

Frederik J. Simons Publication List | February 3, 2026

- Amirbekyan, A., Michel, V. & **Frederik J. Simons**, 2008. Parameterizing surface-wave tomographic models with harmonic spherical splines, *Geophys. J. Int.*, **174**(2), 617–628. doi: 10.1111/j.1365-246X.2008.03809.x.
- Beggan, C. D., Saarimäki, J., Whaler, K. A. & **Frederik J. Simons**, 2013. Spectral and spatial decomposition of lithospheric magnetic field models using spherical Slepian functions, *Geophys. J. Int.*, **193**(1), 136–148. doi: 10.1093/gji/ggs122.
- Beveridge, A. K., Harig, C. & **Frederik J. Simons**, 2018. The changing mass of glaciers on the Tibetan Plateau, 2002–2016, using time-variable gravity from the GRACE satellite mission, *J. Geod. Sci.*, **8**, 83–97. doi: 10.1515/jogs-2018-0010.
- Bevis, M., Harig, C., Khan, S. A., Brown, A., **Frederik J. Simons**, Willis, M., Fettweis, X., van den Broeke, M. R., Madsen, F. B., Kendrick, E. C., Caccamise II, D. J., van Dam, T., Knudsen, P. & Nylén, T., 2019. Accelerating changes in ice mass within Greenland, and the ice sheet’s sensitivity to atmospheric forcing, *Proc. Natl. Acad. Sci.*, **116**(6), 1934–1939. doi: 10.1073/pnas.1806562116.
- Borisov, D., Modrak, R., Rusmanugroho, H., Yuan, Y. O., Gao, F., **Frederik J. Simons** & Tromp, J., 2016, Spectral-element based 3D elastic full waveform inversion of surface waves in the presence of complex topography using an envelope-based misfit function, in *SEG Tech. Prog. Expanded Abstracts*, pp. 1211–1215, Soc. Explor. Geophys. doi: 10.1190/segam2016-13843759.1.
- Borisov, D., Gao, F., Williamson, P., **Frederik J. Simons** & Tromp, J., 2019, Robust surface-wave full-waveform inversion, in *SEG Tech. Prog. Expanded Abstracts*, pp. 5005–5009, Soc. Explor. Geophys., Denver, Col. doi: 10.1190/segam2019-3215047.1.
- Burky, A., Irving, J. C. E. & **Frederik J. Simons**, 2023. The mantle transition zone beneath eastern North America: Receiver functions and tomographic velocity models, *Phys. Earth Planet. Inter.*, **340**, 107035. doi: 10.1016/j.pepi.2023.107035.
- Burky, A. L., Irving, J. C. E. & **Frederik J. Simons**, 2021. Mantle transition zone receiver functions for Bermuda: Automation, quality control, and interpretation, *J. Geophys. Res.*, **126**(3), e2020JB020177. doi: 10.1029/2020JB020177.
- Burky, A. L., Irving, J. C. E. & **Frederik J. Simons**, 2021. Instrument response removal and the 2020 M_{Lg} 3.1 Marlboro, New Jersey, earthquake, *Seismol. Res. Lett.*, **92**, 3865–3872. doi: 10.1785/0220210118.
- Charl  ty, J., Voronin, S., Nolet, G., Loris, I., **Frederik J. Simons**, Sigloch, K. & Daubechies, I. C., 2013. Global seismic tomography with sparsity constraints: Comparison with smoothing and damping regularization, *J. Geophys. Res.*, **118**(9), 4887–4899. doi: 10.1002/jgrb.50326.
- Dahlen, F. A. & **Frederik J. Simons**, 2008. Spectral estimation on a sphere in geophysics and cosmology, *Geophys. J. Int.*, **174**(3), 774–807. doi: 10.1111/j.1365-246X.2008.03854.x.

