwesigwa (Computer Science, '2021); Ben Huang ('2020); Lauren Von Berg ('2020); Elijah Ash ('2019); James Tralie ('2019); Sarah Kroecker (Fresno State, '2018); Kylee Ford (Fresno State, '2018); Gloria Yin (Mathematics, '2018); Ben Leizman (Computer Science, '2017); Anna van Brummen ('2017); Gabe Eggers ('2013); Evan Welch (Physics, '2012); Austin Robbins (Fresno State, '2017); Laura Larsen-Strecker (Harvard, '2009).

*Non-Princeton Students Advised:* [8]

Jonathan Watson (M. Res., 2006, Birkbeck); Anthony Bloom, Ben Dando & Gary Hayes (M. Sci. 2006, UCL); Caroline Attwood, Rachael Bayliss, Richard Ford & N. Jeshani (B. Sc. 2006, UCL).

*High School Mentees:* [2]

Andy Potylitsin, Holmdel High School ('2023);

David Li, Princeton High School ('2014): *Analysis of seafloor bathymetry using MATLAB*;

Dmitriy Potylitsin, Holmdel High School ('2012): *Dendroclimatological analysis of Pine species in California*, entered into the 2012 Intel and Siemens Competitions and presented at the 57th Annual New Jersey Academy of Science Junior and Senior Academies Meeting.

EXAMINER *I have served on 23 doctoral and 3 master's examination committees at other institutions or in departments outside of my primary affiliation. A listing of the doctoral committees on which I served within the Department of Geosciences, as of my "normal" duties, is found on page 17.*

2022 Franck Latallier (Ph. D., Sciences de la Terre et de l'Univers – Géophysique), Université Strasbourg,  
*Seismic tomography of plume-like upwellings in the French Polynesia region using Backus-Gilbert inversion.*  
Adviser: Alessia Maggi, Christophe Zaroli, and Sophie Lambotte.

Nobuaki Fuji (H.D.R., Sciences de la Terre), Université Paris Cité,  
*Small-data seismology — from a centimetric rock sample to Mars.*

2021 Adeem Aslam (Ph. D., Electrical Engineering), Lahore University of Management Sciences,  
*Optimal filtering, localized analysis and multiscale representations on the sphere.*  
Adviser: Zubair Khalid.

Rıdvan Örsvuran (Ph. D., Sciences de la Planète et de l'Univers), Université Côte d'Azur,  
*Towards anisotropic and anelastic global adjoint models: Improving measurements and parameterization for global full-waveform inversion.*  
Advisers: Ebru Bozdağ and Stéphane Operto.

2020 Sébastien Bonnieux (Ph. D., Sciences de la Planète et de l'Univers), Université Côte d'Azur,  
*Flotteur pour la surveillance pluridisciplinaire de l'environnement marin: de l'expertise métier aux codes embarqués.*  
Advisers: Frédéric Cappa and Guust Nolet.

Georg S. Reuber (Ph. D., Geodynamics), Johannes-Gutenberg Universität Mainz,  
*Gradient based inversion in geodynamics.*  
Advisers: Boris Kaus and Martin Hanke-Bourgeois.

Mathurin D. Wamba (Ph. D., Sciences de la Terre et de l'Environnement), Institut de Physique Globe de Paris,  
*Tomographie de l'Océan Indien par inversion de forme d'onde.*  
Advisers: Jean-Paul Montagner and Barbara Romanowicz.

- 2018 Devi K. (Ph. D., Ocean Engineering), Indian Institute of Technology Madras, Chennai,  
*Assessment of coastal dunes and peatlands methane plumes in coastal plain landforms of India by Ground Penetrating Radar measurements.*  
Adviser: Rajesh R. Nair.
- David R. Dalton (Ph. D., Earth Sciences), Memorial University of Newfoundland,  
*On Backus average in modelling guided waves.*  
Adviser: Michael A. Slawinski.
- 2017 Yudhvir Singh (Ph. D., Ocean Engineering), Indian Institute of Technology Madras, Chennai,  
*Gas hydrate saturation using effective medium modeling with partially aligned fractures at Krishna Godavari Basin.*  
Adviser: Rajesh R. Nair.
- 2016 Verena Lieb (Ph. D., Engineering), T. U. Munich,  
*Enhanced regional gravity field modeling from the combination of real data via Multi-Resolution Repres.*  
Advisers: Roland Pail and Michael Schmidt.
- 2015 Christian Blick (Ph. D., Mathematics), U. Kaiserslautern,  
*Multiscale potential methods in geothermal research: Decorrelation reflected post-processing and locally based inversion.*  
Adviser: Willi Freeden.
- Paul Käufel (Ph. D., Geophysics), U. Utrecht,  
*Rapid probabilistic source inversion using pattern recognition.*  
Adviser: Jeannot Trampert.
- Ramakrushna Reddy T. (Ph. D., Geophysics), Indian Institute of Technology Madras, Chennai,  
*Seismic early warning using improved multiscale wavelet approach.*  
Adviser: Rajesh R. Nair.
- 2014 Anthony Chatu (M. Sc., Geophysics), U. Witwatersrand,  
*Processing and interpretation of potential field data from Namibia.*  
Adviser: Gordon R. J. Cooper.

- 2013 Zubair Khalid (Ph. D., Electrical Engineering), Australian National U.,  
*Spatio-spectral analysis on the unit sphere.*  
Adviser: Rodney A. Kennedy.
- D. Cornelis Slobbe (Ph. D., Geoscience & Remote Sensing), T. U. Delft,  
*Roadmap to a mutually consistent set of offshore vertical reference frames.*  
Adviser: Roland Klees.
- 2012 Sergey Voronin (Ph. D., Applied and Computational Mathematics), Princeton,  
*Regularization of linear systems with sparsity constraints with applications to large scale inverse problems.*  
Adviser: Ingrid C. Daubechies.
- Lei Wang (Ph. D., Geodetic Science), Ohio State U.,  
*Coseismic deformation detection and quantification for great earthquakes using spaceborne gravimetry.*  
Adviser: C. K. Shum.
- 2011 Eugene Brevdo (Ph. D., Electrical Engineering), Princeton,  
*Efficient representations of signals in nonlinear signal processing with applications to inverse problems.*  
Advisers: Peter J. Ramadge and Ingrid C. Daubechies.
- Mélanie Villemaire (*Maîtrise*, Sciences de la Terre), U. Québec à Montréal,  
*Structure tridimensionnelle du manteau supérieur sous l'est du bouclier canadien et le nord des Appalaches en utilisant la tomographie des ondes P.*  
Adviser: Fiona A. Darbyshire.
- Doreen Fischer (Ph. D., Mathematics), U. Siegen,  
*Sparse regularization of a joint inversion of gravitational data and normal mode anomalies.*  
Adviser: Volker Michel.
- Reyko Schachtschneider (Ph. D., Physics), U. Potsdam,  
*Error distribution in regional inversions of potential fields from satellite data.*  
Adviser: Matthias Holschneider.
- 2010 Liying Wei (Ph. D., Electrical Engineering), Australian National U.,  
*Signal concentration and related concepts in time-frequency and on the unit sphere.*  
Adviser: Rodney Kennedy.
- 2007 Abel Amirbekyan (Ph. D., Mathematics), U. Kaiserslautern,  
*The application of reproducing kernel based spline approximation to seismic surface and body wave tomography: Theoretical aspects and numerical results.*  
Adviser: Volker Michel.
- 2006 Peggy Vermeesch (Ph. D., Geophysics), Imperial College,  
*Geophysical modelling of the Chicxulub crater.*  
Advisers: Joanna V. Morgan and Michael Warner.
- 2004 Pascal Audet (*Maîtrise*, Sciences de la Terre), U. Québec à Montréal,  
*Réponse flexurale de la lithosphère dans le bouclier canadien.*  
Adviser: Jean-Claude Mareschal.

CONVENER *I have served as co-organizer of the following 25 meetings and special sessions:*

- 2020 *Teaching Research with Programming*, Special Session,  
Fall AGU; with Alice C. Bradley (Williams C.), Andrew M. Fischer (U. Tasmania) and Anthony Castronova  
(Consortium of Universities for the Advancement of Hydrological Science).
- 2019 *Science beyond Guyot: Twenty-Five Years of Harry Hess Fellows*, Symposium,  
Princeton Geosciences; with Alexandra Turchyn (U. Cambridge).
- 2018 *Waveform and Tomographic Inversion for Natural and Induced Seismic Events*, Special Session,  
Fall AGU; with Lucia Gualtieri (Princeton), Haijiang Zhang (USTC) and Tariq Alkhalifah (KAUST).  
*Geosciences: A Broad Perspective from Academia and the Industry*, Conference,  
Princeton Geosciences; with Martin-Daniel Lacasse (ExxonMobil).
- 2017 *Developing Students' Computational Skills*, Mini Workshop,  
Earth Educators' Rendezvous, U. New Mexico, Albuquerque, NM.  
*APS Conference for Undergraduate Women in Physics*, at Princeton University / PPPL,  
with Shannon Greco (PPPL) and multiple others from Physics, Astrophysical Sciences, and Engineering.
- 2016 *Teaching Geoscience with MATLAB*, Special Session,  
Fall AGU; with Andrew M. Fisher (U. Tasmania) & Risa D. Madoff (U. North Dakota).  
*Princeton Speaks MATLAB*, Users Group Kick-Off Event,  
Princeton Institute for Computational Science and Engineering (PICSciE) and the Office of Information  
Technology (OIT) Research Computing; with Charles Augustine (Princeton).  
*Teaching Computation in the Sciences Using MATLAB*, International Workshop,  
Carleton College SERC, Northfield, MN; with Lisa Kempler (MathWorks), Cathryn A. Manduca (Carleton),  
Kristin Jenkins (BioQUEST), Kelly Roos (Bradley U.) & Wendy Thomas (U. Washington).
- 2015 *Forward and Inverse Problems in Geodesy, Geodynamics, and Geomagnetism*, Minisymposium,  
SIAM Conference on Mathematical & Computational Issues in the Geosciences; with Alain Plattner (Fresno).
- 2014 *From NARS to Mariscope: Three Decades of Seismological Networks*, Special Session,  
Fall AGU; with Suzan van der Lee (Northwestern), Jeroen Ritsema (U. Michigan) & Karin Sigloch (Oxford).  
*Impact of Waves Along Coastlines*, Institute for Mathematics and its Applications (IMA),  
Hot Topic Workshop, Minneapolis, MN; with Jed Brown (Argonne), Donna Calhoun (Boise State), Natasha  
Flyer (NCAR), David George (USGS), Kyle Mandli (Columbia U.), Rosemary Renaut (Arizona State),  
Grady Wright (Boise State) & Dave Yuen (U. Minnesota).  
*Roadmap Workshop*, Consortium for Mathematics in the Geosciences (CMG++),  
Boise State University; with Jodi Mead & Grady Wright (Boise State), Natasha Flyer (NCAR), Rosemary  
Renaut (Arizona State), Seth Stein (Northwestern) & Dave Yuen (U. Minnesota).  
*Real-Time Seismic Data from the Oceans*, Special Interest Group (SIG) meeting,  
IRIS Workshop, Sunriver, OR; with Gabi Laske (Scripps) & Guust Nolet (U. Nice).

