

Gottfried Kirchengast — Scientific Publications

1. Ten selected ones from the most significant publications (page 1)
2. Complete list of peer-reviewed publications (pages 2 to 11)
3. Notes on and link to further scientific publications (page 12)

1. Ten selected ones from the most significant publications

Kirchengast, G., T. Kabas, A. Leuprecht, C. Bichler, and H. Truhetz, WegenerNet: A pioneering high-resolution network for monitoring weather and climate, *Bull. Amer. Meteorol. Soc.*, 95, 227-242, doi:10.1175/BAMS-D-11-00161.1, 2014

Steiner, A. K., D. Hunt, S.-P. Ho, G. Kirchengast, A. J. Mannucci, B. Scherllin-Pirscher, H. Gleisner, A. von Engel, T. Schmidt, C. Ao, S. S. Leroy, E. R. Kursinski, U. Foelsche, M. Gorbunov, S. Heise, Y.-H. Kuo, K. B. Lauritsen, C. Marquardt, C. Rocken, W. Schreiner, S. Sokolovskiy, S. Syndergaard, and J. Wickert, Quantification of structural uncertainty in climate data records from GPS radio occultation, *Atmos. Chem. Phys.*, 13, 1469-1484, doi:10.5194/acp-13-1469-2013, 2013

Kirchengast, G., and S. Schweitzer, Climate benchmark profiling of greenhouse gases and thermodynamic structure and wind from space, *Geophys. Res. Lett.*, 38, L13701, doi:10.1029/2011GL047617, 2011

Lackner, B. C., A. K. Steiner, G. C. Hegerl, and G. Kirchengast, Atmospheric climate change detection by radio occultation data using a fingerprinting method, *J. Climate*, 24, 5275-5291, doi:10.1175/2011JCLI3966.1, 2011

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Ho, S.-P., G. Kirchengast, S. Leroy, J. Wickert, T. Mannucci, A.K. Steiner, D. Hunt, W. Schreiner, S.V. Sokolovskiy, C.O. Ao, M. Borsche, A. von Engel, U. Foelsche, S. Heise, B. Iijima, Y.-H. Kuo, E.R. Kursinski, B. Pirscher, M. Ringer, C. Rocken, and T. Schmidt, Estimating the uncertainty of using GPS radio occultation data for climate monitoring: Inter-comparison of CHAMP refractivity climate records 2002-2006 from different data centers, *J. Geophys. Res.*, 114, D23107, doi: 10.1029/2009JD011969, 2009

Gobiet, A., G. Kirchengast, G. L. Manney, M. Borsche, C. Retscher, and G. Stiller, Retrieval of temperature profiles from CHAMP for climate monitoring: intercomparison with Envisat MIPAS and GOMOS and different atm. analyses, *Atmos. Chem. Phys.*, 7, 3519-3536, 2007

Kirchengast, G., U. Foelsche, A. K. Steiner (Eds.), *Occultations for Probing Atmosphere and Climate*, 408 p., Springer Berlin-Heidelberg, www.springer.com/978-3-540-22350-4, 2004 including (together with 6 further papers as co-author):

Kirchengast, G., Occultations for probing atmosphere and climate: setting the scene, p. 1-8

Kirchengast, G., and P. Hoeg, The ACE+ mission: An atmosphere and climate explorer based on GPS, GALILEO, and LEO-LEO radio occultation, p. 201-220

Steiner, A. K., G. Kirchengast, and H.-P. Ladreiter, Inversion, error analysis, and validation of GPS/MET occultation data, *Ann. Geophys.*, 17, 122-138, 1999

Kirchengast, G., Elucidation of the physics of the gravity wave – TID relationship with the aid of theoretical simulations, *J. Geophys. Res.*, 101, 13,353-13,368, 1996

2. Complete list of peer-reviewed publications

(116 ISI publications, and three edited books; ISI-indexed Springer book articles which passed two-reviewer peer review process included)

Biondi, R., A. K. Steiner, G. Kirchengast, H. Brenot, and T. Rieckh, Supporting the detection and monitoring of volcanic clouds: A promising new application of Global Navigation Satellite System radio occultation, *Adv. Space Res.*, in press/published online, doi:10.1016/j.asr.2017.06.039, 2017