- Espindola-Carmona, A., Hoffmann, J., **Frederik J. Simons** & Tromp, J., 2025. On the importance of horizontal components in source-encoded elastic full-waveform inversion: Multicomponent ocean-bottom-node data, *The Leading Edge*, **44**(5), 154–160. doi: 10.1190/tle44050417a1.1.
- Freedden, W., Michel, V. & **Frederik J. Simons**, 2018, Spherical-harmonics based special function systems and constructive approximation methods, in *Handbook of Mathematical Geodesy*, edited by W. Freedden & M. Z. Nashed, pp. 753–819, Springer, Berlin, Germany. doi: 10.1007/978-3-319-57181-2_12.
- Galanti, E., Kaspi, Y., **Frederik J. Simons**, Durante, D., Parisi, M., Scott & Bolton, J., 2019. Determining the depth of Jupiter’s Great Red Spot with Juno: A Slepian approach, *Astroph. J. Lett.*, **874**, L24. doi: 10.3847/2041-8213/ab1086.
- Goes, S., **Frederik J. Simons** & Yoshizawa, K., 2005. Seismic constraints on temperature of the Australian uppermost mantle, *Earth Planet. Sci. Lett.*, **236**(1-2), 227–237. doi: 10.1016/j.epsl.2005.05.001.
- Gualtieri, L., Bachmann, E., **Frederik J. Simons** & Tromp, J., 2020. The origin of secondary microseism Love waves, *Proc. Natl. Acad. Sc.*, **117**(47), 29504–29511. doi: 10.1073/pnas.2013806117.
- Gualtieri, L., Bachmann, E., **Frederik J. Simons** & Tromp, J., 2021. Generation of secondary microseism Love waves: effects of bathymetry, 3-D structure, and source seasonality, *Geophys. J. Int.*, **226**(1), 192–219. doi: 10.1093/gji/ggab095.
- Guillaumin, A. P., Sykulski, A. M., Olhede, S. C. & **Frederik J. Simons**, 2022. The debiased spatial Whittle likelihood, *J. R. Stat. Soc., Ser. B*, pp. 1–32. doi: 10.1111/rssb.12539.
- Han, S.-C. & **Frederik J. Simons**, 2008. Spatospectral 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. Geophys. Res.*, **113**, B01405. doi: 10.1029/2007JB004927.
- Harig, C. & **Frederik J. Simons**, 2012. Mapping Greenland’s mass loss in space and time, *Proc. Natl. Acad. Sc.*, **109**(49), 19934–19937. doi: 10.1073/pnas.1206785109.
- Harig, C. & **Frederik J. Simons**, 2015. Accelerated West Antarctic ice mass loss continues to outpace East Antarctic gains, *Earth Planet. Sci. Lett.*, **415**, 134–141. doi: 10.1016/j.epsl.2015.01.029.
- Harig, C. & **Frederik J. Simons**, 2016. Ice mass loss in Greenland, the Gulf of Alaska, and the Canadian Archipelago: Seasonal cycles and decadal trends, *Geophys. Res. Lett.*, **43**, 3150–3159. doi: 10.1002/2016GL067759.
- Harig, C., Zhong, S. & **Frederik J. Simons**, 2010. Constraints on upper-mantle viscosity inferred from the flow-induced pressure gradient across a continental keel, *Geochem. Geophys. Geosys.*, **11**(6), Q06004. doi: 10.1029/2010GC003038.

- Harig, C., Lewis, K. W., Plattner, A. & **Frederik J. Simons**, 2015. A suite of software analyzes data on the sphere, *Eos Trans. AGU*, **96**(6), 18–22. doi: 10.1029/2015EO025851.
- Kalnins, L. M., **Frederik J. Simons**, Kirby, J. F., Wang, D. V. & Olhede, S. C., 2015. On the robustness of estimates of mechanical anisotropy in the continental lithosphere: A North American case study and global reanalysis, *Earth Planet. Sci. Lett.*, **419**, 43–51. doi: 10.1016/j.epsl.2015.02.041.