- 2013 *Geological Data Fusion: Tackling the Statistical Challenges of Interpreting Past Environmental Change*, DIMACS Workshop, Rutgers University; with Bob Kopp (Rutgers U.).
- 2012 *Bridging the Gap between the Geosciences and Mathematics, Statistics, and Computer Science*, NSF and Princeton Center for Theoretical Science; with Don Estep (Colorado State), Natasha Flyer (NCAR), Michael Ghil (UCLA), Ridg Scott (U. Chicago), Michael Stein (UCLA), Seth Stein (Northwestern), Grady Wright (Boise State) & Dave Yuen (U. Minnesota).
- 2010 *Advances in Signal Processing Methods for Seismology*, Special Session, Fall AGU; with Youshun Sun (MIT) & Po Chen (U. Wyoming).
- 2008 *Models of the Deep Earth*, Special Session, Fall AGU; with S.-H. Dan Shim (MIT) & Michael Thorne (U. Utah).
- 2007 *Rheological Anisotropy: Geological and Geophysical Perspectives*, Special Session, Fall AGU; with Einat Lev (MIT), Pascal Audet (UBC) & Throstur Thorsteinsson (U. Iceland).
- 2006 MYRES-II: *Dynamics of the Lithosphere*, Verbania, Italy; with Laurent Montési (WHOI) & Giulio di Toro (U. Padova).
- 2005 *Analysis and Representation of Geophysical Data on the Sphere*, Special Session, Fall AGU; with Mark Wieczorek (IPG Paris), Andy Jackson (U. Leeds) & Dave Yuen (U. Minnesota).
- Wavelet and Time-Frequency Analysis in the Earth Sciences*, Special Session, Spring EGU; with Jonathan Lilly (IPG Paris) & Sofia Olhede (Imperial College).
- 2004 MYRES-I: *Heat, Helium, Hotspots, and Whole Mantle Convection*, La Jolla, CA; with Thorsten Becker (USC) & Jamie Kellogg (UCLA).
- Crust-Mantle Interaction and Lithospheric Deformation*, Special Session, Fall AGU; with Corné Kreemer (U. Nevada) & Oliver Heidbach (U. Karlsruhe).
- 2002 *Structure, Composition & Evolution of Deep Continental Lithosphere*, Special Session, Fall AGU; with Cin-Ty Lee (Rice U.).

## SERVICE

- Editorial      Advisory Board Member, *Springer Geosystems Mathematics Books*, since 2014;  
Associate Editor, *International Journal on Geomathematics*, since 2010;  
Associate Editor, *Geophysical Journal International*, 2017–2022;  
Editorial Advisory Board, *Journal of Geodetic Science*, since 2010;  
Editorial Advisory Board, *Earth & Planetary Science Letters*, 2007–2018;  
Associate Editor, *Journal of Geophysical Research (Solid Earth)*, 2004–2009.
- Refereeing      Manuscripts [330+] for journals, publishers, and funding bodies, such as:  
*Adv. Space Res.*, *AGU Monographs*, *Appl. Comput. Harmon. Anal.*, *Arab. J. Geosci.*, *Artificial Satellites*, *Bull. Seismol. Soc. Amer.*, *Cambridge U. Press*, *Czech Sci. Found.*, *Climatic Change*, *Comm. Earth Env.*, *Comput. Geosci.*, *Earth Planets Space*, *Earth Sci. Res. J.*, *Earth & Planet. Sc. Lett.*, *Eos Trans. AGU*, *European J. Phys.*, *European Research Council*, *European Science Foundation*, *Fédération Wallonie-Bruxelles*, *Free U. Brussels GOA*, *G-Cubed*, *Geology*, *Geophysics*, *Geoph. J. Int.*, *Geoph. Res. Lett.*, *Geosphere*, *GSA Spec. Pub.*, *Harvard U. Press*, *Icarus*, *IEEE Sig. Proc. Lett.*, *IEEE Stat. Sig. Proc. Workshop*, *IEEE Trans. Sig. Proc.*, *IEEE Trans. Geosc. Remote Sens.*, *Inst. National Sciences de l'Univers*, *Institut Universitaire de France*, *Int. J. Geomath.*, *Inv. Probl. Sci. Eng.*, *Israel Sci. Found.*, *J. Appl. Geophys.*, *J. Coastal Conserv.*, *J. Fourier Anal. Appl.*, *J. Geodyn.*, *J. Geodesy*, *J. Geodet. Sci.*, *J. Geophys. Eng.*, *J. Geoph. Res.*, *J. Roy. Stat. Soc.*, *Kentucky Sci. & Eng. Found.*, *King Abdullah U. Sci. Tech.*, *Lithosphere*, *Louisiana Board of Regents*, *National Aeronautics and Space Administration* (including for the NASA Postdoctoral Program and as panelist on 2 panels), *National Science Foundation* (including as panelist on 3 panels), *Natural Sci. & Eng. Res. Council Canada*, *Nature Geosci.*, *Neth. Org. Sci. Res.* (including as panelist on 2 panels), *Neth. Space Office*, *NYY Abu Dhabi*, *Ocean Modelling*, *Phys. Earth. Planet. Int.*, *Proc. Roy. Soc. Lond. Ser. A*, *Princeton U. Press*, *Science*, *Science Advances*, *Seismol. Res. Lett.*, *Smithsonian Channel USA*, *Solid Earth*, *Studia Geophys. Geodaet.*, *Surveys Geophys.*, *Swiss National Science Fonds*, *Symm. Integr. Geom. Meth. Appl.*, *Taylor & Francis*, *Leading Edge*, *Tectonics*, *Tectonophysics*, *U. K. Natural Environment Res. Council*, *U. K. Particle Phys. Astron. Res. Council*, *U. S. Dept. of Defense*, *U. S. Dept. of Energy*, *Water Resources Res.*
- Community      Member, *EarthScope Consortium Inaugural Board*, since 2023;  
President, *EarthScope-Oceans Steering Committee*, since 2016;  
Member, *Global Seismograph. Network Standing Committee*, IRIS (2021–2024);  
Member, *Comput. Infrastructure Geodyn. Executive Committee* (2016–2019);  
Member, *EOAS Earth Observations & Forecasting Committee*, Rutgers U., 2017;  
Member, *EarthScope Education and Outreach SubCommittee*, 2014–2019;  
Member, *IAG Inter-Commission Committee on Theory Joint Study Groups Multiresolutional aspects of potential field theory* (2015–2019) &  
*Current methodologies in regional gravity field modeling* (2011–2015);  
Member, Jury *UBC/PIMS Math. Sciences Young Faculty Award*, 2018–2020;  
Alternate Rep., *CO Consortium Materials Properties Res. Earth Sci.*, since 2008;  
Alternate Rep., *Incorporated Research Institutions for Seismology*, 2006–2013;  
Co-coordinator, *AGU Fall Meeting, OSP Awards, Seismology*, 2018;  
Co-organizer, *AGU Meeting of the Americas, Tectonophysics*, 2009–2010.



*Doctoral Exam Committees: [23]*

Pathikrit Bhattacharya (Seismology, \*2016), Susannah Dorfman (Mineral Physics, \*2011), Rajkrishna Dutta (Mineral Physics, \*2019), Blake Dyer (Geology, \*2016), Brian Gertsch (Paleontology, \*2010), Jessica Hawthorne (Seismology, \*2012), Jon Husson (Geology, \*2014), Brenhin Keller (Geochemistry, \*2016), Leah Langer (Seismology, \*2020), Wenjie Lei (Seismology, \*2019), Yang Luo (Seismology, \*2012), Scott MacLennan (Geochemistry, \*2019), Ryan Modrak (Seismology, \*2016), Tarje Nissen-Meyer (Seismology, \*2008), Yajun Peng (Seismology, \*2018), Yves Plancherel (Oceanography, \*2011), Kyle Samperton (Geology, \*2017), James Smith (Seismology, \*2019), Yue Tian (Seismology, \*2010), Makoto Suwa (Geochemistry, \*2007), Garrett Tate (Geology, \*2014), Enning Wang (Seismology, \*2013), Hejun Zhu (Seismology, \*2013).

*General Exam Committees: [42]*

Andrew Babbin (Biogeochemistry, \*2014), Pathikrit Bhattacharya (Seismology, \*2016), John Copley (Mineral Physics, \*2025), Congyue Cui (Geophysics, \*2024), Srijan Das (Geophysics, \*2024), Susannah Dorfman (Mineral Physics, \*2011), Rajkrishna Dutta (Mineral Physics, \*2019), Blake Dyer (Geology, \*2016), William Eaton (Seismology, \*2023), Theodore Green (Geology, \*2023), Sirius Han (Mineral Physics, \*2023), Jessica Hawthorne (Seismology, \*2012), Jon Husson (Geology, \*2014), Sarah Johnston (Geology, \*2008), Jennifer Kasbohm (Geology, \*2019), Kelly Kearney (Oceanography, \*2010), Brenhin Keller (Geochemistry, \*2016), Leah Langer (Seismology, \*2019), Wenjie Lei (Seismology, \*2019), Tianyi Li (Seismology, \*2017), Yang Luo (Seismology, \*2012), Scott MacLennan (Geochemistry, \*2019), Ryan Manzuk (Geology, \*2024), Ryan Modrak (Seismology, \*2016), Yajun Peng (Seismology, \*2018), Sirawitch “Pete” Pipatprathanporn, (Seismology, \*2021), Yves Plancherel (Oceanography, \*2010), Lucas Sawade (Seismology, \*2024), Joel Simon (Seismology, \*2020), Chao Song (Seismology, \*2024), James Smith (Seismology, \*2019), Travis Steiner-Leach (Geology, \*2024), Garrett Tate (Geology, \*2014), Shannon Tronick (Biogeochemistry, \*2010), Uno Vaaland (Applied Mathematics, \*2020), Philip Vetter (Applied Mathematics, \*2010), Enning Wang (Seismology, \*2013), Jue Wang (Mineral Physics, \*2014), Fan Wu (Geophysics, \*2020), Yanhua Yuan (Seismology, \*2016), Lisha Xie (Mineral Physics, \*2009), Hejun Zhu (Seismology, \*2013).

## Service

Princeton

### *Other Committees & Service-Oriented Tasks:*

Faculty *Steering Committee for Service And Civic Engagement* (2017–2018);  
Faculty *Committee on Committees* (2014–2017 & Spring 2020);

Geosciences *Development Committee* (2013–);  
Geosciences *Diversity Committee* (2013–);  
Geosciences *Departmental Lecture Series* (Co-)Organizer (2007 & 2013–2018);  
Geosciences *Harry Hess Fellows Search Committee* (2013);  
Geosciences *Graduate Work & Admissions Committee* (2007–2012);  
Geosciences *Faculty Search Committees* (2007–2008, 2020–2021);  
Geosciences *Website Committee* (2007–2008);

PACE Center, *Personal Success vs. Serving The World?* Panelist (2017);

PICSciE, *PIXI17 Visualization Challenge*, Organizer & Panelist (2017);

Andlinger Center & Princeton Environmental Institute, Proposal Panelist (2014);

Andlinger Center, *E-affiliates Advisory Committee* Substitute (2014, 2016);

McGraw Center, *Teaching Data Visualization*, Panelist (2018);

McGraw Center, *New Faculty Orientation*, Panelist (2009);

The Graduate School, *The Evolving Geosciences at Princeton*, Panelist (2012).

