

Curriculum Vitae: Shu-Peng Ben Ho

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EDUCATION

Ph. D. (Atmospheric Science), 1998 -- University of Wisconsin-Madison

M.S., (Atmospheric Science), 1995 --University of Wisconsin-Madison

M.S., (Atmospheric Science), 1992, Rutgers-the State University of New Jersey

B.A., (Computer Science), 1987, Feng Chia University, Taichung, Taiwan

PROFESSIONAL EXPERIENCE

2016- : UCAR/COSMIC Interim Lead Application Scientist

2014- : UCAR/COSMIC, Project scientist III

2008-2014: UCAR/COSMIC, Project scientist II

2005-2008: UCAR/COSMIC

2002-2005: NCAR/ACD, Project scientist I

2001-2002: NCAR/ACD, Associate Scientist III

1998-2001: Analytical Service & Materials, Inc., in affiliation of NASA Langley Research Center, Hampton, VA, Research Scientist

1993-1998: Department of Atmospheric and Oceanic, University of Wisconsin-Madison, Research Assistant

1990-1992: Department of Meteorology, Rutgers-the State University of New Jersey, Research Assistant

PROFESSIONAL SERVICES

Section 1: Institutional Service

1. Supervisor of COSMIC student program, 2008
2. Director of the Student Program for 2011 COSMIC student trip and workshop, Taipei, Taiwan.
3. Chair of NCAR Asian Listening Meeting breakout section, 2008
4. Committee of NCAR Asian circle Meeting, 2009-present.
5. Panel member of NCAR Asian circle Meeting, 2010
6. Coordinator and moderator of the UCAR/COSMIC Science Seminar Series, 2009-present
7. Coordinator of the COSMIC science team meeting, 2013- present
8. NCAR SOARS steering committee, 2014- present

Section 2: Scientific Community Service/Working Groups

1. Lead the international RO trend working group – round 1 comparison (2009-2010)
2. Lead the international RO trend working group – round 2 comparison (2011-2012)
3. Member of the international RO trend working group and lead at COSMIC UCAR for – round 3 comparison (2013-present)
4. Team leader for NOAA NCDC GPS RO climate data record (2010- present)
5. Member of the WCRP (World Climate Research Program) GEWEX Radiation Panel (GRP) water vapor profile climate data record assessment (2012- present).
6. Members of the NASA AURA science team for the TES instrument (2007-2011)
7. Member of the WCRP (World Climate Research Program) SPARC global temperature profile climate record assessment (2011- present).
8. Member of the International Radio Occultation Working Group (2011- present).
9. Member of U.S. Climate Variability and Predictability Program (CLIVAR) working group (2015-)
10. NASA ROSES proposal review panel (2015)
11. Regular reviewers of NASA, NSF, and other international proposals
12. Member of the U.S.A. federal Advisory Committee for the Sustained National Climate Assessment

Section 3: Organizer/Convertor/Steering Committee for Scientific Meetings and Workshops

1. Organizer: Workshop on the Applications of GPS Radio Occultation to Climate, NCAR Foothills Laboratory, Building #1 Atrium Conference Room 3450 Mitchell Lane, Boulder, CO 80301 March 17-18, 2008.
2. Co-Organizer: Program Committee of COSMIC 2009 International Workshop
3. Organizer and Chair: COSMIC scientific applications section in the COSMIC/NCAR/UCAR retreat, 2009.
4. Section Chair: COSMIC scientific applications section in the COSMIC/NCAR/UCAR retreat, 2009.
5. Chair: COSMIC scientific applications section in the COSMIC/NCAR/UCAR retreat, 2009.
6. Organizer and Chair and panel member: the Science Opportunities for COSMIC-II, COSMIC/NCAR/UCAR retreat, 2010, Lake Shore Lodge and Conference Center, Estes Park, CO.
7. Organizer and Co-chair: COSMIC-NOAA climate meeting in AMS, 2008.
8. Organizer and Co-chair: COSMIC-NOAA climate meeting in AMS, 2009.
9. Organizer and Co-chair: COSMIC-NOAA climate meeting in AMS, 2010.
10. Chair: student poster competition of COSMIC international workshop, Boulder, CO, USA, October, 2009.
11. Organizer and Co-chair: UCAR/COSMIC workshop the RO inversion and climate workshop in Estes Park, CO, USA from 28th March to 3rd April 2012, together with the CGMS International Radio Occultation Working Group (IROWG).
12. Organizer: the climate section in the 5th FORMOSAT-3/COSMIC Data Users Workshop & ICGPSRO, April, 2011, Taipei, Taiwan.

