

Curriculum Vitae, Andrea K. Steiner

Personal Data

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Date of birth: May 8, 1965 in Judenburg, Austria
Nationality: Austrian



Academic Education

University of Graz, Austria
1996–1998 Dr.rer.nat. (Ph.D. Natural Sciences) in Meteorology and Geophysics
Ph.D. thesis: *High resolution sounding of key climate variables with the aid of the radio-occultation technique* (Supervisor: Prof. G. Kirchengast)
1992–1995 2nd Diploma (M.Sc. level with honors) in Meteorology and Geophysics
M.Sc. thesis: *Temperaturinversionen im Grazer Becken und ihre Auswirkungen auf Luftschadstoffe* (Supervisor: Prof. S. J. Bauer)
1992–1993 1st Diploma (B.Sc. level) in Environmental Sciences
1988–1991 1st Diploma (B.Sc. level) in Meteorology and Geophysics

Professional Development

University of Graz, Austria
Wegener Center for Climate and Global Change
Since 09/2012 Assistant Professor
Vice-Director for Quality Assurance & Inform. Management, IT & Technics
Vice-Head of Atmospheric Remote Sensing and Climate System (ARSCliSys) Research Group
Project Leader of FWF Project TRENDEVAL
Graz University of Technology, Austria
Institute of Remote Sensing and Photogrammetry
07–06/2012 Project Leader of FWF Project TRENDEVAL
University of Graz, Austria
Wegener Center for Climate and Global Change
2010–06/2012 Vice-Director for Quality Assurance & Inform. Management, IT & Technics
Vice-Head of Atmospheric Remote Sensing and Climate System
2009–06/2012 Senior Scientist and Project Leader of FWF Project TRENDEVAL
2006–2008 Senior Post-Doc and Project Leader of FWF Project INDICATE
2005–2006 Research Scientist

Institute for Geophysics, Astrophysics and Meteorology

2003–Present Lecturer
2003–2005 Research Scientist
1999–2003 Post-Doc Scientist

Research Visits

Jul 2010 Visiting Scientist, COSMIC Project
University Corporation for Atmospheric Res. (UCAR), Boulder, CO, USA
Aug 2003 Visiting Scientist, GRAS SAF visiting scientist program,
Danish Meteorological Institute (DMI), Copenhagen, Denmark
Fall 1997 Research and Study in Biosphere 2 Earth Semester Program *Global Change*
Biosphere 2 Center, AZ, USA

Awards and Scholarships

2008 Femtech Expert May 2008
Austrian Ministry of Transport, Innovation, and Technology
2008 Recognition of excellent academic achievement
Faculty of Natural Sciences of the University of Graz
2003 Burgen Scholar of the Academia Europaea in
recognition of excellent academic achievement
1997 Biosphere 2 Excellence in Research Award
Fellowship of Columbia University (NY, USA) for Biosphere 2
Scholarships of the Austrian Ministry of Science, the University of Graz, and
the Province of Styria for studies abroad

Research Interests and Fields of Research

Atmospheric and environmental physics with focus on atmospheric remote sensing and climate change

- Analysis, detection, and attribution of climate trends in atmospheric data records with focus on radio occultation (RO) observations
- Analysis of climate variability and atmospheric processes in RO observations
- Analysis of RO based climatologies for climate change monitoring
- Global climate model evaluation with RO data records
- Comparison of upper-air temperatures from atmospheric observations of RO, radiosonde and (Advanced) Microwave Sounding Unit ((A)MSU) data
- Intercomparison of RO products from different data processing centers and coordination of the International ROTrends working group
- Error analysis and characterization of RO data based on observations and simulations
- Sonification and visualization of climate data (in cooperation with Inst. of Electronic Music and Acoustics, University of Music and Performing Arts Graz (IEM/KUG))