### *College Fellowships:*

First College Faculty Fellow, 2021–2022;

Wilson College Faculty Fellow, 2011–2020.

## CLASSES

*In the following pages I provide short descriptions of the classes that I have developed and/or taught since joining the Princeton faculty. A complete list was found on page 2 of this document. A general selection of student comments, from the Student Course Guide website, can be found at <http://geoweb.princeton.edu/people/simons/fjsimons-feedback.html>*

DATA, MODELS & UNCERTAINTY IN THE NATURAL SCIENCES GEO422  
*Offered in 2007 [8 enrolled], 2008 [6], 2010 [14], 2012 [25], 2015 [30], 2017 [21], 2020 [15]*  
<http://geoweb.princeton.edu/people/simons/GEO422-feedback.html>

For those who want to turn data into models and evaluate their uniqueness and uncertainty. Three main topics are elementary statistics, heuristic time series analysis, and model parameter estimation via matrix inverse methods. Problem sets and MATLAB computer programming exercises form integral parts of the course.

GLOBAL GEOPHYSICS GEO371/PHY371  
INTRODUCTORY GEOPHYSICS GEO320/GEO700  
*Offered in 2008 [6 enrolled], 2009 [8], 2013 [7], 2015 [2], 2017 [17], 2019 [9], 2021 [15]*  
<http://geoweb.princeton.edu/people/simons/GEO371-feedback.html>

An introduction to the fundamental principles of global geophysics. Four parts, taught over three weeks each in an order allowing the material to build up to form a final coherent picture of (how we know) the structure and evolution of the solid Earth: *Gravity and Magnetism*: description and study of the Earth's magnetic and gravitational fields. *Seismology*: body waves, surface waves and free oscillations. *Geodynamics*: heat flow, cooling of the Earth, mantle convection. The emphasis is on physical principles including the mathematical derivation and solution of the governing equations.

ORIGIN AND EVOLUTION OF THE CONTINENTAL LITHOSPHERE GEO556  
*Offered in 2012 [4 enrolled]*  
<http://geoweb.princeton.edu/people/simons/GEO556-feedback.html>

Despite its volumetric insignificance, the continental lithosphere is an important geochemical reservoir, hosts the terrestrial biosphere, and impacts plate tectonics and mantle convection. How and why is the continental lithosphere formed, preserved, and destroyed throughout Earth history? We tap into datasets collected using structural geology, geochemistry and petrology, radiogenic and stable isotopes, seismology, gravity, and heat flow, all of which are used to inform numerical and theoretical models.  
*Co-taught with Prof. Blair Schoene.*

FUNDAMENTALS OF THE GEOSCIENCES GEO505/506  
*Offered in 2008 [9], 2012 [4], 2013 [9], 2014 [9], 2015 [4+7], 2019 [13], 2020 [5], 2021 [8+4], 2023 [3]*

A survey of fundamental topics in the geosciences. *Co-taught with Geosciences Faculty.*

RESPONSIBLE CONDUCT OF RESEARCH IN GEOSCIENCES GEO503  
*Offered in 2019 [15 enrolled], 2020 [7], 2021 [13], 2022 [13], 2023 [4]*  
*Co-taught with Geosciences Faculty.*

## EARTH: CROPS, CULTURE, AND CLIMATE (IN ITALY)

FRS161

*Offered in 2019 [17 enrolled], 2020 (on Zoom) [7], 2021 (on Campus) [4], 2022 [13]*

<http://geoweb.princeton.edu/people/simons/FRS-CCCI.html>

<http://geoweb.princeton.edu/people/simons/FRS-CCCI-feedback.html>

In this Freshman Seminar, you combine satellite remote sensing and geological and geophysical field observations with modeling, interpretation, and reporting, to answer questions on the impact of climate, topography, and geography on agricultural crop production. *How is the energy of Earth and the Sun harnessed in its various forms? What is the impact of agriculture and resource extraction on landscapes—and how do climate and topography influence what can be grown, what can be mined, where humans settle? How have civilizations through the ages reconciled opportunity and threat: of fertile volcanoes, powerful rivers, burning forests?* In the classroom, around campus, and in the field abroad, using both instruments and your own senses, you gain practical experience collecting data in geographic context. You analyze these data using statistical techniques such as regression and geospatial analysis, while learning the programming language MATLAB. You write a research paper and typeset it in L<sup>A</sup>T<sub>E</sub>X. The week-long Fall Break field trip centers around staying at, and studying, a mid-size Italian olive farm, along with exploration of the geological and archaeological environment nearby. The classroom component of this Freshman Seminar will have graded (bi)weekly assignments built around on-campus data collection, data preparation or analysis, and scientific programming. A significant part of your assessment comes from writing assignments that teach you to communicate your scientific results, and culminate in an original research paper and an oral presentation for an audience of peers, Freshman Seminar alumni, and invited guests from the university community.

*Co-taught with Prof. Adam Maloof.*

## STATE OF THE EARTH: SHIFTS AND CYCLES (IN SPAIN)

FRS135/124

*Offered in 2015 [13 enrolled], 2017 [14], 2017 [10]*

<http://geoweb.princeton.edu/people/simons/FRS-SESC.html>

<http://geoweb.princeton.edu/people/simons/FRS-SESC-feedback.html>

In this Freshman Seminar, you will combine field observations of the natural world with quantitative modeling and interpretation to answer questions like: *How have Earth and human histories been recorded in the geology of Princeton, the Catskills, and Spain, and what experiments can you do to query such archives of the past?* In the classroom, through problem sets, and around campus, you will gain practical experience collecting geological and geophysical data in geographic context, and analyzing these data using statistical techniques such as regression and time series analysis, with the programming language MATLAB. During the required one-day trip to the Catskills and week-long term break trip to France and Spain, you will engage in research projects that focus on the cycles and shifts in Earth's shape, climate, and life that occur now on timescales of days, and have been recorded in rocks over timescales of millions of years. The classroom component of this Freshman Seminar will have graded (bi)weekly assignments built around on-campus data collection, data preparation or analysis, and scientific programming. A significant part of your assessment comes from writing assignments that teach you to communicate your scientific results, and culminate in an original research paper and an oral presentation for an audience of peers, Freshman Seminar alumni, and invited guests from the university community.

*Co-taught with Prof. Adam Maloof.*

## EARTH'S ENVIRONMENTS & ANCIENT CIVILIZATIONS (IN CYPRUS)

FRS171/187

Offered in 2011 [12 enrolled], 2012 [15], 2013 [13]

<http://geoweb.princeton.edu/people/simons/FRS-EEAC.html>

<http://geoweb.princeton.edu/people/simons/FRS-EEAC-feedback.html>

In this Freshman Seminar, you will combine field observations of the natural world with quantitative modeling and interpretation in order to answer questions like: *How does environmental change alter the course of civilization, and how do civilizations modify their environment? How have Earth and human histories been recorded in the geology and archaeology of Cyprus, and what experiments can we do to query such archives of the past?* In the classroom, through problem sets, and on campus excursions, you will gain practical experience collecting geological and geophysical data in geographic context, and analyzing these using software and programming languages like ArcGIS and MATLAB. During the required week-long trip to Cyprus, you will engage in research projects that focus on the interplay between active tectonic landscapes, changing climate, and ancient civilizations, and then turn what you learn into three progressively more elaborate research papers. The classroom component of the seminar will have graded assignments built around data collection, preparation, or analysis, software handling and the beginnings of scientific programming; but, also, expository and research writing which culminates in an original research paper, a poster and a public oral presentation. The field location for this course is appropriate not only for its geoscientific importance but also for the tie-in with the *Department of Art & Archaeology* which has been conducting archaeological excavations in the city of Polis Chrysochous for three decades. This is a *science* class: you should come prepared with an aptitude for, and a willingness to learn the quantitative aspects of scientific inquiry.

*Co-taught with Prof. Adam Maloof.*

## EARTH'S CHANGING SURFACE & CLIMATE (IN CALIFORNIA)

FRS145/149

Offered in 2007 [20 enrolled], 2008 [13], 2009 [15]

<http://geoweb.princeton.edu/people/simons/FRS-ECSC.html>

<http://geoweb.princeton.edu/people/simons/FRS-ECSC-feedback.html>

The surface of Earth today, an amalgamation of mountain ranges, basins, and the hydrosphere, records an integrated history of processes that act on a range of time scales spanning seventeen orders of magnitude. The central question treated in this Freshman Seminar is: *How does Earth's surface evolve in response to internal (e.g., tectonic and magmatic), surficial (e.g., weather, climate, and anthropogenic effects), and external (e.g., extraterrestrial) forcing?* This Freshman Seminar provides you with practical experience making geological and geophysical observations, and in particular, focuses on quantitative analysis of observables such as topography, gravity, and weather. The classroom seminar is complimented by a mandatory week-long field trip to the western United States. During this trip, you will develop research projects that involve geological and geophysical mapping of the interplay between recent volcanic explosion craters, changing climate, and anthropogenic demands on water resources in the Mono Lake region. This seminar is *not* a comprehensive introduction to the geological sciences, but rather a look at a select few processes of import to understand changes to the Earth's surface in space and time. While certain fundamental principles of geology are explained in class and through reading assignments, the emphasis is on how *you* can be a natural scientist with a background of nothing but high school math and physics, a keen observational sense, a knack for spatial and quantitative analysis, and a careful and precise way with words.