- Kazei, V., Ovcharenko, O., Alkhalifah, T. & **Frederik J. Simons**, 2019, Realistically textured random velocity models for deep learning applications, in *EAGE Conf. Proc.*, pp. 1–5. doi: 10.3997/2214-4609.201901340.
- Kopp, R. E., **Frederik J. Simons**, Mitrovica, J. X., Maloof, A. C. & Oppenheimer, M., 2009. Probabilistic assessment of sea level during the last interglacial stage, *Nature*, **462**, 863–867. doi: 10.1038/nature08686.
- Kopp, R. E., **Frederik J. Simons**, Mitrovica, J. X., Maloof, A. C. & Oppenheimer, M., 2013. A probabilistic assessment of sea level variations within the last interglacial stage, *Geophys. J. Int.*, **193**(2), 711–716. doi: 10.1093/gji/ggt029.
- Lewis, K. W. & **Frederik J. Simons**, 2011, Spatial variability of the Martian crustal magnetic field, in *42nd Lunar Planetary Science Conference*, p. 2621.
- Lewis, K. W. & **Frederik J. Simons**, 2012. Local spectral variability and the origin of the Martian crustal magnetic field, *Geophys. Res. Lett.*, **39**, L18201. doi: 10.1029/2012GL052708.
- Lewis, K. W., **Frederik J. Simons** & Eggers, G. L., 2013, Maximum-likelihood estimation of lithospheric thickness on Venus, in *44th Lunar Planetary Science Conference*, p. 2612.
- Lewis, K. W., **Frederik J. Simons**, Olhede, S. C. & Eggers, G. L., 2017, Maximum-likelihood analysis of planetary roughness, in *48th Lunar Planetary Science Conference*, p. 2608.
- Liu, Q., bin Waheed, U., Borisov, D., **Frederik J. Simons**, Gao, F. & Williamson, P., 2022. Full-waveform centroid moment tensor inversion of passive seismic data acquired at the hydrocarbon exploration scale, *Geophys. J. Int.*, **230**(3), 1725–1750. doi: 10.1093/gji/ggac137.
- Liu, Z., Hoffmann, J., **Frederik J. Simons** & Tromp, J., 2021, Elastic full waveform inversion of VSP data from a complex anticline in northern Iraq, in *SEG Tech. Prog. Expanded Abstracts*, pp. 637–641, Soc. Explor. Geophys., Denver, Col. doi: 10.1190/segam2021-3582871.1.
- Liu, Z., Hoffmann, J., **Frederik J. Simons** & Tromp, J., 2022, 3-D acoustic-elastic full-waveform inversion and migration of marine VSP data from Norway, in *SEG Tech. Prog. Expanded Abstracts*, pp. 799–801, Soc. Explor. Geophys., Denver, Col. doi: 10.1190/image2022-3750936.1.
- Liu, Z., Hoffmann, J., Bachmann, E., Cui, C., **Frederik J. Simons** & Tromp, J., 2024. Laplace-domain crosstalk-free source-encoded elastic full waveform inversion using time-domain solvers, *Geophysics*, **89**(4), R355–R375. doi: 10.1190/geo2023-0351.1.

- Maloof, A. C., Rose, C. V., Calmet, C. C., Beach, R., Samuels, B. M., Erwin, D. H., Poirier, G. R., Yao, N. & **Frederik J. Simons**, 2010. Possible animal body-fossils from pre-Marinoan limestones, South Australia, *Nature Geosci.*, **3**(9), 653–659. doi: 10.1038/NGEO934.
- McGuire, J. J., **Frederik J. Simons** & Collins, J. A., 2008. Analysis of seafloor seismograms of the 2003 Tokachi-Oki earthquake sequence for earthquake early warning, *Geophys. Res. Lett.*, **35**, L14310. doi: 10.1029/2008GL033986.