- Exploration of climate change indicators based on observations, reanalyses, and global climate model data with visualization tools (in cooperation with SimVis GmbH, Vienna)
- Investigation of the climate monitoring and atmospheric change detection capability of a GNSS occultation observing system (OSSE)
- Contribution to scientific algorithms of the End-to-End GNSS Occultation Performance Simulator (EGOPS) software tool
- Contribution to scientific studies for the Atmosphere and Climate Explorer (ACE+) mission (selected 2002 top priority future ESA EEO Mission, postponed after Phase A)
- Utilization of radio occultation data for studying stratospheric gravity wave activity
- Retrieval and validation of RO data and processing advancement
- Atmosphere–ocean interaction and the carbon dioxide cycle in Biosphere 2 including observation of diurnal carbon dioxide concentration and analysis of isotopic composition
- Effect of temperature inversions on air pollution in urban areas including occurrence of inversions and concentration of nitrous oxides, sulfur dioxide, tropospheric ozone

Teaching Activities

University lectures, seminars, and practical courses (lecture = VO, seminar = SE, exercises = UE, interdisciplinary practical training = IP)

- Methoden der Modellierung und Simulation VO
(Methods of Modeling and Simulation)
- Übungen zu Methoden der Modellierung u. Simulation UE
(Exercises in Methods of Modeling and Simulation)
- Projektpraktikum zu Meth. der Modellierung u. Simulation PP
(Practical Project-oriented Training in Methods of Modeling and Simulation)
- Messmethoden der Umweltphysik und Meteorologie 2 – Fernerkundung VS
(Measuring Methods in Environmental Physics and Meteorology 2 – Remote Sensing)
- Messmethoden der Umweltphysik und Meteorologie VO and SE
(Measuring Methods in Environmental Physics and Meteorology)
- Projektpraktikum zu Meth. der Datenanalyse u. Dateninversion PP
(Practical on Methods of Data Analysis and Data Inversion)
- Geophysikalisches Seminar SE
(Geophysical Seminar)
- Interdisziplinäres Praktikum (Ein Klima um zu handeln) IP
(Interdisciplinary Practical Training)
- Ausgewählte Kapitel der Umweltphysik und Meteorologie – Klimawandel und Ergebnisse des IPCC: Climate Change 2007 SE
(Selected Topics in Environmental Physics and Meteorology – Climate Change and Results of the IPCC: Climate Change 2007)

Supervision of BSc students, Co-supervision of MSc and PhD studentson topics in remote sensing, climate and environmental change

University Services

- Representative of the mid-level faculty committee
Faculty of Environmental and Regional Sciences and Education, University of Graz
- Member of the election commission of the faculty committee
Faculty of Environmental and Regional Sciences and Education, University of Graz

Organization of Workshops and Meetings

- International Advisory Board Member
ICGPSRO 2011 – 5th FORMOSAT-3/COSMIC Data Users Workshop & Intl. Conference on GPS RO, Apr 2011, Taipei, Taiwan <www.nspo.org.tw/5th_FS3WS/>
- Organizer and Chair
OPAC 2010 – Intl. Workshop on Occultations for Probing Atmosphere and Climate, Sep 2010, Graz, Austria <www.uni-graz.at/opac2010/>
- Scientific Programme Committee Member
3. Österr. MeteorologInnentag, Nov 2009, Graz, Austria
- Co-Organizer, Vice Chair
OPAC-3 – 3rd Intl. Workshop on Occultations for Probing Atmosphere and Climate, Sep 2007, Graz, Austria, <www.uni-graz.at/opac3>
OPAC-2, Sep 2004, Graz, Austria, <www.uni-graz.at/opac2>
OPAC-1, Sep 2002, Graz, Austria, <www.uni-graz.at/opac1>
- Workshop Convenor
GPS Atmosphere Workshop at OIST-4 – 4th Oerstedt Intl. Science Team Conference, Sep 2002, Copenhagen, Denmark