*Co-taught with Prof. Adam Maloof.*

## PAPERS

*The following is a chronological list of peer-reviewed papers published by major research journals (on papers that appeared since my joining Princeton, asterisks denote Princeton graduate students, circles denote Princeton postdocs, daggers visiting or collaborating graduate students or postdocs, and dollar signs undergraduates; superscripts P for tenured Princeton faculty and T for tenured faculty at other institutions). Links to the journal pages are provided; a direct link to the published papers in PDF form is <http://geoweb.princeton.edu/people/simons/reprints.html>. The Bib<sub>T</sub>E<sub>X</sub> archive is at <http://geoweb.princeton.edu/people/simons/fjspubs.html>.*

- 2023 Alexander L. Burky, Jessica C.E. Irving & **F. J. Simons**,  
The mantle transition zone beneath eastern North America: receiver functions & tomographic velocity models  
*Phys. Earth. Planet. Int.*, 12 pp, *in revision*
- Zhendong Zhang, Jessica C. E. Irving, **F. J. Simons** & Tariq Alkhalifah,  
Seismic evidence for a 1000-km mantle discontinuity below the Pacific,  
*Nature Commun.*, 21+15 pp, *in revision*
- 2022 Arthur P. Guillaumin, Adam M. Sykulski, Sofia C. Olhede & **F. J. Simons**,  
The debiased spatial Whittle likelihood,  
*J. R. Stat. Soc., Ser. B*, 32+35 pp, <http://doi.org/10.1111/rssb.12539>

- 2022 Qiancheng Liu, Umair bin Waheed, Dmitry Borisov, **F. J. Simons**, Fuchun Gao & Paul Williamson,  
Full-waveform centroid moment tensor inversion of passive seismic data acquired at the reservoir scale,  
*Geoph. J. Int.*, 26+3 pp, <http://doi.org/10.1093/gji/ggac137>
- Sirawich Pipatprathanporn & **F. J. Simons**,  
One year of sound recorded by a MERMAID float in the Pacific: Hydroacoustic earthquake signals and  
infrasonic ambient noise,  
*Geoph. J. Int.*, 20+214 pp, <http://doi.org/10.1093/gji/ggab296>
- Joel D. Simon, **F. J. Simons** & Jessica C.E. Irving,  
Recording earthquakes for tomographic imaging of the mantle beneath the South Pacific by autonomous  
MERMAID floats,  
*Geoph. J. Int.*, 24+14 pp, <http://doi.org/10.1093/gji/ggab271>
- 2021 Alexander L. Burky, Jessica C.E. Irving & **F. J. Simons**,  
Instrument response removal and the 2020  $M_{Lg}$  3.1 Marlboro, New Jersey, earthquake,  
*Seismol. Res. Lett.*, 10 pp, <http://doi.org/10.1785/0220210118>
- Joel D. Simon, **F. J. Simons** & Jessica C.E. Irving,  
A MERMAID miscellany: Seismoacoustic signals beyond the  $P$  wave,  
*Seismol. Res. Lett.*, 11 pp, <http://doi.org/10.1785/0220210052>
- F. J. Simons**, Joel D. Simon & Sirawich Pipatprathanporn,  
Twenty-thousand leagues under the sea: Recording earthquakes with autonomous floats,  
*Acoustics Today*, 10 pp, <http://doi.org/10.1121/AT.2021.17.2.42>
- Lucia Gualtieri, Etienne Bachmann, **F. J. Simons** & Jeroen Tromp,  
Generation of secondary microseism Love waves: effects of bathymetry, 3-D structure, & source seasonality,  
*Geoph. J. Int.*, 28+8 pp, <http://doi.org/10.1093/gji/ggab095>
- Alexander L. Burky, Jessica C.E. Irving & **F. J. Simons**,  
Mantle transition zone receiver functions for Bermuda: Automation, quality control, and interpretation,  
*J. Geoph. Res.*, 18+6 pp, <http://doi.org/10.1029/2020JB020177>
- 2020 Georg S. Reuber & **F. J. Simons**,  
Multi-physics adjoint modeling of Earth structure: Combining gravimetric, seismic & geodynamic inversions,  
*Int. J. Geomath.*, 38 pp, <http://doi.org/10.1007/s13137-020-00166-8>
- Lucia Gualtieri, Etienne Bachmann, **F. J. Simons** & Jeroen Tromp,  
The origin of secondary microseism Love waves,  
*Proc. Natl. Acad. Sc.*, 8+15 pp, <http://doi.org/10.1073/pnas.2013806117>
- Joel D. Simon, **F. J. Simons** & Guust Nolet,  
Multiscale estimation of event arrival times and their uncertainties in hydroacoustic records from autonomous  
oceanic floats,  
*B. Seismol. Soc. Am.*, 28+4 pp, <http://doi.org/10.1785/0120190173>
- Yanhua O. Yuan, Ebru Bozdağ, Caio Ciardelli, Fuchun Gao & **F. J. Simons**,  
The exponentiated phase measurement, & objective-function hybridization for adjoint waveform tomography,  
*Geoph. J. Int.*, 20 pp, <http://doi.org/10.1093/gji/ggaa063>

- 2019 Eli Galanti, Yohai Kaspi, **F. J. Simons**, Daniele Durante, Marzia Parisi and Scott J. Bolton,  
Determining the depth of Jupiter's Great Red Spot with Juno: A Slepian approach,  
*Astroph. J. Lett.*, 7 pp, <http://doi.org/10.3847/2041-8213/ab1086>
- Michael Bevis, Christopher Harig, Shfaqat A. Khan, Abel Brown, **F. J. Simons**, Michael Willis, Xavier Fettweis, Michiel R. van den Broeke, Finn Bo Madsen, Eric Kendrick, Dana J. Caccamise II, Tonie van Dam, Per Knudsen & Thomas Nylen,  
Accelerating changes in ice mass within Greenland, and the ice sheet's sensitivity to atmospheric forcing,  
*Proc. Natl. Acad. Sc.*, 6+22 pp, <http://doi.org/10.1073/pnas.1806562116>
- Guust Nolet, Yann Hello, Suzan van der Lee, Sébastien Bonnieux, Mario Ruiz, Nelson Pazmino, Anne Deschamps, Marc Regnier, Yvonne Font, Yongshun J. Chen & **F. J. Simons**,  
Imaging the Galápagos mantle plume with an unconventional application of floating seismometers,  
*Sci. Rep.*, 12+6 pp, <http://doi.org/10.1038/s41598-018-36835-w>
- 2018 Alyson K. Beveridge<sup>§</sup>, Christopher Harig & **F. J. Simons**,  
The changing mass of glaciers on the Tibetan Plateau, 2002–2016, using time-variable gravity from the GRACE satellite mission,  
*J. Geodetic Sci.*, 15 pp, <http://doi.org/10.1515/jogs-2018-0010>
- Willi Freeden, Volker Michel & **F. J. Simons**,  
Spherical-harmonics based special function systems and constructive approximation methods,  
*Handbook of Mathematical Geodesy*, edited by W. Freeden & M. Z. Nashed,  
Springer Verlag, 67 pp, [http://doi.org/10.1007/978-3-319-57181-2\\_12](http://doi.org/10.1007/978-3-319-57181-2_12)
- 2017 Volker Michel & **F. J. Simons**,  
A general approach to regularizing inverse problems with regional data using Slepian wavelets,  
*Inv. Prob.*, 28 pp, <http://doi.org/10.1088/1361-6420/aa9909>
- Alain Plattner & **F. J. Simons**,  
Internal and external potential-field estimation from regional vector data at varying satellite altitude,  
*Geoph. J. Int.*, 32 pp, <http://doi.org/10.1093/gji/ggx244>
- 2016 Yanhua O. Yuan\*, **F. J. Simons** & Jeroen Tromp,  
Double-difference adjoint seismic tomography,  
*Geoph. J. Int.*, 20 pp, <http://doi.org/10.1093/gji/ggw233>
- Christopher Harig<sup>°</sup> & **F. J. Simons**,  
Ice mass loss in Greenland, the Gulf of Alaska and Canadian Archipelago: Seasonal cycles and decadal trends,  
*Geoph. Res. Lett.*, 10 pp, <http://doi.org/10.1002/2016GL067759>
- 2015 Alain Plattner & **F. J. Simons**,  
High-resolution local magnetic field models for the Martian South Pole from Mars Global Surveyor data,  
*J. Geoph. Res.*, 24 pp, <http://doi.org/10.1002/2015JE004869>
- Yanhua O. Yuan\*, **F. J. Simons** & Ebru Bozdağ,  
Multiscale adjoint waveform tomography for surface and body waves,  
*Geophysics*, 22 pp, <http://doi.org/10.1190/GEO2014-0461.1>



- 2015 Alexey Sukhovich, Sébastien Bonnieux, Yann Hello, Jean-Olivier Irisson, **F. J. Simons** & Guust Nolet, Seismic monitoring in the oceans using autonomous floats, *Nature Commun.*, 6 pp, <http://doi.org/10.1038/ncomms9027>
- Lara M. Kalnins, **F. J. Simons**, Jon F. Kirby, Dong V. Wang & Sofia C. Olhede, On the robustness of estimates of mechanical anisotropy in the continental lithosphere: A North American case study and global reanalysis, *Earth & Planet. Sc. Lett.*, 9+46 pp, <http://doi.org/10.1016/j.epsl.2015.02.041>
- Christopher Harig<sup>o</sup> & **F. J. Simons**, Accelerated West Antarctic ice mass loss continues to outpace East Antarctic gains, *Earth & Planet. Sc. Lett.*, 8+7 pp, <http://doi.org/10.1016/j.epsl.2015.01.029>
- Alain Plattner<sup>o</sup> & **F. J. Simons**, Potential-field estimation using scalar and vector Slepian functions at satellite altitude, *Handbook of Geomathematics (2nd edition)*, edited by W. Freeden, M. Z. Nashed & T. Sonar, Springer Verlag, 47 pp, [http://doi.org/10.1007/978-3-642-54551-1\\_64](http://doi.org/10.1007/978-3-642-54551-1_64)
- F. J. Simons** & Alain Plattner<sup>o</sup>, Scalar and vector Slepian functions, spherical signal estimation and spectral analysis, *Handbook of Geomathematics (2nd edition)*, edited by W. Freeden, M. Z. Nashed & T. Sonar, Springer Verlag, 46 pp, [http://doi.org/10.1007/978-3-642-54551-1\\_30](http://doi.org/10.1007/978-3-642-54551-1_30)
- 2014 Yanhua O. Yuan\* & **F. J. Simons**, Multiscale adjoint waveform-difference tomography using wavelets, *Geophysics*, 17 pp, <http://doi.org/10.1190/GEO2013-0383.1>
- Alain Plattner<sup>o</sup> & **F. J. Simons**, Spatiospectral concentration of vector fields on a sphere, *Appl. Comput. Harm. Anal.*, 23 pp, <http://doi.org/10.1016/j.acha.2012.12.001>
- 2013 Alain Plattner<sup>o</sup> & **F. J. Simons**, A spatio-spectral localization approach for analyzing and representing vector-valued functions on spherical surfaces, *Proc. SPIE*, Invited Paper, 15 pp, <http://doi.org/10.1117/12.2024703>
- Jean Charléty<sup>†</sup>, Sergey Voronin\*, G. Nolet<sup>T</sup>, Ignace Loris<sup>T</sup>, **F. J. Simons**, Karin Sigloch & I. C. Daubechies<sup>T</sup>, Global seismic tomography with sparsity constraints: Comparison with smoothing & damping regularization, *J. Geoph. Res.*, 13 pp, <http://doi.org/10.1002/jgrb.50326>
- F. J. Simons** & Sofia C. Olhede<sup>T</sup>, Maximum-likelihood estimation of lithospheric flexural rigidity, initial-loading fraction, and load correlation, under isotropy, *Geoph. J. Int.*, 43 pp, <http://doi.org/10.1093/gji/ggt056>
- R. E. Kopp, **F. J. Simons**, J. X. Mitrovica<sup>T</sup>, A. C. Maloof<sup>P</sup> & M. Oppenheimer<sup>P</sup>, A probabilistic assessment of sea level variations within the last interglacial stage, *Geoph. J. Int.*, 6 pp, <http://doi.org/10.1093/gji/ggt029>
- Ciarán D. Beggan, Jarno Saarimäki<sup>†</sup>, Kathy Whaler<sup>T</sup> & **F. J. Simons**, Spectral and spatial decomposition of lithospheric magnetic field models using spherical Slepian functions, *Geoph. J. Int.*, 13 pp, <http://doi.org/10.1093/gji/ggs122>