- Michel, V. & **Frederik J. Simons**, 2017. A general approach to regularizing inverse problems with regional data using Slepian wavelets, *Inv. Probl.*, **33**, 125016. doi: 10.1088/1361-6420/aa9909.
- Montési, L. G. J., di Toro, G., **Frederik J. Simons**, Akber-Knutson, S., Becker, T. W., Billen, M., Deschamps, A. & Kellogg, J. B., 2006. Young scientists focus on the dynamics of the lithosphere, *Eos Trans. AGU*, **87**(44), 482. doi: 10.1029/2006EO440005.
- Nolet, G., Hello, Y., van der Lee, S., Bonnieux, S., Ruiz, M. C., Pazmino, N. A., Deschamps, A., Regnier, M. M., Font, Y., Chen, Y. J. & **Frederik J. Simons**, 2019. Imaging the Galápagos mantle plume with an unconventional application of floating seismometers, *Sci. Rep.*, **9**, 1326. doi: 10.1038/s41598-018-36835-w.
- Nolet, G., Nguyen, B.-H., Bonnieux, S., Kondo, Y., Kong, F., Obayashi, M., Pipatprathanporn, S., Sigloch, K., D.Simon, J., Simons, F. J., Sugioka, H., Yoshimitsu, J. & Zhang, Q., 2025. Picking first arrivals in hydroacoustic seismograms from MERMAID floats, *Seismica*, **4**(1), 1–12. doi: 10.26443/seismica.v4i1.1505.
- Pipatprathanporn, S. & **Frederik J. Simons**, 2022. One year of sound recorded by a MERMAID float in the Pacific: Hydroacoustic earthquake signals and infrasonic ambient noise, *Geophys. J. Int.*, **228**, 193–212. doi: 10.1093/gji/ggab296.
- Pipatprathanporn, S. & **Frederik J. Simons**, 2024. Waveform modeling of hydroacoustic teleseismic earthquake records from autonomous MERMAID floats, *Geophys. J. Int.*, **239**(1), 136–154. doi: 10.1093/gji/ggae238.
- Plattner, A. & **Frederik J. Simons**, 2013, A spatio-spectral localization approach for analyzing and representing vector-valued functions on spherical surfaces, in *Wavelets and Sparsity XV*, edited by D. Van de Ville, V. K. Goyal, & M. Papadakis, p. 88580N, SPIE. doi: 10.1117/12.2024703.
- Plattner, A. & **Frederik J. Simons**, 2014. Spatio-spectral concentration of vector fields on a sphere, *Appl. Comput. Harmon. Anal.*, **36**, 1–22. doi: 10.1016/j.acha.2012.12.001.
- Plattner, A. & **Frederik J. Simons**, 2015. High-resolution local magnetic field models for the Martian South Pole from Mars Global Surveyor data, *J. Geophys. Res.*, **120**, 1543–1566. doi: 10.1002/2015JE004869.
- Plattner, A. & **Frederik J. Simons**, 2015, Mars’ heterogeneous South Polar magnetic field revealed using altitude vector Slepian functions, in *46th Lunar Planetary Science Conference*, p. 1794.

- Platner, A. & **Frederik J. Simons**, 2015, Potential-field estimation using scalar and vector Slepian functions at satellite altitude, in *Handbook of Geomathematics*, edited by W. Freeden, M. Z. Nashed, & T. Sonar, pp. 2003–2055, Springer, Heidelberg, Germany, 2nd edn. doi: 10.1007/978-3-642-54551-1_64.
- Platner, A. & **Frederik J. Simons**, 2017. Internal and external potential field estimation from regional vector data at varying satellite altitude, *Geophys. J. Int.*, **211**, 207–238. doi: 10.1093/gji/ggx244.
- Platner, A., **Frederik J. Simons** & Wei, L., 2012, Analysis of real vector fields on the sphere using Slepian functions, in *2012 IEEE Statistical Signal Processing Workshop (SSP'12)*, IEEE. doi: 10.1109/SSP.2012.6319659.