Services for the Scientific Community

- Team Member of the *Stratospheric Temperature Trends Group* of the World Climate Res. Programme's (WRCP) project Stratospheric Processes and their Role in Climate (SPARC)
- Team Member of the Climate Subgroup of the *International Radio Occultation Working Group (IROWG)*, a WG of the Coordination Group for Meteorological Satellites (CGMS)
- Co-Lead of the *Radio Occultation Trends Working Group*, an international collaboration of main RO processing centers on the intercomparison of RO data records
- Session Chair at national and international conferences and workshops
- Editor and Co-Editor of peer-reviewed proceedings books (Springer Verlag)
- Associate Editor of *Atmospheric Measurement Techniques – Special Issue OPAC 2010*
- Reviewer for international journals, e.g., *Annales Geophysicae*, *Asia-Pacific Journal of Atmospheric Sciences*, *Atmospheric Measurement Techniques*, *Climate Dynamics*, *Geophysical Research Letters*, *Journal of Atmospheric and Oceanic Technology*, *Journal of Geophysical Research*, *Physics and Chemistry of the Earth*, *Radio Science*
- Reviewer for the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)
- Reviewer of research proposals for international research organizations

Publications

Peer Reviewed Papers

- 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, Y.-H. Kuo, K. B. Lauritsen, C. Marquardt, C. Rocken, W. Schreiner, S. Sokolovskiy, S. Syndergaard, S. Heise, and J. Wickert (2013), 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, <<http://www.atmos-chem-phys.net/13/1469/2013/>>.
- Steiner, A. K.**, Habilitation thesis, Atmospheric climate monitoring and change detection using GPS radio occultation records, University of Graz, Graz, Austria, June 2012.
- Ho, S.-P., D. Hunt, **A. K. Steiner**, A. J. Mannucci, G. Kirchengast, H. Gleisner, S. Heise, A. von Engel, C. Marquardt, S. Sokolovskiy, W. Schreiner, B. Scherllin-Pirscher, C. Ao, J. Wickert, S. Syndergaard, K. Lauritsen, S. Leroy, E. R. Kursinski, Y.-H. Kuo, U. Foelsche, T. Schmidt, and M. Gorbunov (2012), Reproducibility of GPS radio occultation data for climate monitoring: Profile-to-profile inter-comparison of CHAMP climate records 2002 to 2008 from six data centers, *J. Geophys. Res.*, *117*, D18111, doi:10.1029/2012JD017665.
- Foelsche, U., B. Scherllin-Pirscher, F. Ladstädter, **A. K. Steiner**, and G. Kirchengast (2011), Refractivity and temperature climate records from multiple radio occultation satellites consistent within 0.05%, *Atmos. Meas. Tech.*, *4*, 2007–2018, doi:10.5194/amt-4-2007-2011, <<http://www.atmos-meas-tech.net/4/2007/2011/>>.
- Lackner, B.C., **A. K. Steiner**, G. C. Hegerl, and G. Kirchengast (2011), Atmospheric climate change detection by radio occultation data using a fingerprinting method, *J. Clim.*, *24*, 5275–5291, doi:10.1175/2011JCLI3966.1.
- Lackner, B. C., **A. K. Steiner**, and G. Kirchengast (2011), Where to see climate change best in radio occultation variables – Study using GCMs and ECMWF reanalyses, *Ann. Geophys.*, *29*, 2147–2167, doi:10.5194/angeo-29-2147-2011, <<http://www.ann-geophys.net/29/2147/2011/>>.
- Ladstädter, F., **A. K. Steiner**, U. Foelsche, L. Haimberger, C. Tavorato, and G. Kirchengast (2011), 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, <<http://www.atmos-meas-tech.net/4/1965/2011/>>.
- Scherllin-Pirscher, B., G. Kirchengast, **A. K. Steiner**, Y.-H. Kuo, and U. Foelsche (2011), Quantifying uncertainty in climatological fields from GPS radio occultation: An empirical-analytical error model, *Atmos. Meas. Tech.*, *4*, 2019–2034, doi:10.5194/amt-4-2019-2011, <<http://www.atmos-meas-tech.net/4/2019/2011/>>.
- Scherllin-Pirscher, B., **A. K. Steiner**, G. Kirchengast, Y.-H. Kuo, and U. Foelsche (2011), Empirical analysis and modeling of errors of atmospheric profiles from GPS radio occultation, *Atmos. Meas. Tech.*, *4*, 1875–1890, doi:10.5194/amt-4-1875-2011, <<http://www.atmos-meas-tech.net/4/1875/2011/>>.
- Steiner, A. K.**, B. C. Lackner, F. Ladstädter, B. Scherllin-Pirscher, U. Foelsche, and G. Kirchengast (2011), GPS radio occultation for climate applications, *Radio Sci.*, *46*, RS0D24, doi:10.1029/2010RS004614.
- Ladstädter F., **A. K. Steiner**, B. C. Lackner, B. Pirscher, G. Kirchengast, J. Kehler, H. Hauser, P. Muigg, and H. Doleisch (2010), Exploration of climate data using interactive visualization, *J. Atmos. Oceanic Tech.*, *27*, 667–679, doi:10.1175/2009JTECHA1374.1.
- Steiner, A. K.**, G. Kirchengast, B. C. Lackner, B. Pirscher, M. Borsche, and U. Foelsche (2010), Correction to “Atmospheric temperature change detection with GPS radio occultation 1995 to 2008”, *Geophys. Res. Lett.*, *37*, L03704, doi:10.1029/2010GL042427.