- 2012 Christopher Harig<sup>o</sup> & **F. J. Simons**,  
Mapping Greenland's mass loss in space and time,  
*Proc. Natl. Acad. Sc.*, 4+9 pp, <http://doi.org/10.1073/pnas.1206785109>
- Kevin W. Lewis<sup>o</sup> & **F. J. Simons**,  
Local spectral variability and the origin of the Martian crustal magnetic field,  
*Geoph. Res. Lett.*, 6+4 pp, <http://doi.org/10.1029/2012GL052708>
- Lei Wang<sup>†</sup>, C. K. Shum<sup>T</sup>, **F. J. Simons**, Andrés Tassara, Kamil Erkan<sup>†</sup>, Christopher Jekeli<sup>T</sup>, Alexander Braun, Chungyen Kuo, Hyongki Lee & Dah-Ning Yuan,  
Coseismic slip of the 2010 Mw 8.8 Great Maule, Chile, earthquake quantified by the inversion of GRACE observations,  
*Earth & Planet. Sc. Lett.*, 13+3 pp, <http://doi.org/10.1016/j.epsl.2012.04.044>
- Lei Wang<sup>†</sup>, C. K. Shum<sup>T</sup>, **F. J. Simons**, Byron D. Tapley<sup>T</sup> & Chunli Dai<sup>†</sup>,  
Coseismic and postseismic deformation of the 2011 Tohoku-Oki earthquake constrained by GRACE gravimetry,  
*Geoph. Res. Lett.*, 6+13 pp, <http://doi.org/10.1029/2012GL051104>
- D. Cornelis Slobbe<sup>†</sup>, **F. J. Simons** & Roland Klees<sup>T</sup>,  
The spherical Slepian basis as a means to obtain spectral consistency between mean sea level and the geoid,  
*J. Geodesy*, 20 pp, <http://doi.org/10.1007/s00190-012-0543-x>
- 2011 **F. J. Simons**, Ignace Loris, Eugene Brevdo\* & Ingrid C. Daubechies<sup>P</sup>,  
Wavelets and wavelet-like transforms on the sphere and their application to geophysical data inversion,  
*Proc. SPIE*, Invited Paper, 15 pp, <http://doi.org/10.1117/12.892285>
- F. J. Simons**, Ignace Loris, Guust Nolet<sup>P</sup>, Ingrid C. Daubechies<sup>P</sup>, Sergey Voronin\*, J. Stephen Judd, Philip A. Vetter\*, Jean Charléty<sup>†</sup> & Cédric Vonesch<sup>o</sup>,  
Solving or resolving global tomographic models with spherical wavelets, and the scale and sparsity of seismic heterogeneity,  
*Geoph. J. Int.*, 20 pp, <http://doi.org/10.1111/j.1365-246X.2011.05190.x>
- A. Sukhovich<sup>†</sup>, J.-O. Irisson, **F. J. Simons**, A. Ogé, Y. M. Hello, A. Deschamps & G. Nolet<sup>T</sup>,  
Automatic discrimination of underwater acoustic signals generated by teleseismic P-waves: A probabilistic approach,  
*Geoph. Res. Lett.*, 5+3 pp, <http://doi.org/10.1029/2011GL048474>
- F. J. Simons** & Dong V. Wang\*,  
Spatiospectral concentration in the Cartesian plane,  
*Int. J. Geomath.*, 36 pp, <http://doi.org/10.1007/s13137-011-0016-z>
- 2010 **F. J. Simons**,  
Slepian functions and their use in signal estimation and spectral analysis,  
*Handbook of Geomathematics*, edited by W. Freeden, M. Z. Nashed & T. Sonar,  
Springer Verlag, 34 pp, [http://doi.org/10.1007/978-3-642-01546-5\\_30](http://doi.org/10.1007/978-3-642-01546-5_30)
- Adam C. Maloof, Catherine V. Rose\*, Claire C. Calmet<sup>†</sup>, Robert Beach, Brad M. Samuels, Douglas H. Erwin, Gerald R. Poirier, Nan Yao & **F. J. Simons**,  
Possible animal-body fossils in pre-Marinoan limestones from South Australia,  
*Nature Geosci.*, 7+5 pp, <http://doi.org/10.1038/ngeo934>

- 2010 Christopher Harig<sup>†</sup>, Shijie Zhong<sup>T</sup> & **F. J. Simons**,  
Constraints on upper-mantle viscosity from the flow-induced pressure gradient across the Australian continental keel,  
*Geochem., Geoph., Geosys.*, 21 pp, <http://doi.org/10.1029/2010GC003038>
- 2009 R. E. Kopp<sup>o</sup>, **F. J. Simons**, J. X. Mitrovica<sup>T</sup>, A. C. Maloof & M. Oppenheimer<sup>P</sup>,  
Probabilistic assessment of sea level during the last interglacial stage,  
*Nature*, 6+33 pp, <http://doi.org/10.1038/nature08686>
- F. J. Simons**, Jessica C. Hawthorne\* & Ciarán D. Beggan<sup>†</sup>,  
Efficient analysis and representation of geophysical processes using localized spherical basis functions,  
*Proc. SPIE*, Invited Paper, 15 pp, <http://doi.org/10.1117/12.825730>
- F. J. Simons**, G. Nolet<sup>P</sup>, P. Georgief, J. M. Babcock, L. A. Regier & R. E. Davis<sup>P</sup>,  
On the potential of recording earthquakes for global seismic tomography by low-cost autonomous instruments in the oceans,  
*J. Geoph. Res.*, 16 pp, <http://doi.org/10.1029/2008JB006088>
- 2008 F. A. Dahlen<sup>P</sup> & **F. J. Simons**,  
Spectral estimation on a sphere in geophysics and cosmology,  
*Geoph. J. Int.*, 34 pp, <http://doi.org/10.1111/j.1365-246X.2008.03854.x>
- Jeffrey J. McGuire, **F. J. Simons** & John A. Collins,  
Analysis of seafloor seismograms of the 2003 Tokachi-Oki earthquake sequence for earthquake early warning,  
*Geoph. Res. Lett.*, 5 pp, <http://doi.org/10.1029/2008GL033986>
- Abel Amirbekyan<sup>†</sup>, Volker Michel & **F. J. Simons**,  
Parametrizing surface wave tomographic models with harmonic spherical splines,  
*Geoph. J. Int.*, 12 pp, <http://doi.org/10.1111/j.1365-246X.2008.03809.x>
- Shin-Chan Han & **F. J. Simons**,  
Spatiospectral localization of global geopotential fields from the Gravity Recovery and Climate Experiment (GRACE) reveals the coseismic gravity change owing to the 2004 Sumatra-Andaman earthquake,  
*J. Geoph. Res.*, 14 pp, <http://doi.org/10.1029/2007JB004927>
- 2007 Mark A. Wieczorek & **F. J. Simons**,  
Minimum-variance multitaper spectral estimation on the sphere,  
*J. Fourier Anal. Appl.*, Invited Paper, 28 pp, <http://doi.org/10.1007/s00041-006-6904-1>
- F. J. Simons** & F. A. Dahlen<sup>P</sup>,  
A spatio-spectral localization approach to estimating potential fields on the surface of a sphere from noisy, incomplete data taken at satellite altitudes,  
*Proc. SPIE*, Invited Paper, 15 pp, <http://doi.org/10.1117/12.732406>
- 2006 **F. J. Simons**, Ben D. E. Dando<sup>s</sup> & Richard M. Allen,  
Automatic detection and rapid determination of earthquake magnitude by wavelet multiscale analysis of the primary arrival,  
*Earth & Planet. Sc. Lett.*, 10 pp, <http://doi.org/10.1016/j.epsl.2006.07.039>

- 2006 **F. J. Simons** & F. A. Dahlen,  
Spherical Slepian functions and the polar gap in geodesy,  
*Geoph. J. Int.*, 23 pp, <http://doi.org/10.1111/j.1365-246X.2006.03065.x>
- F. J. Simons**, F. A. Dahlen & Mark A. Wieczorek,  
Spatiospectral concentration on a sphere,  
*SIAM Review*, 33 pp, <http://doi.org/10.1137/S0036144504445765>
- 2005 Mark A. Wieczorek & **F. J. Simons**,  
Localized spectral analysis on the sphere,  
*Geoph. J. Int.*, 21 pp, <http://doi.org/10.1111/j.1365-246X.2005.02687.x>
- Saskia Goes, **F. J. Simons** & Kazunori Yoshizawa,  
Seismic constraints on the temperature of the Australian uppermost mantle,  
*Earth & Planet. Sc. Lett.*, 11 pp, <http://doi.org/10.1016/j.epsl.2005.05.001>
- 2003 **F. J. Simons** & Rob D. van der Hilst,  
Seismic and mechanical anisotropy and the past and present deformation of the Australian lithosphere,  
*Earth & Planet. Sc. Lett.*, 16+2 pp, [http://doi.org/10.1016/S0012-821X\(03\)00198-5](http://doi.org/10.1016/S0012-821X(03)00198-5)
- F. J. Simons**, Rob D. van der Hilst & Maria T. Zuber,  
Spatiospectral localization of isostatic coherence anisotropy in Australia and its relation to seismic anisotropy:  
Implications for lithospheric deformation,  
*J. Geoph. Res.*, 21 pp, <http://doi.org/10.1029/2001JB000704>
- 2002 **F. J. Simons**, Rob D. van der Hilst, Jean-Paul Montagner & Alet Zielhuis,  
Multimode Rayleigh wave inversion for heterogeneity and azimuthal anisotropy of the Australian upper  
mantle,  
*Geoph. J. Int.*, 17 pp, <http://doi.org/10.1046/j.1365-246X.2002.01787.x>
- F. J. Simons** & Rob D. van der Hilst,  
Age-dependent seismic thickness and mechanical strength of the Australian lithosphere,  
*Geoph. Res. Lett.*, 4 pp, <http://doi.org/10.1029/2002GL014962>
- 2000 **F. J. Simons**, Maria T. Zuber & Jun Korenaga,  
Isostatic response of the Australian lithosphere: Estimation of effective elastic thickness and anisotropy using  
multitaper spectral analysis,  
*J. Geoph. Res.*, 22 pp, <http://doi.org/10.1029/2000JB900157>
- 1999 **F. J. Simons**, Alet Zielhuis & Rob D. van der Hilst,  
The deep structure of the Australian continent from surface-wave tomography,  
*Lithos*, 27 pp, [http://doi.org/10.1016/S0024-4937\(99\)00041-9](http://doi.org/10.1016/S0024-4937(99)00041-9)
- 1997 **F. J. Simons**, Frédéric Verhelst & Rudy Swennen,  
Quantitative characterization of coal by means of microfocal X-ray Computed Microtomography (CMT) and  
Color Image Analysis (CIA),  
*Intern. J. Coal Geol.*, 20 pp, [http://doi.org/10.1016/S0166-5162\(97\)00011-6](http://doi.org/10.1016/S0166-5162(97)00011-6)