- Platner, A., Golabek, G. J. & **Frederik J. Simons**, 2017, A spectral view of the Terra Sirenum / Cimmeria crustal magnetic field, in *48th Lunar Planetary Science Conference*, p. 1627.
- Reuber, G. S. & **Frederik J. Simons**, 2020. Multi-physics adjoint modeling of Earth structure: combining gravimetric, seismic, and geodynamic inversions, *Intern. J. Geomath.*, **11**(30), 1–38. doi: 10.1007/s13137-020-00166-8.
- Sambridge, M., Beghein, C., **Frederik J. Simons** & Snieder, R., 2006. How do we understand and visualize uncertainty?, *The Leading Edge*, **25**(5), 542–546. doi: 10.1190/1.2202654.
- Simon, J. D., **Frederik J. Simons** & Nolet, G., 2020. Multiscale estimation of event arrival times and their uncertainties in hydroacoustic records from autonomous oceanic floats, *Bull. Seism. Soc. Am.*, **100**(3), 970–997. doi: 10.1785/0120190173.
- Simon, J. D., **Frederik J. Simons** & Irving, J. C. E., 2021. A MERMAID miscellany: Seismoacoustic signals beyond the *P* wave, *Seismol. Res. Lett.*, **92**, 3657–3667. doi: 10.1785/022022010052.
- Simon, J. D., **Frederik J. Simons** & Irving, J. C. E., 2022. Recording earthquakes for tomographic imaging of the mantle beneath the South Pacific by autonomous MERMAID floats, *Geophys. J. Int.*, **228**, 147–170. doi: 10.1093/gji/ggab271.
- Simon, J. D., **Frederik J. Simons**, Irving, J. C. E., Wu, W., Obayashi, M., Yu, Y., Chen, Y. J., Sugioka, H. & Hello, Y. M., 2026. Hydroacoustic observations of the 15 January 2022 Hunga Tonga-Hunga Ha’apai eruption: The role of bathymetry along the path, *J. Geophys. Res.*. doi: 10.1029/2025JB032996.
- Slobbe, D. C., **Frederik J. Simons** & Klees, R., 2012. The spherical Slepian basis as a means to obtain spectral consistency between mean sea level and the geoid, *J. Geod.*, **86**(8), 609–628. doi: 10.1007/s00190-012-0543-x.
- Staats, M., Aderhold, K., Hafner, K., Dalton, C., Flanagan, M., Lau, H., **Frederik J. Simons**, Vallée, M., Wei, S. S., Yeck, W., Frassetto, A. & Busby, R., 2023. Inconsistent citation of the Global Seismographic Network in scientific publications, *Seismol. Res. Lett.*, **95**(3), 1478–1485. doi: 10.1785/0220230004.

- Sukhovich, A., Irisson, J.-O., **Frederik J. Simons**, Ogé, A., Hello, Y. M., Deschamps, A. & Nolet, G., 2011. Automatic discrimination of underwater acoustic signals generated by teleseismic P-waves: A probabilistic approach, *Geophys. Res. Lett.*, **38**, L18605. doi: 10.1029/2011GL048474.
- Sukhovich, A., Bonnieux, S., Hello, Y., Irisson, J.-O., **Frederik J. Simons** & Nolet, G., 2015. Seismic monitoring in the oceans by autonomous floats, *Nature Commun.*, **6**, 8027. doi: 10.1038/ncomms9027.
- Frederik J. Simons**, 2009. Afloat on a sea of noise, *Planet Earth Magazine*, **Winter**, 28–29.
- Frederik J. Simons**, 2010. Turning freshmen into scientists with field research and quantitative analysis of geoscientific data, *MATLAB Digest Academic Edition*, **October**, 1–3.
- Frederik J. Simons**, 2010, Slepian functions and their use in signal estimation and spectral analysis, in *Handbook of Geomathematics*, edited by W. Freeden, M. Z. Nashed, & T. Sonar, chap. 30, pp. 891–923, Springer, Heidelberg, Germany. doi: 10.1007/978-3-642-01546-5_30.