13. Converter: the climate section in the 5th FORMOSAT-3/COSMIC Data Users Workshop & ICGPSRO, April, 2011, Taipei, Taiwan.
14. Co-Chair: Student poster competition of the 5th FORMOSAT-3/COSMIC Data Users Workshop & ICGPSRO 2011, April, 2011, Taipei, Taiwan.
15. Co-Chair: for the COSMIC workshop of the GPS RO Data Processing for Climate Applications, Estes Park, CO, USA from 28th March to 3rd April 2012.
16. Organizer and Chair: Workshop Organizing Committee for the sixth COSMIC users workshop, Boulder CO., 2012.
17. Chair: the sixth COSMIC users workshop, Boulder, CO., 2012.
18. Converter: the climate section in the 2nd IROWG Workshop 28 March 3, April 2012, CO, U.S.A.
19. Converter/Moderator: section of Inventory and requirements on data records and reference data working group for the GEWEX water vapor assessment workshop, September, 25-28, 2012, Germany.
20. Co-Chair: the 8th COSMIC users' workshop, Climate Applications section, Boulder, CO, USA, October, 2014.
21. Section chair for RO climate application: the 3rd ICGPSRO conference, March, 9-11, 2016, Taipei, Taiwan.
22. Steering committee for the 10th FORMOSAT-3/COSMIC Data Users' Workshop and 6th International Radio Occultation Working Group (IROWG-6) Sep., 21-27, 2017, Estes Park, Colorado USA.

Section 4: Journals

1. Guest editor for the Special Issue for Advances in Meteorology
2. Member of the Editorial Board of International Journal of Atmospheric Sciences
3. Senior Editor of the International Journal of Sciences
4. Regular reviewer of manuscripts for journals and proposals

EDUCATION & OUTREACH

Section 1: Supervisory Experiences

1. 2007-2008: supervisor of Dr. Wenying He, COSMIC/UCAR visiting scientist from Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China.
2. 2008-2012: supervisor of Xinjia Zhou, COSMIC/UCAR visiting scientist from Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China.
3. 2008-2011: supervisor of Dr. Patrick F. Callaghan, COSMIC/UCAR post-graduate scientist.
4. 2009-2010: supervisor of Professor Jie Xiang, ACD/NCAR, COSMIC/UCAR visiting scientist from Department of Atmospheric science, Nanjing University, Nanjing, China.
5. 2009-2010: supervisor of Dr. Junmei Zhang, COSMIC/UCAR visiting scientist from Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China.
6. 2009-2011: supervisor of Teresa VanHove, COSMIC/UCAR associate scientist.

7. 2010-2011: co-supervisor of Jerry Raj, Ph. D. student from the National Central University, Taiwan.
8. 2010-2012: supervisor of Wen-Hsin Teng, student visitor from the National Central University, Taiwan.
9. 2012-present: supervisor of Dr. Liang Peng, COSMIC/UCAR visiting scientist from Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China.
10. 2010-2012: co-supervisor of Dr. Barbara Scherllin-Pirscher, a NCAR ASP post-doctor scientist, who is originally from University of Graz, Austria.
11. 2010-2012: co-supervisor of Dr. Zhen Zang, NCAR COSMIC project scientist.
12. 2011-2013: co-supervisor of Mr. Riccardo Biondi, Ph. D. visitor from DMI.
13. 2012-2013: co-supervisor of Ms. Xu Xu, Associate Professor visitor from China
14. 2013: co-supervisor of Ms. Hsiao-chun Lin, a SOARS student from NCU, Taiwan.
15. 2014: co-supervisor of Ms. Therese Rieckh, a Ph. D student from WegC, Graz
16. 2014: co-supervisor of Mr. Ji-yian Chien, a graduate student from NCU, Taiwan.
17. 2014: co-supervisor of Dr. Xiaohua Xu, Professor from School of Geodesy & Geomatics, Wuhan University, China.
18. 2016: supervisor of Dr. Xingqin Fang, PS I of COSMIC/UCAR
19. 2014- : supervisor of Dr. Liang Peng, associate scientist II COSMIC/UCAR
20. 2016- : supervisor of Dr. Hui Liu, PS II of COSMIC/UCAR
21. 2016- : supervisor of Dr. Tae-kwon Wee, PS II of COSMIC/UCAR
22. 2016- : supervisor of Dr. Hailing Zhen, post-graduate scientist of COSMIC/UCAR