OTHER *A chronological list of conference papers, white papers, patents, book reviews, and “forum” pieces:*

- 2022 Zhaolun Liu, Jürgen Hoffmann, **F. J. Simons** & Jeroen Tromp,  
3-D acoustic-elastic full-waveform inversion and migration of marine VSP data from Norway,  
*SEG Tech. Prog. Expanded Abstracts*, 5 pp, <http://doi.org/10.1190/image2022-3750936.1>
- 2021 **F. J. Simons**,  
Waarde Redactie | Open Brief,  
*OLVC Alumni for Alumni*, 5 pp
- Zhaolun Liu, Jürgen Hoffmann, **F. J. Simons** & Jeroen Tromp,  
Elastic full waveform inversion of VSP data from a complex anticline in northern Iraq,  
*SEG Tech. Prog. Expanded Abstracts*, 5 pp, <http://doi.org/10.1190/segam2021-3582871.1>
- Fan V. Wu, Dmitry Borisov, **F. J. Simons** & Paul Williamson,  
Waveform inversion for shear velocity and attenuation via the spectral-element adjoint method,  
*SEG Tech. Prog. Expanded Abstracts*, 5 pp, <http://doi.org/10.1190/segam2021-3581151.1>
- 2019 Vladimir Kazei, Oleg Ovcharenko, Tariq Alkhalifah & **F. J. Simons**,  
Realistically textured random velocity models for deep learning applications,  
*EAGE Conf. Proc. 81st Conf. Exhib.*, 5 pp, <http://doi.org/10.3997/2214-4609.201901340>
- Dmitry Borisov, Fuchun Gao, Paul Williamson, **F. J. Simons** & J. Tromp,  
Robust surface-wave full-waveform inversion,  
*SEG Tech. Prog. Expanded Abstracts*, 5 pp, <http://doi.org/10.1190/segam2019-3215047.1>
- F. J. Simons**,  
*Waves and Rays in Seismology: Answers to Unasked Questions*, by M. A. Slawinski,  
*The Leading Edge*, Book Review, 1 p, <http://doi.org/10.1190/tle38050406.1>
- 2018 **F. J. Simons**,  
*On Foundations of Seismology: Bringing Idealizations Down to Earth*, by J. R. Brown & M. A. Slawinski,  
*The Leading Edge*, Book Review, 1 p, <http://doi.org/10.1190/tle37030232.1>
- 2017 Alain Plattner, Gregor J. Golabek & **F. J. Simons**,  
A spectral view of the Terra Sirenum/Cimmeria crustal magnetic field,  
*48th Lunar and Planetary Science Conference*, Abstract No. 1627, 2 pp
- Kevin W. Lewis, **F. J. Simons**, Sofia C. Olhede & Gabe L. Eggers,  
Maximum-likelihood analysis of planetary roughness,  
*48th Lunar and Planetary Science Conference*, Abstract No. 2608, 2 pp
- 2016 **F. J. Simons** & Musa S. D. Manzi,  
Musa Sipiwe Doctor Manzi receives 2016 Africa Award for Research Excellence in Earth Science,  
*Eos Trans. AGU*, 1 p., <http://doi.org/10.1029/2017E0064523>
- Dmitry Borisov, R. Modrak, H. Rusmanugroho, Yanhua O. Yuan\*, Fuchun Gao, **F. J. Simons** & J. Tromp,  
Spectral-element based 3D elastic full-waveform inversion of surface waves in the presence of complex topography using an envelope-based misfit function,  
*SEG Tech. Prog. Expanded Abstracts*, 5 pp, <http://doi.org/10.1190/segam2016-13843759.1>

- 2015 Alain Plattner & **F. J. Simons**,  
Mars' heterogeneous South Polar magnetic field revealed using altitude vector Slepian functions,  
*46th Lunar and Planetary Science Conference*, Abstract No. 1794, 2 pp
- Christopher Harig<sup>o</sup>, Kevin W. Lewis<sup>o</sup>, Alain Plattner<sup>o</sup> & **F. J. Simons**,  
A suite of software analyzes data on the sphere,  
*Eos Trans. AGU*, 5 pp, <http://doi.org/10.1029/2015EO025851>
- 2014 Yanhua O. Yuan\*, **F. J. Simons** & Ebru Bozdağ,  
Full-waveform adjoint tomography in a multiscale perspective,  
*SEG Tech. Prog. Expanded Abstracts*, 6 pp, <http://doi.org/10.1190/segam2014-0816.1>
- 2013 **F. J. Simons** & Harold T. Vincent,  
Son-O-Mermaid: Marine instrumentation for geophysical measurements in the oceans,  
*United States Provisional Patent Application*, 61911637 (expired)
- Kevin W. Lewis<sup>o</sup>, **F. J. Simons** & Gabe L. Eggers<sup>s</sup>,  
Maximum-likelihood estimation of lithospheric thickness on Venus,  
*44th Lunar and Planetary Science Conference*, Abstract No. 2612, 2 pp
- 2012 L. Ridgway Scott<sup>T</sup> & twenty-six alphabetized others,  
Fostering interactions between the geosciences & mathematics, statistics, and computer science,  
*University of Chicago Department of Computer Science*, Technical Report, TR-2012-02, 32 pp
- Alain Plattner<sup>o</sup>, **F. J. Simons** & Liying Wei<sup>†</sup>,  
Analysis of real vector fields on the sphere using Slepian functions,  
*IEEE Stat. Signal Proc. Workshop (SSP)*, 4 pp, <http://doi.org/10.1109/SSP.2012.6319659>
- 2011 Kevin W. Lewis<sup>o</sup> & **F. J. Simons**,  
Spatial variability of the Martian crustal magnetic field,  
*42nd Lunar and Planetary Science Conference*, Abstract No. 2621, 2 pp
- 2010 **F. J. Simons**,  
Turning freshmen into scientists with field research and quantitative analysis of geoscientific data,  
*MATLAB Digest | Academic Edition*, October 2010, 1–3
- 2009 **F. J. Simons**,  
Afloat on a sea of noise,  
*NERC Magazine Planet Earth*, 2009 (Winter), 28–29
- 2006 Laurent G. J. Montési, Giulio di Toro, **F. J. Simons** & five others,  
Young scientists focus on the dynamics of the lithosphere,  
*Eos Trans. AGU*, 2 pp, <http://doi.org/10.1029/2006EO440005>
- F. J. Simons**, Guust Nolet, Jeff M. Babcock, Russ E. Davis & John A. Orcutt,  
A future for drifting seismic networks,  
*Eos Trans. AGU*, 2 pp, <http://doi.org/10.1029/2006EO310002>
- Malcolm S. Sambridge, Caroline Beghein, **F. J. Simons** & Roel Snieder,  
How do we understand and visualize uncertainty?  
*The Leading Edge*, 5 pp, <http://doi.org/10.1190/1.2202654>

- 2005 **F. J. Simons**, Thorsten W. Becker, James B. Kellogg & five others,  
MYRES: A program to unite young solid Earth researchers,  
*Eos Trans. AGU*, 2 pp, <http://doi.org/10.1029/2005EO050005>
- 2004 **F. J. Simons**, Thorsten W. Becker, James B. Kellogg & six others,  
Young solid Earth researchers of the world unite!  
*Eos Trans. AGU*, 2 pp, <http://doi.org/10.1029/2004EO160011>

## MEDIA

*Interviews, personal profiles, media comments, passing mentions, audiovisual material:*

Through the olive trees: My reconciliation with science in southern Italy, by Julia Stern, *Nassau Weekly*, 11/06/2022

Students monitor campus noise in seismic silence, by Carolina Cuellar, *Eos*, 12/17/2020, <http://doi.org/10.1029/2020EO152734>

My Freshman Seminar, by Patrice McGivney, *Princeton University Undergraduate Admission Blog*, 11/6/2020

Ocean acoustics confirm rising sea temperatures, by Shi En Kim, *Temblor*, 09/21/2020, <http://doi.org/10.32858/temblor.118>

Undersea earthquakes may help us take the ocean's temperature, by Alex Fox, *Smithsonian Magazine*, 09/21/2020

Ocean's hidden heat measured with earthquake sounds, by Paul Voosen, *Science*, 09/17/2020, <http://doi.org/10.1126/science.abe8435>

Underwater earthquakes' sound waves reveal changes in ocean warming, by Carolyn Gramling, *ScienceNews*, 09/17/2020

Earthquake sounds could reveal how quickly the ocean is warming, by Stephe Pappas, *Sci. Am.*, 09/17/2020

3.1 magnitude earthquake reported in Monmouth County, N.J., by Trish Hartman, *6 ABC Action News*, 09/09/2020 (web & television)

Campus seismometers illustrate compliance with the stay-at-home order, by Liz Fuller-Wright, *News@Princeton*, 07/07/2020

New environmental studies facilities to accompany U.'s renovation of Guyot for COS, by Katie Tam, *The Daily Princetonian*, 07/21/2019

Professorship and Mentorship: An interview with Frederik Simons, by Alec Getraer, *Princeton Correspondents on Undergraduate Research*, 02/18/2019

Minor earthquake tremors felt on Princeton campus, by Daniel Day, *News@Princeton*, 11/30/2017

Minor earthquake tremors felt in U. buildings, by Allie Spensley and Benjamin Ball, *The Daily Princetonian*, 11/30/2017

FRS 124: State of the Earth, Shifts and Cycles, by Yang Shao, *The Daily Princetonian*, 11/30/2016

Fellows voorgedragen door het Departement Aard- en Omgevingswetenschappen, [Wet.kuleuven.be/fellows/geologie.html](http://Wet.kuleuven.be/fellows/geologie.html), 10/21/2014 (web, in Dutch)

Size doesn't matter: a sampling of Princeton's smallest departments, by Margot Yale, *The Daily Princetonian*, 04/10/2014

Searching for bones, finding wisdom within the earth, by Morgan Kelly and D. Alio, *News@Princeton*, 12/02/2013 (web) and <http://vimeo.com/79706110> (video)

Double Brook Farm gets Ivy credentials, by Robin McConaughy, [Blog.doublebrookfarm.com](http://Blog.doublebrookfarm.com), 9/10/2013 (web)



The daily grind: Princeton lab uncovers the planetary past hidden in rocks, by M. Kelly,  
*News@Princeton*, 8/15/2013 (web)

Niets moet, (bijna) alles kan. Hoe is het nu met: Frederik Simons,  
*Science@Leuven*, 2013, **11** (41), 19–21 (in Dutch)

A ‘City of Gold’ unearths new educational opportunities, by Jamie Saxon,  
*News@Princeton*, 11/29/2012 (web)