- Frederik J. Simons**, 2018. On *Foundations of Seismology: Bringing Idealizations Down to Earth*, by James R. Brown and M. A. Slawinski, *The Leading Edge*, **37**(3), 232. doi: 10.1190/tle37030232.1.
- Frederik J. Simons**, 2019. *Waves and Rays in Seismology: Answers to Unasked Questions*, by Michael A. Slawinski, *The Leading Edge*, **38**(5), 406–407. doi: 10.1190/tle38050406.1.
- Frederik J. Simons**, 2021. Waarde Redactie | Open Brief, *Alumni for Alumni*, **2**(3), 73–76.
- Frederik J. Simons**, 2023. W. Jason Morgan (obituary), *Phys. Today*, **76**(12), 52. doi: 10.1063/PT.3.5365.
- Frederik J. Simons** & Dahlen, F. A., 2006. Spherical Slepian functions and the polar gap in geodesy, *Geophys. J. Int.*, **166**(3), 1039–1061. doi: 10.1111/j.1365-246X.2006.03065.x.
- Frederik J. Simons** & Dahlen, F. A., 2007, A spatio-spectral localization approach to estimating potential fields on the surface of a sphere from noisy, incomplete data taken at satellite altitudes, in *Wavelets XII*, edited by D. Van de Ville, V. K. Goyal, & M. Papadakis, p. 670117, SPIE. doi: 10.1117/12.732406.
- Frederik J. Simons** & Olhede, S. C., 2013. Maximum-likelihood estimation of lithospheric flexural rigidity, initial-loading fraction, and load correlation, under isotropy, *Geophys. J. Int.*, **193**(3), 1300–1342. doi: 10.1093/gji/ggt056.
- Frederik J. Simons** & Plattner, A., 2015, Scalar and vector Slepian functions, spherical signal estimation and spectral analysis, in *Handbook of Geomathematics*, edited by W. Freeden, M. Z. Nashed, & T. Sonar, pp. 2563–2608, Springer, Heidelberg, Germany, 2nd edn. doi: 10.1007/978-3-642-54551-1_30.
- Frederik J. Simons** & van der Hilst, R. D., 2002. Age-dependent seismic thickness and mechanical strength of the Australian lithosphere, *Geophys. Res. Lett.*, **29**(11), 1529. doi: 10.1029/2002GL014962.

- Frederik J. Simons** & van der Hilst, R. D., 2003. Seismic and mechanical anisotropy and the past and present deformation of the Australian lithosphere, *Earth Planet. Sci. Lett.*, **211**(3-4), 271–286. doi: 10.1016/S0012-821X(03)00198-5.
- Frederik J. Simons** & Wang, D. V., 2011. Spatospectral concentration in the Cartesian plane, *Intern. J. Geomath.*, **2**(1), 1–36. doi: 10.1007/s13137-011-0016-z.
- Frederik J. Simons**, Verhelst, F. & Swennen, R., 1997. Quantitative characterization of coal by means of microfocal X-ray computed microtomography (CMT) and color image analysis (CIA), *Intern. J. Coal Geol.*, **34**(1-2), 69–88. doi: 10.1016/S0166-5162(97)00011-6.
- Frederik J. Simons**, Zielhuis, A. & van der Hilst, R. D., 1999. The deep structure of the Australian continent from surface-wave tomography, *Lithos*, **48**, 17–43. doi: 10.1016/S0024-4937(99)00041-9.
- Frederik J. Simons**, Zuber, M. T. & Korenaga, J., 2000. Isostatic response of the Australian lithosphere: Estimation of effective elastic thickness and anisotropy using multitaper spectral analysis, *J. Geophys. Res.*, **105**(B8), 19163–19184. doi: 10.1029/2000JB900157.