Section 2: Hosting Scientific Visitor

2010, July: Dr. Andrea Stenier, research scientist from WegC, Graz

2012, July: Dr. Uli Foelsche, Associate Professor from WegC, Graz

PROFESSIONAL SOCIETY

Member of the American Meteorological Society

Member of the American Geophysical Union

Member of American Association for the Advancement of Science

AWARDS AND RECOGNITIONS

Section 1: External Awards and Recognitions

1. May, 2017: Selected as “2017 Albert Nelson Marquis Lifetime Achievement Award winner for Who is who in American”.
2. March, 2014: Invited as the Lead guest editor for a special issue of the Scientific World Journal (impact factor = 1.73).
3. July, 2015: Selected in “Who is who in American” for the 2016 issue.
4. July, 2013: Selected in “Who is who in American” for the 2014 issue.

5. January, 2013: Invited visiting to the GPS Scientific Application Research Center in National Central University, Taiwan from 5 to 15 January, 2012.
6. Feb. 2013: Invited as the Lead Guest Editor of the Special Issues for Advances in Meteorology (impact factor = 1.24).
7. Member of international working groups, the World Climate Research Programme (WCRP) Global Energy and Water Cycle Experiment (GEWEX).
8. Member of international working groups, the World Climate Research Programme (WCRP) Global Stratospheric Processes and their Role in Climate (SPARC)
9. 2012- : Member of NASA Sounder science team
10. January, 2012: Invited visiting to the GPS Scientific Application Research Center in National Central University, Taiwan from 5 to 15 January, 2012.
11. February, 2014: Selected in “Who is who in American” for 2015 issue.
12. February, 2013: Selected in “Who is who in American” for 2014 issue.
13. February, 2012: Selected in “Who is who in American” for 2013 issue.
14. June, 2011: Selected in “Who is who in American” for 2012 issue.
15. May, 2011: invited to join the WCRP SPARC group.
16. March, 2011: invited to attend the World Climate Research Programme (WCRP) Global Energy and Water Cycle Experiment (GEWEX) Radiation Panel (GRP) workshop and the ESA Data User Element (DUE) programme’s global Vapour project in Frascati, Italy.
17. November, 2010: invited to be a Contributing Author for the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC WGI AR5).
18. June 2010: Invited visiting to the GPS Scientific Application Research Center in National Central University, Taiwan from June 5 to July 2, 2010.
19. March 2009: Invited to workshop on the “Assessment of Small Satellite Missions to “Meet the Needs of the Earth Sciences”, University of Colorado Laboratory for Atmospheric and Space Physics (LASP).
20. July 2009: Selected in “Who is who in American” for 2010 issue.
21. June 2008: Selected in “Who is who in American” for 2009 issue.
22. April 2007: Selected by “Who is who in the World” for 2008 issue.
23. May 2006: Selected in “Who is who in American” for 2007 issue.