- Foelsche, U., B. Pirscher, M. Borsche, **A. K. Steiner**, G. Kirchengast, and C. Rocken (2009), Climatologies based on radio occultation data from CHAMP and Formosat-3/COSMIC, in *New Horizons in Occultation Research: Studies in Atmosphere and Climate*, A.K. Steiner, B. Pirscher, U. Foelsche, and G. Kirchengast (Eds.), Springer, Berlin, Heidelberg, 181–194, doi:10.1007/978-3-642-00321-9_15.
- 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 (2009), 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.
- Lackner B. C., **A. K. Steiner**, F. Ladstädter, and G. Kirchengast (2009), Trend indicators of atmospheric climate change based on global climate model scenarios, in *New Horizons in Occultation Research: Studies in Atmosphere and Climate*, A. K. Steiner, B. Pirscher, U. Foelsche, and G. Kirchengast (Eds.), Springer, Berlin Heidelberg, 247–259, doi:10.1007/978-3-642-00321-9-20.
- Ladstädter F., **A. K. Steiner**, B. C. Lackner, G. Kirchengast, P. Muigg, J. Kehrler, and H. Doleisch (2009), SimVis: An interactive visual field exploration tool applied to climate research, in *New Horizons in Occultation Research: Studies in Atmosphere and Climate*, A. K. Steiner, B. Pirscher, U. Foelsche, and G. Kirchengast (Eds.), Springer, Berlin Heidelberg, 235–245, doi:10.1007/978-3-642-00321-9-19.
- Steiner, A. K.**, G. Kirchengast, M. Borsche, and U. Foelsche (2009), Lower stratospheric temperatures from CHAMP RO compared to MSU/AMSU records: An analysis of error sources, in *New Horizons in Occultation Research: Studies in Atmosphere and Climate*, A. K. Steiner, B. Pirscher, U. Foelsche, and G. Kirchengast (Eds.), Springer, Berlin, Heidelberg, 219–234, doi:10.1007/978-3-642-00321-9_18.
- Steiner, A. K.**, G. Kirchengast, B. C. Lackner, B. Pirscher, M. Borsche, and U. Foelsche (2009), Atmospheric temperature change detection with GPS radio occultation 1995 to 2008, *Geophys. Res. Lett.*, *36*, L18702, doi:10.1029/2009GL039777.
- Foelsche, U., G. Kirchengast, **A. K. Steiner**, L. Kornblueh, E. Manzini, and L. Bengtsson (2008), An observing system simulation experiment for climate monitoring with GNSS radio occultation data: Setup and testbed study, *J. Geophys. Res.*, *113*, D11108, doi:10.1029/2007JD009231.
- Kehrler, J., F. Ladstädter, P. Muigg, H. Doleisch, **A. Steiner**, and H. Hauser (2008), Hypothesis generation in climate research with interactive visual data exploration, *IEEE TVCG*, *14*(6), 1579–1586, doi:10.1109/TVCG.2008.139.
- Luntama, J.-P., G. Kirchengast, M. Borsche, U. Foelsche, **A. K. Steiner**, S. Healy, A. von Engel, E. O’Clerigh, and C. Marquardt (2008), Prospects of the EPS GRAS mission for operational atmospheric applications, *Bull. Amer. Met. Soc.*, *89*, 1863–1875, doi:10.1175/2008BAMS2399.1.
- Foelsche, U., M. Borsche, **A. K. Steiner**, A. Gobiet, B. Pirscher, G. Kirchengast, J. Wickert, and T. Schmidt (2008), Observing upper troposphere–lower stratosphere climate with radio occultation data from the CHAMP satellite, *Climate Dynamics*, *31*, 49–65, doi:10.1007/s00382-007-0337-7 (published online: 2007, appeared in print: 2008).
- Steiner, A. K.**, G. Kirchengast, M. Borsche, U. Foelsche, and T. Schoengassner (2007), A multi-year comparison of lower stratospheric temperatures from CHAMP radio occultation data with MSU/AMSU records, *J. Geophys. Res.*, *112*, D22110, doi:10.1029/2006JD008283.
- Borsche, M., A. Gobiet, **A. K. Steiner**, U. Foelsche, G. Kirchengast, T. Schmidt, and J. Wickert (2006), Pre-operational retrieval of radio occultation based climatologies, in: *Atmosphere and Climate: Studies by Occultation Methods*, U. Foelsche, G. Kirchengast, and A. K. Steiner (Eds.), Springer, Berlin-Heidelberg, 315–323, doi:10.1007/3-540-34121-8_26.
- Foelsche, U., A. Gobiet, **A. K. Steiner**, G. Kirchengast, M. Borsche, T. Schmidt, and J. Wickert (2006), Global climatologies based on radio occultation data: The CHAMPCLIM project, in: *Atmosphere and Climate: Studies by Occultation Methods*, U. Foelsche, G. Kirchengast, and A. K. Steiner (Eds.), Springer, Berlin-Heidelberg, 303–314, doi:10.1007/3-540-34121-8_25.
- Steiner, A. K.**, A. Löscher, and G. Kirchengast (2006), Error characteristics of refractivity profiles retrieved from CHAMP radio occultation data, in *Atmosphere and Climate – Studies by Occultation Methods*, U. Foelsche, G. Kirchengast, and A. K. Steiner (Eds.), Springer, Berlin-Heidelberg, 27–36, doi:10.1007/3-540-34121-8_3.
- Foelsche, U., A. Gobiet, A. Löscher, G. Kirchengast, **A. K. Steiner**, J. Wickert, and T. Schmidt (2005), The CHAMPCLIM project: An overview, in *Earth observation with CHAMP- Results from three years in orbit*, Reigber et al. (Eds.), Springer, Berlin, Heidelberg, New York, 615–620, doi:10.1007/3-540-26800-6_98.
- Gobiet, A., U. Foelsche, **A. K. Steiner**, M. Borsche, G. Kirchengast, and J. Wickert (2005), Climatological validation of stratospheric temperatures in ECMWF operational analyses with CHAMP radio occultation data, *Geophys. Res. Lett.*, *32*, L12806, doi:10.1029/2005GL022617.