On loyalty and legacy, by Tara Thean,  
*The Daily Princetonian*, 05/14/2010

This is how it works, by Simon Taranto,  
*Cornell Daily Sun*, 10/29/2009

Seismic stations could help catch tsunami waves, by Katharine Sanderson,  
*Nature*, 02/25/2008, <http://doi.org/10.1038/news.2008.618>

Around the world in seven days of Fall Break, by Michelle Wu,  
*The Daily Princetonian*, 12/10/2007

Iedereen geoloog! Hoe gaat het nu met... Frederik Simons,  
*Science@Leuven*, 2005, **3** (8), 7–9 (in Dutch)

Neutrinos to spy on planet’s core,  
*New Scientist*, 2005, **185** (2488)

Interview, Television broadcast,  
*Discovery Channel*, WagTV, 2005

On “*The origin of secondary microseism Love waves*”:

Solving the century-old mystery of background Love waves, by Alex Lopatka,  
*Physics Today*, 12/09/2020, <http://doi.org/10.1063/PT.6.1.20201209a>

Undersea origins of Earth’s mysterious Love waves, by Josie Garthwaite,  
*Stanford | News*, 11/13/2020 (web)

On “*Imaging the Galápagos mantle plume with an unconventional application of floating seismometers*”, “*Seismic monitoring in the oceans by autonomous floats*”, “*On the potential of recording earthquakes for global seismic tomography by low-cost autonomous instruments in the oceans*”, and “*A future for drifting seismic networks*”, and more generally, on MERMAID and Son-O-Mermaid:

The fleet of underwater drones probing Earth’s interior, by Teresa Carey,  
*Freethink.com*, 01/24/2020 (web)

Fleet of robotic MERMAIDs to peer what’s under Earth’s crust, by Kristy Hamilton,  
*IFLScience*, 12/06/2019 (web)

Move over Jules Verne: Scientists deploy ocean floats to peer into Earth’s interior,  
*Phys.org*, 12/06/2019 (web)

Deploying seismometers where they’re needed most: Underwater, by Alex Lopatka,  
*Physics Today*, 05/24/2019, <http://doi.org/10.1063/PT.6.1.20190524a>

These ocean floats can hear earthquakes, revealing mysterious structures deep inside Earth, by Erik Stokstad,  
*Science*, 04/17/2019, <http://doi.org/10.1126/science.aax7339>

Monitoring marine earthquakes with MERMAIDs, by Sue Himmelstein,  
*Electronics360*, 02/10/2019

Scientists use ‘MERMAIDS’ floating in the ocean to scan interior of the Earth,  
by Kanika Gupta,  
*Tech Times*, 02/09/2019

MERMAIDs dive a mile underwater to detect incoming earthquakes, by J. Delaosa,  
*EEWorld*, 02/07/2019 (web)

New tech ‘MERMAIDS’ can detect earthquakes before they wreak destruction,  
by Robby Berman,  
[www.bigthink.com](http://www.bigthink.com), 02/06/2019 (web)

MERMAIDs spy huge umbrella-shaped heat source beneath the Galápagos,  
by Robin Andrews,  
*Forbes*, 02/06/2019

The first artificial network of ocean seismometers will allow you to capture the sounds of distant earthquakes, by Dmitry Mazalevsky,  
*Naked Science*, 02/04/2019 (in Russian)

MERMAIDs reveal secrets from below the ocean floor, by Liz Fuller-Wright,  
*News@Princeton*, 02/04/2019 (web)

U. professors partner to create MERMAIDs, study seismic activity, by Nouran Ibrahim,  
*The Daily Princetonian*, 02/14/2019

EarthScope-Oceans: A seismic shift in the sea,  
*IRIS Newsletter*, June 2017

Son-O-Mermaid holds promise for tracking oceanic earthquakes, by Daniel Kelly,  
*Environmental Monitor*, Fall 2016, 59

A tale about MERMAIDs, by Kathrin Spieker,  
*Seismology Division of the European Geosciences Union*, 06/24/2016 (web)

Catching a (seismic) wave: Simons measures earthquakes in the oceans, by J. Schieltz, *News@Princeton*, 06/20/2016 (web) and <http://vimeo.com/169542456> (video)

Son-O-Mermaid takes to the waters, by Catherine Zandonella, *Discovery – Research at Princeton*, 2015, 3

Ocean robots listen for earthquake echoes, by Eric Hand, *Science*, 09/04/2015, <http://doi.org/10.1126/science.349.6252.1033>

Global seismic network takes to the seas, by Nicola Jones, *Nature*, 03/12/2014, <http://doi.org/10.1038/507151a>

Wenn Meerjungfrauen Erdbeben detektieren, by Dagmar Röhrlich, *Deutschlandfunk.de*, 12/12/2013 (web & radio, in German)

Floating seismic devices peer deep beneath ocean floor, by Tia Ghose, *LiveScience.com*, 12/10/2013 (web)

Mermaids exist! And they are seismically sensitive, by Christina Reed, *Discovery News*, 12/09/2013 (web)

Secrets of the Southern Ocean, by Tara Thean, *Discovery – Research at Princeton*, 2013, 18–22

Des “sirènes” au large de la Réunion, by Fiorenza Gracci, *La Recherche*, 2012, **465**, 32 (in French)

Grâce à MERMAID, les enregistrements sismiques dans les domaines océaniques lointains seront désormais possibles, *Insu.cnrs.fr*, 11/04/2011 (in French)

Robot ‘Mermaids’ swim seas to detect seismic waves, by Charles Choi, *LiveScience.com*, 10/13/2011 (web)

MERMAIDs detect distant earthquakes, by Naomi Lubick, *Nature*, 10/07/2011, <http://doi.org/10.1038/news.2011.583>

Afloat in [on] a sea of noise, *Planet Earth*, 2009 (Winter), 28–29

Energy efficient MERMAID (Mobile Earthquake Recorder in Marine Areas), *Green Data Center Blog*, [www.greenm3.com](http://www.greenm3.com), 02/19/2008 (web)

Plumbing the depths: A new generation of mermaids looks at oceanic earthquakes, *The Economist*, 02/09/2008

For geoscientist Simons, Earth’s deepest secrets may come from the sea, by C. Boutin, *Princeton Weekly Bulletin*, 2008, **97** (19), 7–8 & *News@Princeton*, 01/28/2008 (web) *GeologyTimes.com*, 01/29/2008 (web) & *Underwatertimes.com*, 01/29/2008 (web)

Fyrirlestur um jarðskjálftabylgjur: Dr. Frederik J Simons, *Morgunblaðið*, 04/20/2007 (in Icelandic)

Under veraldar: Sneiðmyndun jarðar, *Rannísblaðið*, 03/28/2007 (in Icelandic)

MERMAIDs detect earthquakes, Top Stories, *UCL Homepage News*, 06/27/2006 (web)

Earth Structure, by Guust Nolet, John A. Orcutt & John Collins, *ORION Puerto Rico Workshop Report*, 2004, 28–34

On “Accelerating changes in ice mass within Greenland, and the ice sheet’s sensitivity to atmospheric forcing”:

Shrinking ice caps, rising oceans, by Michael Gross,  
*Current Biology*, 03/04/2019, <http://doi.org/10.1016/j.cub.2019.02.029>

Les mystères glaciaires du Groenland éclaircis, by Sylvestre Huet,  
*Le Monde*, 01/24/2019 (in French)

Grönland: Schmelzrate vervierfacht, by Nadja Podbregar,  
*Focus.de*, 01/23/2019 (in German)

Greenland’s ice sheet reaching ‘tipping point,’ melting four times faster than 2003,  
by Kashmira Gander,  
*Newsweek*, 01/22/2019

Greenland’s ice is melting much faster than previously thought, by Eli Meixler,  
*Time Magazine*, 01/22/2019

Greenland’s ice melting four times faster than in 2003, by Zamira Rahim,  
*The Independent*, 01/22/2019

Greenland’s ice melting faster than scientists previously thought, by Katy Clifton,  
*Evening Standard*, 01/22/2019

Greenland’s ice melting faster than scientists previously thought, by Oliver Milman,  
*The Guardian*, 01/22/2019

IJs Groenland smelt nog sneller dan wetenschappers dachten, by Joeri Vlemings,  
*Het Laatste Nieuws*, 01/22/2019 (in Dutch)

Ook het zuidwestelijke deel van de Groenlandse ijskap smelt, by C. Kraaijvanger,  
[www.scientias.nl](http://www.scientias.nl), 01/22/2019 (in Dutch)

Satellites saw rapid Greenland ice loss,  
*BBC.com*, 01/22/2019 (web)

New data on Greenland’s melting ice spells trouble for coastal cities, by D. Meyer,  
*Fortune*, 01/22/2019

Greenland’s ice sheet melt may be hitting a ‘tipping point’, by Pam Wright,  
*Weather.com*, 01/22/2019 (web)

Greenland ice melt reaching ‘tipping point,’ by Joshua Berlinger,  
*CNN.com*, 01/21/2019 (web)

Greenland’s melting ice nears a ‘tipping point,’ scientists say, by John Schwartz,  
*The New York Times*, 01/21/2019

Greenland’s ice is melting four times faster than thought, by Stephen Leahy,  
*National Geographic*, 01/21/2019

Greenland ice melting faster than scientists had thought by Doyle Rice,  
*USA Today*, 01/21/2019

UA Geoscientist helps make climate discovery in Greenland, by Mari N. Jensen,  
*The University of Arizona | Global*, 01/30/2019 (web)

Greenland ice melting rapidly, study finds, by Laura Arenschild,  
*Ohio State News*, 01/21/2019 (web)

On “Accelerated West Antarctic ice mass loss continues to outpace East Antarctic gains”:

Climate past, present and future, by Dana Mackenzie,

*What's Happening in the Mathematical Sciences? Vol 10, 2015,*

Antarctica is gaining ice, so why is the Earth still warming?, by Elizabeth Newbern,  
*LiveScience.com*, 11/19/2015 (web)

A controversial NASA study says Antarctica is gaining ice. Here's why you should be skeptical, by Chris Mooney,  
*The Washington Post*, 11/05/2015

The long future of Antarctic melting, by Alexander Robel,  
*Nature*, 10/14/2015, <http://doi.org/10.1038/526327a>

'Stable' region of Antarctica is melting, by Jeff Tollefson,  
*Nature*, 05/21/2015, <http://doi.org/10.1038/nature.2015.17606>

Ice loss in west Antarctica is speeding up, by John Abraham,  
*The Guardian*, 05/11/2015 (web)

Verdwijnen ijs aan de zuidpool is nu “onomkeerbaar”, by Mick Van Loon,  
*Newsmonkey.be*, 05/11/2015 (in Dutch)

Melting ice sheet ‘runaway problem’, by Melanie Gosling,  
*Cape Times*, 05/11/2015  
*Pretoria News*, 05/11/2015  
*IOL.co.za*, 05/11/2015 (web)