Section 2: Internal Awards and Recognitions

1. December 2006: UCAR Outstanding Accomplishment Award for Scientific and Technical Advancement (for the MOPITT project).
2. September 2006: Key Contributor to UCAR COSMIC Program Award
Citation: the recognition of the key contributor to UCAR COSMIC Program
3. April 2007: Special Contribution to UCAR COSMIC Mission Award.
Citation: the special recognition of the science contribution to COMSIC mission
4. October 2008: COSMIC Special Recognition Award for coordinating COSMIC Student Program.
Citation: the special recognition for coordinating COSMIC student program

5. March 2016: 15 years of service in UCAR/NCAR

EXTERNALLY FUNDED COLLABORATIONS

1. Principal Investigator: Validation and Calibration of MSU/AMSU Measurements and Radiosonde Observations Using GPS RO Data for Improving Stratospheric and Tropospheric Temperature Trends, NOAA, NA07OAR4310224, POP: 08/01/07-07/31/10 (\$300K for three years, finished).
2. Principal Investigator: Satellite and Ground-Based Validation of TES Tropospheric CO Products, NASA, NNX07AB52G, POP: 01/15/07-01/14/10 (\$600K for three years, finished).
3. Co-Principal Investigator: A Climate Virtual Observatory (CVO): Online Data Fusion & Analysis for Climate Variability & Change, POP: 04/01/08-03/31/09 (\$350K for two years finished).
4. Co-Principal Investigator: UCAR-NOAA Collaborative Planning for an Operational Radio Occultation (RO) Mission, NOAA NESDIS, 2009-2011 (on going).
5. Co-Principal Investigator: Climate Trends and model Evaluation by Radio Occultation Trendeval: Analysis, Detection and Attribution of Atmospheric Climate Trend and Climate Model Evaluation based on Data Records from Radio Occultation, Research Project Proposal to the Austrian Science Fund, 2009-2011, POP: 07/01/10-06/30/12.
6. Principal Investigator: Construction of Consistent Microwave Sensor Temperature Records and Tropopause Height Climatology Using MSU/AMSU Measurements, GPS RO Data and Radiosonde Observations, NOAA, POP: 07/01/2009-06/30/2012 (\$600K for three years, from 2008 to 2011).
7. Co-Principal Investigator: Continued Operation of COSMIC in Support of Operational and Research for years 2011 -2015, NSF (on going).
8. Consultant: NASA FBAR project, 2010-2013 (on going).
9. Co-Principal Investigator: Applications and Construction of Climate Data Records for Global Climate Change Studies, China-973 project, China, 2010-2014 (on going).
10. Principal Investigator: RO-Calibrated AMSU Brightness Temperature CDR, NOAA, 2013 (sole source contract, \$10K/year, on going).
11. Co-Principal Investigator: Radio occultation based gridded climate data sets - RO-CLIM, SCOPE-CM (Sustained and coordinated processing of Environmental

- Satellite data for Climate Monitoring). 2013 (approved).
12. Co-Principal Investigator: Sustained generations of upper tropospheric humidity (UTH) from multi-sensors with multi-agency cooperation, SCOPE-CM (Sustained and coordinated processing of Environmental Satellite data for Climate Monitoring). 2013 (approved).
 13. Principal Investigator: The Mean Layer Temperature – Troposphere & Stratosphere CDR, the Mean Layer Temperature - Lower Stratosphere CDR and the Tropopause Height Climatology, NCDC, NOAA, 2015 (\$100K/year, on going).
 14. Principal Investigator: A New Reprocessing Scheme to Improve the Aqua AIRS Global Temperature and Water Vapor Retrievals in the Lower Troposphere and Stratosphere using GPS Radio Occultation Measurements, NASA ROSES 2013, 2013-2016 (approved).
 15. Co-Principal Investigator: Continued Operation of COSMIC GPS Radio Occultation Constellation in Support of Research Applications in Atmospheric Sciences, NSF and NASA joint proposal (2.8M/yr from 2015-2020).
 16. Principal Investigator: Generating the Enhanced Atmospheric and Hydrometeor Retrievals from the Combined Microwave Sounders and GPS RO Measurements, NOAA 2015, 2015-2017.
 17. Co-Principal Investigator: The atmospheric Natural EXtreme evenTs REseArch, Monitoring and detection (NEXTREAM), 2015-2019.
 18. International Scientific Advisory Partners: Convective storms and tropical cyclone detection improvements (VORTECS)", FWF Austria and Taiwan Project (submitted).
 19. Principal Investigator: UCP program development fund, 2015 (\$12K, approved).
 20. Principal Investigator: The Mean Layer Temperature – Troposphere & Stratosphere CDR, the Mean Layer Temperature - Lower Stratosphere CDR and the Tropopause Height Climatology, NCDC, NOAA, 2016 (on going).
 21. Principal Investigator: Calibration Inter-consistency study of SNPP/NASA ATMS, POES/AMSU-A, and Metop-A/-B AMSU-A Observations using GPS Radio Occultation Data and Radiosonde Data for Re-construction of Stratospheric and Tropospheric Temperature Trends from 1980 to 2019, NASA inter-satellite consistency study, 2016-2019 (submitted).
 22. Collaborator: A multi-mission and multi-processing-center observation ensemble of GPS radio occultation climate dataset, NASA DATA FOR OPERATION AND ASSESSMENT, 2017-2020 (submitted).
 23. Principal Investigator: Integrated Multi-mission Upper Tropospheric Humidity