- Steiner, A. K.**, and G. Kirchengast (2005), Error analysis for GNSS radio occultation data based on ensembles of profiles from end-to-end simulations, *J. Geophys. Res.*, *110*, doi:10.1029/2004JD005251.
- Wickert, J, A. Gobiet, G. Beyerle, **A. K. Steiner**, G. Kirchengast, U. Foelsche, and T. Schmidt (2005), GPS radio occultation with CHAMP: Comparison of atmospheric profiles from GFZ Potsdam and IGAM Graz, in *Earth observation with CHAMP- Results from three years in orbit*, Reigber et al. (Eds.), Springer, Berlin, Heidelberg, New York, 525–530, doi:10.1007/3-540-26800-6_83.
- Steiner, A. K.**, and G. Kirchengast (2004), Ensemble-based analysis of errors in atmospheric profiles retrieved from GNSS radio occultation data, in *Occultations for Probing Atmosphere and Climate*, G. Kirchengast, U. Foelsche, and A. K. Steiner (Eds), Springer, Berlin, Heidelberg, New York, 149–160.
- Foelsche, U., G. Kirchengast, and **A. K. Steiner** (2003), Global climate monitoring based on CHAMP/GPS radio occultation data, in *First CHAMP mission results for gravity, magnetic and atmospheric studies*, Reigber et al. (Eds.), Springer, Berlin, Heidelberg, New York, 397–407.
- Steiner, A. K.**, G. Kirchengast, U. Foelsche, L. Kornblueh, E. Manzini, and L. Bengtsson (2001), GNSS occultation sounding for climate monitoring, *Phys. Chem. Earth (A)*, *26*, 113–124.
- Steiner, A. K.**, and G. Kirchengast (2000), Gravity wave spectra from GPS/MET occultation observations, *J. Atmos. Oceanic Technology*, *17*, 495–503, doi:10.1175/1520-0426(2000)017<0495:GWSFGM>2.0.CO;2.
- Steiner, A. K.**, G. Kirchengast, and H. P. Ladreiter (1999), Inversion, error analysis, and validation of GPS/MET occultation data, *Ann. Geophys.*, *17*, 122–138, doi: 10.1007/s00585-999-0122-5.