Antarctic ice sheet melting at a faster rate, new gravity data shows, by Ravi Mandalia,  
*Techienews.co.uk*, 05/11/2015

Antarctica's ice sheets are melting faster each year, by Lord Marin,  
*Biztekmojo.com*, 05/11/2015 (web)

Princeton-forskere: Is-smeltingen i Antarktis kan løpe løpsk, by Halldor Hustadnes,  
*Dagbladet*, 05/09/2015 (in Norwegian)

Ny studie: Antarktis smelter raskere enn antatt, by Elisabeth Bergskaug,  
*ABCnyheter.no*, 05/09/2015 (in Norwegian)

Scientists warn of “runaway” West Antarctic ice melt,  
Scientists weigh up new evidence on Antarctic ice melt, by Tim Radford,  
*Climatechangenews.com*, 05/10/2015 (web)  
*Globalpossibilities.org*, 05/10/2015 (web)  
*Climatenewsnetwork.net*, 05/07/2015 (web)  
*Truthdig.com*, 05/07/2015 (web)

Failure to act now on emissions could raise oceans by metres, by Graham Readfearn,  
*The Guardian*, 05/05/2015 (web)

Antarctica is melting faster than ever before, by Mary Beth Griggs,  
*BusinessInsider.com*, 05/07/2015 (web)  
*Popsci.com*, 05/05/2015 (web)

Past and present melting rates point to 3m rise by end of century, by Jayalakshmi K,  
*International Business Times*, 05/05/2015

Scientists horrified by speed of glaciers melting, by Russell Jackson,  
*The Scotsman*, 05/04/2015 (web)

Los datos gravimétricos de la misión GRACE indican que la pérdida de hielo en la Antártida se está acelerando,  
*NoticiasdeLaCiencia.com*, 05/04/2015 (in Spanish)

Antarctica's ice loss increased by 6 billion tons per year in over a decade, by T. Shirole,  
*Medindia.net*, 05/03/2015 (web)

Gravity data shows Antarctic ice sheet is melting much faster,  
*Delhi Daily News*, 05/02/2015 (web)

Fonte accélérée en Antarctique, selon les données GRACE, by Johan Lorck,  
*Global-climat.com*, 05/01/2015 (in French)

Antarctic ice loss accelerating, by Christopher Keating,  
*Dialoguesonglobalwarming.blogspot.com*, 05/01/2015 (web)

Antarctica is melting faster than ever, by Jenna Iacurci,  
*Nature World News*, 05/01/2015 (web)

Satellite data helps pinpoint Antarctic ice loss, by Bob Berwyn,  
*Summit County Voice*, 05/01/2015 (web)

Antarctica's ice sheet is melting faster than ever, revealed with new gravity data,  
by Catherine Griffin  
*Science World Report*, 05/01/2015

Gravity data show that Antarctic ice sheet is melting increasingly faster, by M. Kelly,  
*News@Princeton*, 04/30/2015 (web)

The quest to determine Antarctica's contribution to sea-level change, by Matt King,  
*Royal Society Kavli Lecture*, 04/28/2015, <https://youtu.be/E8qfbStNi1s>

Il congelatore del Polo Sud ha dei problemi, by Sylvestre Huet,  
*ADUC.it*, 04/07/2015 (in Italian)

La Terre perd son congélateur, by Sylvestre Huet,  
*Libération*, 04/02/2015 (in French)

On “Ice mass loss in Greenland, the Gulf of Alaska and the Canadian Archipelago”:

Satellites detect both steady and accelerated ice loss, by Christina Langone,  
*GlacierHub*, 05/24/2016

Scientists use gravity to measure Arctic glacier loss, by Lisa Gregoire,  
*NunatsiaqOnline*, 04/05/2016

The vast, shrinking northern glaciers that we never even talk about, by Chris Mooney,  
*The Washington Post*, 03/17/2016  
*Hamilton Spectator*, 03/17/2016

On “*Mapping Greenland’s mass loss in space and time*”:

- Climate Change 2013: The Physical Science Basis,  
*Intergovernmental Panel on Climate Change*, Fifth Assessment Report, 2013
- New science upsets calculations on sea level rise, climate change, by Lewis Page,  
*The Register*, 11/28/2012 (web)
- Embracing data ‘noise’ brings Greenland’s complex ice melt into focus, by M. Kelly,  
*News@Princeton*, 11/27/2012 (web)
- Änderungen in der Schwerkraft verraten Eisschmelze,  
*derStandard.at*, 11/24/2012 (in German)
- Le Groenland fond avec gravité, by Sylvestre Huet,  
*Libération*, 11/22/2012 (in French)
- De rafelranden van de ijskap, by Elmar Veerman,  
*NPOwetenschap.nl*, 11/21/2012 (in Dutch)
- Eisschild schrumpft jährlich um 200 Mrd. Tonnen,  
*Science@ORF.at*, 11/20/2012 (in German)
- Schwerkraft-Messung zeigt massive Eisschmelze,  
*Die Welt*, 11/20/2012 (in German)
- Greenland ice loss is accelerating, by Sunanda Creagh,  
*TheConversation.edu.au*, 11/20/2012 (web)
- Greenland ice is melting at ever faster rates, by Laura Sinpetru,  
*Softpedia.com*, 11/20/2012 (web)
- Geoscientists report Greenland ice sheet melting rate is increasing, by Bob Yirka,  
*Phys.org*, 11/20/2012 (web)
- Greenland ice melt accelerating, by Larry O’Hanlon,  
*ABC.net.au*, 11/20/2012 (web)
- Wechselnde Schwerkraft zeigt Schmelzen des Grönlandeises,  
*Focus.de*, 11/19/2012 (in German)
- Eispanzer Grönlands schmilzt ungleichmässig ab,  
*Südoschweiz.ch*, 11/19/2012 (in German)  
*Blick.ch*, 11/19/2012 (in German)
- Greenland ice melt accelerating, by Douglas Main,  
*CBSNews.com*, 11/19/2012 (web)  
*OurAmazingPlanet.com*, 11/19/2012 (web)
- Greenland is losing 200 billion tons of ice every year, by Randy Astaiza,  
*BusinessInsider.com*, 11/19/2012 (web)
- Greenland loses 200 billion tons ice per year, by Larry O’Hanlon,  
*MSNBC.msn.com*, 12/03/2012 (web)  
*LiveScience.com*, 11/19/2012 (web)  
*Discovery.com*, 11/19/2012 (web)

On “*Probabilistic assessment of sea level during the last interglacial stage*”:

Climate Change 2013: The Physical Science Basis,  
*Intergovernmental Panel on Climate Change, Fifth Assessment Report, 2013*

Sea rose eight metres in warmer age: study,  
*The Independent*, 12/20/2009

How high will the seas go in a warmer world?, Michael D. Lemonick  
*Time Magazine*, 12/18/2009

Professors say sea levels sensitive to warmth, by Sophia Jih,  
*The Daily Princetonian*, 12/18/2009

Little global warming goes a long way,  
*Futurity.org*, 12/18/2009 (web)

After Copenhagen, climate talks that will work, by Sharon Begley,  
*Newsweek*, 12/17/2009

Greater sea-level rise from warming predicted, by Juliet Eilperin,  
*The Washington Post*, 12/17/2009

Scientists warn of 30ft rise in sea level due to 2C of global warming,  
*The Scotsman*, 12/17/2009

Forskare varnar för höga havsnivåer, by P. O. Lindström,  
*DN.se*, 12/16/2009 (in Danish)

Estudo aponta que nível dos oceanos pode subir 9 metros,  
*Estadao*, 12/16/2009 (in Spanish)

Plus 3 à 5 degrés aux pôles, et l’eau montera de 8 à 9 mètres,  
*L’Express*, 12/16/2009 (in French)  
*Le Soir*, 12/16/2009 (in French)

Study suggests greater sea level rise from warming, by Malcolm Ritter,  
*The New York Times*, 12/16/2009  
*The Boston Globe*, 12/16/2009  
*U. S. News & World Report*, 12/16/2009

Two-degree temperature rise could flood wide areas of planet, study says, by M. Munro,  
*Canada.com*, 12/16/2009 (web)  
*CommonDreams.org*, 12/17/2009 (web)

Study forecasts 9m sea-level rise if temperatures meet 2C threshold, by Alok Jha,  
*The Guardian*, 12/16/2009

Earth’s polar ice sheets vulnerable to even moderate global warming, by Steven Barnes,  
*News@Princeton*, 12/16/2009 (web)  
*Harvard Gazette*, 12/16/2009 (web)  
*HighBeam Research*, 09/30/2013 (web)

Interglacial and future sea level, by Peter U. Clark & Peter Huybers,  
*Nature*, 2009, <http://doi.org/10.1038/462856a>

Sea level rise may exceed worst expectations, by Richard A. Lovett,  
*Nature*, 12/16/2009, <http://doi.org/10.1038/news.2009.1146>



On “*Possible animal body-fossils in pre-Marinoan limestones from South Australia*”:

A history of Earth in 100 groundbreaking discoveries, by Douglas Palmer,  
*Firefly Books*, 2011

From single cells, a vast kingdom arose, by Carl Zimmer,  
*New York Times*, 03/14/2011

Fossils may be oldest animals, by W. Raymond Ollwerther,  
*Princeton Alumni Weekly*, 09/22/2010

Discovery of 650-million-year-old sponge-like creatures pushes back fossil record;  
Reef-dwelling creatures on ‘Snowball Earth’,  
*Underwatertimes.com*, 08/19/2010 (web)

Fossilised sponges point to animal life 100m years earlier than thought, by Alok Jha,  
*The Guardian*, 08/17/2010

Sponge fossils may be earliest animals,  
*Futurity.org*, 08/17/2010 (web)

Found: World’s oldest animal fossils, by James O’Donoghue,  
*NewScientist*, 08/17/2010

Discovery of possible earliest animal life pushes back fossil record,  
*NSF Press Release*, 10-143, 08/17/2010

Possible discovery of earliest animal life pushes back fossil record, by Hilary Parker,  
*ScienceDaily*, 08/17/2010 (web)  
*News@Princeton*, 08/17/2010 (web)

Palaeontology: Wringing out the oldest sponges, by Marc Laflamme,  
*Nature Geosci.*, 2010, <http://doi.org/10.1038/ngeo945>

On “*Spectral estimation on a sphere in geophysics and cosmology*”:

Editorial, by Cynthia J. Ebinger,  
*Geoph. J. Int.*, 2008, **174** (3), 773

On “*Spatiospectral concentration on a sphere*”:

Problems & Techniques, by Ilse Ipsen,  
*SIAM Review*, 2006, **48** (3), 485–486

On “*The deep structure of the Australian continent from surface-wave tomography*”:

A seismic look under the continents, by Karen M. Fischer & Rob D. van der Hilst,  
*Science*, 1999, <http://doi.org/10.1126/science.285.5432.1365>

On “*On the robustness of estimates of mechanical anisotropy in the continental lithosphere*”:

Continental complexity, by Amy Whitchurch,  
*Nature Geosci.*, 2015, <http://doi.org/10.1038/ngeo2479>