Earth System Data Records for Climate Research, NASA ROSES: Making Earth System Data Records for Use in Research Environments, 2017-2022 (submitted).

24. Co-Principal Investigator: A Multi-Decadal Multi-Satellite Record of High Vertical Resolution Upper Troposphere Lower Stratosphere Temperature Products, NASA ROSES: Making Earth System Data Records for Use in Research Environments, 2017-2022 (submitted).

PUBLICATIONS

Section 1: Thesis

1. **Shu-peng Ho**, An Expert System for Validation and Screening of Air Quality data. Master Thesis. Rutgers-the State University of New Jersey. 1992.
2. **Shu-peng Ho**, Atmospheric Profiles from Simultaneous Observations of Upwelling and Downwelling Spectral Radiance. Ph. D. Thesis, University of Wisconsin - Madison, March 1998.

Section 2: Referred Journal Articles

Total citation: 2343

* Written by students, science visitors, post-docs and supervised by Ho.

1. **Ho, S.-P.**, L. Peng, and H. **Voemel**, 2017: Characterization of the long-term radiosonde temperature biases in the upper troposphere and lower stratosphere using COSMIC and Metop-A/GRAS data from 2006 to 2014. *Atmospheric Chemistry and Physics*, **17**, 4493-4511, doi:10.5194/acp-17-4493-2017.
2. **Ho, S.-P.**, L. Peng, C. Mears, R. Anthes (2017), Comparison of Global Observations and Trends of Total Precipitable Water Derived from Microwave Radiometers and COSMIC Radio Occultation from 2006 to 2013, *Atmospheric Chemistry and Physics* (Submitted).
3. Kumar V., S. K. Dhaka, **S.-P. Ho**, Narendra Singh, and H.-Y. Chun (2016), Impact of seasonal solar variability on the association between lower troposphere and cold point tropopause in the tropics: Observations using RO data from COSMIC, *Atmospheric Research* (submitted).
4. Wu, Qian, B. Schreiner, **S.-P. Ho**, H.-L. Liu, Barbara Emery, Liying Qian (2017): Observations and simulations of Eddy diffusion and tidal effects on the seasonal change of the ionosphere, to be submitted to *J. Geophys. Res., Space Phys* (submitted).