Liu, C. L., G. Kirchengast, S. Syndergaard, E. R. Kursinski, Y. Q. Sun, W. H. Bai, and Q. F. Du, A review of low Earth orbit occultation using microwave and infrared-laser signals for monitoring the atmosphere and climate, *Adv. Space Res.*, in press/published online, doi:10.1016/j.asr.2017.05.011, 2017

Scherllin-Pirscher, B., A. K. Steiner, G. Kirchengast, M. Schwärz, and S. S. Leroy, The power of vertical geolocation of atmospheric profiles from GNSS radio occultation, *J. Geophys. Res. Atmos.*, 122, 1595-1616, doi:10.1002/2016JD025902, 2017

Schlager, C., G. Kirchengast, and J. Fuchsberger, Generation of high-resolution wind fields from the WegenerNet dense meteorological station network in Southeastern Austria, *Wea. Forecasting*, 32, 1301-1319, doi:10.1175/WAF-D-16-0169.1, 2017

Schroeer, K., and G. Kirchengast, Sensitivity of extreme precipitation to temperature: the variability of scaling factors from a regional to local perspective, *Clim. Dyn.*, in press/published online, doi:10.1007/s00382-017-3857-9, 2017

Schwarz, J., G. Kirchengast, and M. Schwaerz, Integrating uncertainty propagation in GNSS radio occultation retrieval: From bending angle to dry-air atmospheric profiles, *Earth Space Sci.*, 4, 200-228, doi:10.1002/2016EA000234, 2017

O, S., U. Foelsche, G. Kirchengast, and J. Fuchsberger, Validation and correction of rainfall data from the WegenerNet high density network in southeast Austria, *J. Hydrol.*, in press/published online, doi:10.1016/j.jhydrol.2016.11.049, 2016

Syndergaard, S., and G. Kirchengast, An Abel transform for deriving line-of-sight wind profiles from LEO-LEO infrared laser occultation measurements, *J. Geophys. Res. Atmos.*, 121, 2525-2541, doi:10.1002/2015JD023535, 2016

Biondi, R., A. K. Steiner, G. Kirchengast, and T. Rieckh, Characterization of thermal structure and conditions for overshooting of tropical and extratropical cyclones with GPS radio occultation, *Atmos. Chem. Phys.*, 15, 5181–5193, doi:10.5194/acp-15-5181-2015, 2015

Gorbunov, M. E., and G. Kirchengast, Uncertainty propagation through wave optics retrieval of bending angles from GPS radio occultation: Theory and simulation results, *Radio Sci.*, 50, 1086-1096, doi:10.1002/2015RS005730, 2015

Kann, A., I. Meirold-Mautner, F. Schmid, G. Kirchengast, J. Fuchsberger, V. Meyer, L. Tüchler, and B. Bica, Evaluation of high-resolution precipitation analyses using a dense station network, *Hydrol. Earth Syst. Sci.*, 19, 1547-1559, doi:10.5194/hess-19-1547-2015, 2015

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Ladstädter, F., A. K. Steiner, M. Schwärz, and G. Kirchengast, Climate intercomparison of GPS radio occultation, RS90/92 radiosondes and GRUAN from 2002 to 2013, *Atmos. Meas. Tech.*, 8, 1819-1834, doi:10.5194/amt-8-1819-2015, 2015

Li, Y., G. Kirchengast, B. Scherllin-Pirscher, R. Norman, Y. Yuan, J. Fritzer, M. Schwaerz, and K. Zhang, Dynamic statistical optimization of GNSS radio occultation bending angles: advanced algorithm and performance analysis, *Atmos. Meas. Tech.*, 8, 3447-3465, doi:10.5194/amt-8-3447-2015, 2015

Liu, C. L., G. Kirchengast, K. Zhang, R. Norman, Y. Li, S. C. Zhang, J. Fritzer, M. Schwaerz, S. Q. Wu, and Z. X. Tan, Quantifying residual ionospheric errors in GNSS radio occultation bending angles based on ensembles of profiles from end-to-end simulations, *Atmos. Meas. Tech.*, 8, 2999-3019, doi:10.5194/amt-8-2999-2015, 2015