Edited Books and Special Issues

- Foelsche, U., **A. K. Steiner**, and K. B. Lauritsen (Eds.) (2011), *Observing atmosphere and climate with occultation techniques - results from the OPAC 2010 Workshop*, Atmos. Meas. Tech., Special Issue, <http://www.atmos-meas-tech-discuss.net/special_issue19.html> <http://www.atmos-meas-tech.net/special_issue20.html>.
- Steiner, A. K.**, B. Pirscher, U. Foelsche, and G. Kirchengast (Eds.) (2009), *New Horizons in Occultation Research: Studies in Atmosphere and Climate*, Springer, Berlin-Heidelberg, doi:10.1007/978-3-642-00321-9.
- Foelsche, U., Kirchengast, G., and **A. K. Steiner** (Eds.) (2006), *Atmosphere and Climate: Studies by Occultation Methods*, Springer, Berlin, Heidelberg, New York, doi:10.1007/3-540-34121-8.
- Kirchengast, G., U. Foelsche, and **A. K. Steiner** (Eds.) (2004), *Occultations for Probing Atmosphere and Climate*, Springer, Berlin, Heidelberg, New York.

Proceedings, Reports, and Book Chapters

(Reviewed proceedings-abstracts in, e.g., *Geophys. Res. Abstracts* or *EOS Transactions* are included in the list of presentations)

- Foelsche, U., B. Scherllin-Pirscher, F. Ladstädter, **A. K. Steiner** und G. Kirchengast (2011), Konsistente Klimatologien der Atmosphäre mittels Radio-Okkultation, *Proc. 12. Österr. Klimatag*, September 2011, Vienna, Austria, V16, 3 pp.
- Foelsche, U., B. Scherllin-Pirscher, **A. K. Steiner**, F. Ladstädter, and G. Kirchengast (2011), Observing Earth's atmosphere and climate with GNSS radio occultation, *Proc. IEEE International Geosci. and Rem. Sensing Symp.*, July 2011, Vancouver, Canada.
- Kirchengast, G., K. Steininger, A. Gobiet und **A. K. Steiner** (2011), Klimawandel messbar machen und unsere Antworten gestalten, *Soziale Technik 3/2011*, 11–14, IFZ für Technik, Arbeit und Kultur, Klagenfurt-Wien-Graz.