- Frederik J. Simons**, van der Hilst, R. D., Montagner, J.-P. & Zielhuis, A., 2002. Multimode Rayleigh wave inversion for heterogeneity and azimuthal anisotropy of the Australian upper mantle, *Geophys. J. Int.*, **151**(3), 738–754. doi: 10.1046/j.1365-246X.2002.01787.x.
- Frederik J. Simons**, van der Hilst, R. D. & Zuber, M. T., 2003. Spatospectral localization of isostatic coherence anisotropy in Australia and its relation to seismic anisotropy: Implications for lithospheric deformation, *J. Geophys. Res.*, **108**(B5), 2250. doi: 10.1029/2001JB000704.
- Frederik J. Simons**, Becker, T. W., Kellogg, J. B., Billen, M., Hardebeck, J., Lee, C.-T. A., Montési, L. G. J., Panero, W. & Zhong, S., 2004. Young solid Earth researchers of the world unite!, *Eos Trans. AGU*, **85**(16), 160–161. doi: 10.1029/2004EO160011.
- Frederik J. Simons**, Becker, T. W., Kellogg, J. B., Billen, M., Lee, C.-T. A., Montési, L. G. J., Panero, W. & Zhong, S., 2005. MYRES: A program to unite young solid Earth researchers, *Eos Trans. AGU*, **86**(5), 48–49. doi: 10.1029/2005EO050005.
- Frederik J. Simons**, Dahlen, F. A. & Wieczorek, M. A., 2006. Spatospectral concentration on a sphere, *SIAM Rev.*, **48**(3), 504–536. doi: 10.1137/S0036144504445765.
- Frederik J. Simons**, Dando, B. D. E. & Allen, R. M., 2006. Automatic detection and rapid determination of earthquake magnitude by wavelet multiscale analysis of the primary arrival, *Earth Planet. Sci. Lett.*, **250**(1-2), 214–223. doi: 10.1016/j.epsl.2006.07.039.
- Frederik J. Simons**, Nolet, G., Babcock, J. M., Davis, R. E. & Orcutt, J. A., 2006. A future for drifting seismic networks, *Eos Trans. AGU*, **87**(31), 305 & 307. doi: 10.1029/2006EO310002.
- Frederik J. Simons**, Hawthorne, J. C. & Beggan, C. D., 2009, Efficient analysis and representation of geophysical processes using localized spherical basis functions, in *Wavelets XIII*, edited by V. K. Goyal, M. Papadakis, & D. Van de Ville, p. 74460G, SPIE. doi: 10.1117/12.825730.

- Frederik J. Simons**, Nolet, G., Georgief, P., Babcock, J. M., Regier, L. A. & Davis, R. E., 2009. On the potential of recording earthquakes for global seismic tomography by low-cost autonomous instruments in the oceans, *J. Geophys. Res.*, **114**, B05307. doi: 10.1029/2008JB006088.
- Frederik J. Simons**, Loris, I., Brevdo, E. & Daubechies, I. C., 2011, Wavelets and wavelet-like transforms on the sphere and their application to geophysical data inversion, in *Wavelets and Sparsity XIV*, edited by M. Papadakis, D. Van de Ville, & V. K. Goyal, p. 81380X, SPIE. doi: 10.1117/12.892285.
- Frederik J. Simons**, Loris, I., Nolet, G., Daubechies, I. C., Voronin, S., Vetter, P. A., Charléty, J. & Vonesch, C., 2011. Solving or resolving global tomographic models with spherical wavelets, and the scale and sparsity of seismic heterogeneity, *Geophys. J. Int.*, **187**(2), 969–988. doi: 10.1111/j.1365-246X.2011.05190.x.
- Frederik J. Simons**, Simon, J. D. & Pipatprathanporn, S., 2021. Twenty-thousand leagues under the sea: Recording earthquakes with autonomous floats, *Acoustics Today*, **17**(2), 42–51. doi: 10.1121/AT.2021.17.2.42.