Norman, R., J. Le Marshall, W. Rohm, B. A. Carter, G. Kirchengast, S. Alexander, C. Liu, and K. Zhang, Simulating the impact of refractive transverse gradients resulting from a severe troposphere weather event on GPS signal propagation, *IEEE J. Sel. Topics Appl. Earth Obs. Remote Sens.*, 8, 418-424, doi:10.1109/JSTARS.2014.2344091, 2015

Plach, A., V. Proschek, and G. Kirchengast, Profiling wind and greenhouse gases by infrared-laser occultation: results from end-to-end simulations in windy air, *Atmos. Meas. Tech.*, 8, 2813-2825, doi:10.5194/amt-8-2813-2015, 2015

Proschek, A., G. Kirchengast, S. Schweitzer, J. S. A. Brooke, P. F. Bernath, C. B. Thomas, J.-G. Wang, K. A. Tereszchuk, G. González Abad, R. J. Hargreaves, C. A. Beale, J. J. Harrison, P. A. Martin, V. L. Kasyutich, C. Gerbig, O. Kolle, and A. Loescher, Retrieval and validation of carbon dioxide, methane and water vapor for the Canary Islands IR-laser occultation experiment, *Atmos. Meas. Tech.*, 8, 3315-3336, doi:10.5194/amt-8-3315-2015, 2015

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Lammer, H., S.-C. Schiefer, I. Juvan, P. Odert, N. V. Erkaev, C. Weber, K. G. Kislyakova, M. Güdel, G. Kirchengast, and A. Hanslmeier, Origin and stability of exomoon atmospheres: implications for habitability, *Orig. Life Evol. Biosph.*, 44, 239-260, doi:10.1007/s11084-014-9377-2, 2014

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Scherllin-Pirscher, B., A. K. Steiner, and G. Kirchengast, Deriving dynamics from GPS radio occultation: Three-dimensional wind fields for monitoring the climate, *Geophys. Res. Lett.*, 41, 7367-7374, doi:10.1002/2014GL061524, 2014

Li Y., G. Kirchengast, B. Scherllin-Pirscher, S. Wu, M. Schwärz, J. Fritzer, S. Zhang, B. A. Carter, and K. Zhang, A new dynamic approach for statistical optimization of GNSS radio occultation bending angles for optimal climate monitoring utility, *J. Geophys. Res. Atmos.*, 118, 13022-13040, doi:10.1002/2013JD020763, 2013

Liu, C. L., G. Kirchengast, K. F. Zhang, R. Norman, Y. Li, S. C. Zhang, B. Carter, J. Fritzer, M. Schwaerz, S. L. Choy, S. Q. Wu, and Z. X. Tan, Characterisation of residual ionospheric errors in bending angles using GNSS RO end-to-end simulations, *Adv. Space Res.*, 52, 821-836, doi:10.1016/j.asr.2013.05.021, 2013

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Brooke, J. S. A., P. F. Bernath, G. Kirchengast, C. B. Thomas, J.-G. Wang, K. A. Tereszchuk, G. Gonzalez Abad, R. J. Hargreaves, C. A. Beale, J. J. Harrison, S. Schweitzer, V. Proschek, P. A. Martin, V. L. Kasyutich, C. Gerbig, C. Kolle, and A. Loescher, Greenhouse gas measurements over a 144 km open path in the Canary Islands, *Atmos. Meas. Tech.*, 5, 2309-2319, doi:10.5194/amt-5-2309-2012, 2012

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Kabas, T., U. Foelsche, and G. Kirchengast, Seasonal and annual trends of temperature and precipitation within 1951/1971-2007 in South-Eastern Styria/Austria, *Meteorol. Z.*, 20, 277-289, doi:10.1127/0941-2948/2011/0233, 2011

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Ladstädter, F., A. K. Steiner, U. Foelsche, L. Haimberger, C. Tavorato, and G. Kirchengast, An assessment of differences in lower stratospheric temperature records from (A)MSU, radiosondes, and GPS radio occultation, *Atmos. Meas. Tech.*, 4, 1965-1977, doi:10.5194/amt-4-1965-2011, 2011

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Ladstädter, F., A. K. Steiner, B. C. Lackner, B. Pirscher, G. Kirchengast, J. Kehrner, H. Hauser, P. Muigg, and H. Doleisch, Exploration of climate data using interactive visualization, *J. Atmos. Oceanic Tech.*, 27, 667-679, doi: 10.1175/2009JTECHA1374.1, 2010