- Lackner, B. C., **A. K. Steiner**, G. C. Hegerl und G. Kirchengast (2011), Klimawandeldetektion in der freien Atmosphäre mittels GPS Radio-Okkultation, *Proc. 12. Österr. Klimatag*, September 2011, Vienna, Austria, V15, 2 pp.
- Steiner, A. K.**, B. C. Lackner, F. Ladstädter, G. Kirchengast, B. Pirscher, G. C. Hegerl, and U. Foelsche (2010), GPS radio occultation for climate applications, ext. abstract, *International Beacon Satellite Symposium 2010*, P. Doherty, M. Hernández-Pajares, J. M. Juan, J. Sanz, and A. Aragon-Angel (Eds.), June 2010, Techn. Univ. Catalonia (UPC), Barcelona, 5 pp., <http://gge.unb.ca/Resources/BSS2010/abstracts/a96_revGO.pdf>.
- Borsche, M., U. Foelsche, B. Pirscher, **A. K. Steiner**, B. C. Lackner, J. Fritzer, M. Pock und G. Kirchengast (2008), Radiookkultation für globale und regionale Klimabeobachtung der Atmosphäre: Ergebnisse des Wegener Zentrums Graz, *Proc. 10. Österr. Klimatag*, March 2008, Vienna, Austria, V08, 3 pp.
- Foelsche, U., G. Kirchengast, M. Borsche, B. Pirscher, and **A. K. Steiner** (2008), Creating a consistent radio occultation data base for climate studies in the upper troposphere and lower stratosphere, *Proc. of the ECMWF GRAS-SAF Workshop on Applications of Radio Occultation Measurements*, June 2008, ECMWF, Reading, UK, 151–165.
- Kirchengast, G., S. Schweitzer, B. Pirscher, M. Pock, F. Ladstädter, B. C. Lackner, I. Thaler, M. Borsche, U. Foelsche, **A. K. Steiner**, and J. Fritzer (2008), EOPSClIM – End-to-end Occultation Processing System and Climate Monitoring Service: MetOp GRAS and ACCURATE Integration (Final Report), *Tech. Rep. for FFG-ALR No. 2/2008*, 4 pp. (Exec.Summary) + *FFG-ALR Rep. No.5/2007* and *No.1/2008*, Wegener Center, Univ. of Graz, Austria.
- Pirscher, B., B. C. Lackner, I. Thaler, M. Pock, U. Foelsche, **A. K. Steiner**, and G. Kirchengast (2007), Initial validation of GRAS occultation data from MetOp and setup of regional climate monitoring including the IPCC land and ocean regions, *Tech. Rep. for FFG-ALR No. 5/2007*, 48 pp., Wegener Center, Univ. of Graz, Austria.
- Borsche, M., U. Foelsche, **A. K. Steiner**, A. Gobiet, B. C. Lackner, B. Pirscher, and G. Kirchengast (2006), Processing system for provision of CHAMP radio occultation based climatologies, *WegCenter Rep. for FFG-ALR No. 1/2006*, 41 pp., Wegener Center, Univ. of Graz, Austria.
- Foelsche, U., M. Borsche, **A. K. Steiner**, B. Pirscher, B. C. Lackner, A. Gobiet, and G. Kirchengast (2006), CHAMP radio occultation based climatologies for global monitoring of climate change, *WegCenter Rep. for FFG-ALR No. 3/2006*, 52 pp., Wegener Center, Univ. of Graz, Austria.
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