- Frederik J. Simons**, Walbert, O. L., Guillaumin, A. P., Gabriel L. Eggers, K. W. L. & Olhede, S. C., 2026. Maximum-likelihood estimation of the Matérn covariance structure of isotropic spatial random fields on finite, sampled grids, *Geophys. J. Int.*. doi: 10.1093/gji/ggaf044.
- Wamba, M. D., **Frederik J. Simons** & Irving, J. C. E., 2025. Data-space cross-validation of global tomographic models to assess mantle structure underneath the Pacific Ocean, *Geophys. J. Int.*, **241**(1), 241–259. doi: 10.1093/gji/ggaf044.
- Wang, L., Shum, C. K., **Frederik J. Simons**, Tapley, B. D. & Dai, C., 2012. Coseismic and post-seismic deformation of the 2011 Tohoku-Oki earthquake constrained by GRACE gravimetry, *Geophys. Res. Lett.*, **39**, L07301. doi: 10.1029/2012GL051104.
- Wang, L., Shum, C. K., **Frederik J. Simons**, Tassara, A., Erkan, K., Jekeli, C., Braun, A., Kuo, C., Lee, H. & Yuan, D.-N., 2012. Coseismic slip of the 2010 Mw 8.8 Great Maule, Chile, earthquake quantified by the inversion of GRACE observations, *Earth Planet. Sci. Lett.*, **335–336**, 167–179. doi: 10.1016/j.epsl.2012.04.044.
- Wieczorek, M. A. & **Frederik J. Simons**, 2005. Localized spectral analysis on the sphere, *Geophys. J. Int.*, **162**(3), 655–675. doi: 10.1111/j.1365-246X.2005.02687.x.
- Wieczorek, M. A. & **Frederik J. Simons**, 2007. Minimum-variance spectral analysis on the sphere, *J. Fourier Anal. Appl.*, **13**(6), 665–692. doi: 10.1007/s00041-006-6904-1.
- Wu, F. V., Borisov, D., **Frederik J. Simons** & Williamson, P., 2021, Waveform inversion for shear velocity and attenuation via the spectral-element adjoint method, in *SEG Tech. Prog. Expanded Abstracts*, pp. 697–701, Soc. Explor. Geophys., Denver, Col. doi: 10.1190/segam2021-3581151.1.
- Yuan, Y. O. & **Frederik J. Simons**, 2014. Multiscale adjoint waveform-difference tomography using wavelets, *Geophysics*, **79**(3), WA79–WA95. doi: 10.1190/GEO2013-0383.1.

- Yuan, Y. O., **Frederik J. Simons** & Bozdağ, E., 2014, Full-waveform adjoint tomography in a multiscale perspective, in *SEG Technical Program Expanded Abstracts*, pp. 1194–1199, Soc. Explor. Geophys., Denver, Col. doi: 10.1190/segam2014-0816.1.
- Yuan, Y. O., **Frederik J. Simons** & Bozdağ, E., 2015. Multiscale adjoint tomography for surface and body waves, *Geophysics*, **80**(5), R281–R302. doi: 10.1190/GEO2014-0461.1.
- Yuan, Y. O., **Frederik J. Simons** & Tromp, J., 2016. Double-difference adjoint tomography, *Geophys. J. Int.*, **206**(3), 1599–1618. doi: 10.1093/gji/ggw233.
- Yuan, Y. O., Bozdağ, E., Ciardelli, C., Gao, F. & **Frederik J. Simons**, 2020. The exponentiated phase measurement, and objective-function hybridization for adjoint waveform tomography, *Geophys. J. Int.*, **221**, 1145–1164. doi: 10.1093/gji/ggaa063.
- Zhang, Z., Irving, J. C. E., **Frederik J. Simons** & Alkhalifah, T., 2023. Seismic evidence for a 1000 km mantle discontinuity under the Pacific, *Nature Commun.*, **14**, 1714. doi: 10.1038/s41467-023-37067-x.