Pirscher, B., U. Foelsche, M. Borsche, G. Kirchengast, and Y.-H. Kuo, Analysis of migrating diurnal tides detected in FORMOSAT-3/COSMIC temperature data, *J. Geophys. Res.*, 115, D14108, doi:10.1029/2009JD013008, 2010

Foelsche, U., B. Pirscher, M. Borsche, G. Kirchengast, and J. Wickert, Assessing the climate monitoring utility of radio occultation data: From CHAMP to FORMOSAT-3/COSMIC, *Terr. Atmos. Oceanic Sci.*, 20, 155-170, doi:10.3319/TAO.2008.01.14.01(F3C), 2009

Foelsche, U., B. Pirscher, M. Borsche, A. K. Steiner, G. Kirchengast, and C. Rocken, Climatologies based on radio occultation data from CHAMP and Formosat-3/COSMIC, in *New Horizons in Occultation Research*, A. K. Steiner, B. Pirscher, U. Foelsche, G. Kirchengast (Eds.), Springer Berlin-Heidelberg, 181-194, doi:10.1007/978-3-642-00321-9_15, 2009

Ho, S.-P., G. Kirchengast, S. Leroy, J. Wickert, T. Mannucci, A.K. Steiner, D. Hunt, W. Schreiner, S.V. Sokolovskiy, C.O. Ao, M. Borsche, A. von Engeln, U. Foelsche, S. Heise, B. Iijima, Y.-H. Kuo, E.R. Kursinski, B. Pirscher, M. Ringer, C. Rocken, and T. Schmidt, Estimating the uncertainty of using GPS radio occultation data for climate monitoring: Inter-comparison of CHAMP refractivity climate records 2002-2006 from different data centers, *J. Geophys. Res.*, 114, D23107, doi: 10.1029/2009JD011969, 2009

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Pirscher B., U. Foelsche, M. Borsche, and G. Kirchengast, Sampling of the Diurnal Cycle of Temperature Using Formosat-3/COSMIC Data, in *New Horizons in Occultation Research*, A. K. Steiner, B. Pirscher, U. Foelsche, G. Kirchengast (Eds.), Springer Berlin-Heidelberg, 131-140, doi:10.1007/978-3-642-00321-9_11, 2009

Steiner, A. K., G. Kirchengast, B. C. Lackner, B. Pirscher, M. Borsche, and U. Foelsche, Atmospheric temperature change detection with GPS radio occultation 1995 to 2008, *Geophys. Res. Lett.*, 36, L18702, doi:10.1029/2009GL039777, 2009

Steiner, A. K., G. Kirchengast, M. Borsche, and U. Foelsche, Lower stratospheric temperatures from CHAMP RO compared to MSU/AMSU records: An analysis of error sources, in *New Horizons in Occultation Research*, A. K. Steiner, B. Pirscher, U. Foelsche, G. Kirchengast (Eds.), Springer Berlin-Heidelberg, 219-234, doi:10.1007/978-3-642-00321-9_18, 2009

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Steiner, A. K., B. Pirscher, U. Foelsche, G. Kirchengast (Eds.), *New Horizons in Occultation Research – Studies in Atmosphere and Climate*, 316 p., Springer Berlin-Heidelberg, www.springer.com/978-3-642-00320-2, 2009

Cai, H., S. Ma, and G. Kirchengast, Numerical simulation of ionization enhancement in the topside ionosphere of cusp foot-point region caused by low energy particle precipitation, *Wuhan Univ. J. Nat. Sci.*, 13, 185-190, doi:10.1007/s11859-008-0211-4, 2008

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3. Notes on and link to further scientific publications

In addition to the peer-reviewed publications G. Kirchengast has authored or co-authored more than 160 further scientific articles and reports. Four selected ones are cited here, each having received more than 25-50 citations (Google Scholar) despite being “grey” literature:

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Another four selected ones are finally noticed here as examples of substantially influential reports in the field (as per feedback from the relevant scientific communities):

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A detailed list of scientific publications (written and oral) is found via the website <http://homepage.uni-graz.at/gottfried.kirchengast/> (follow the link *Publications*).

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