5. Ying, L., G. Kirchengast, T.-K. Wee, **S.-P. Ho** (2017), A new algorithm for the retrieval of atmospheric profiles from GNSS radio occultation data in moist air conditions, *J. Geophys. Res.*, (In Preparation).
6. Liu, C. -Y., J. Li, **S. -P. Ho**, G. -R. Liu, T. -H. Lin, and C. -C. Young (2016), Retrieval of atmospheric thermodynamic state from synergistic use of radio occultation and hyperspectral infrared radiances observations. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, **9**, 744-756, doi:10.1109/JSTARS.2015.2444274.
7. Mears C., **S.-P. Ho**, L. Peng, and J. Wang (2017), Total Column Water Vapor, [In "States of the Climate in 2016"]. *Bul. Amer. Meteor. Sci.*, (in press).
8. Schröder, M., M. Lockhoff, L. Shi, T. August, R. Bennartz, H. Brogniez, X. Calbet, R. Dirksen, S. Eikenberg, F. Fell, J. Forsythe, Gambacorta, K. Graw, **S.-P. Ho**, H. Höschen, J. Kinzel, R. Kursinski, A. Reale, J. Roman, N. Scott, B. Sun, T. Trent, A. Walther, U. Willen, Q. Yang, GEWEX water vapor assessment (G-VAP) Final Report (submitted to WMO).
9. Rieckh, T., R. A. Anthes, W. Randel, **S. -P. Ho**, and U. Foelsche, 2017: Tropospheric dry layers in the tropical western Pacific: Comparisons of GPS radio occultation with multiple data sets. *Atmospheric Measurement Techniques*, **10**, 1093-1110, doi:10.5194/amt-10-1093-2017.
10. Shi, L., J. L. Matthews, **S. -P. Ho**, Q. Yang, and J. J. Bates (2016), Algorithm development of temperature and humidity profile retrievals for long-term HIRS observations. *Remote Sensing*, **8**, 280, doi:10.3390/rs8040280.
11. Mears C., **S.-P. Ho**, L. Peng, Zhou, and J. Wang (2016), Total Column Water Vapor, [In "States of the Climate in 2015"]. *Bul. Amer. Meteor. Sci.*, (in press).
12. Kumar V., S. K. Dhaka, **S.-P. Ho**, A. Gupta, and V. Panwar (2016), Role of solar cycle in decadal trends, *Journal of Atmospheric and Terrestrial Physics* (submitted).
13. Mears C., **S.-P. Ho**, L. Peng, Zhou, and J. Wang (2015), Total Column Water Vapor, [In "States of the Climate in 2014"]. *Bul. Amer. Meteor. Sci.*, (in press).
14. **Ho, S.-P.**, L. Peng, X. J. Zhou (2015), Calibration and Construction of Microwave Sensor Temperature Records in the Lower Stratosphere from 2001 to 2015 Using Global Positioning System Radio Occultation Data, *Atmospheric Chemistry and Physics* (submitted).
15. Dhaka, S. K., V. Kumar, R. K. Choudhary, **S.-P. Ho**, M Takahashi and S. Yoden (2015), Indications of a strong dynamical coupling between the polar and tropical regions during the sudden stratospheric warming event January 2009, based on COSMIC/FORMASAT-3 Satellite temperature data, *Atmospheric Research*,

- doi:10.1016/j.atmosres.2015.06.008, 166, 60-69.
16. Kumar, V., S. K. Dhaka, R. K. Choudhary, **S.-P. Ho**, and K. K. Reddy, On the occurrence of coldest temperature in stratospheric region and tropical tropopause stability: A study using COSMIC/ FORMOSAT-3 satellite measurements, *Journal of Atmospheric and Terrestrial Physics (JASTP)*, doi: 10.1016/j.jastp.2014.10.007.
 17. **Ho, S.-P.**, Liang Peng, Richard A. Anthes, Ying-Hwa Kuo, and Hsiao-Chun Lin (2015), Marine Boundary Layer Heights and Their Longitudinal, Diurnal, and Interseasonal Variability in the Southeastern Pacific Using COSMIC, CALIOP, and Radiosonde Data. *J. Climate*, **28**, 2856–2872. doi: <http://dx.doi.org/10.1175/JCLI-D-14-00238.1>.
 18. **Ho, S.-P.**, X. Yue, Z. Zeng, C. Ao, C.-Y. Huang, E. R. Kursinski, Y.-H. Kuo (2013), Applications of COSMIC Radio Occultation Data from the Troposphere to Ionosphere and Potential Impacts of COSMIC-2 Data, *BAMS*, doi: <http://dx.doi.org/10.1175/BAMS-D-13-00035.1>.
 19. Mears C., **S.-P. Ho**, L. Peng, Zhou, and J. Wang (2014), Total Column Water Vapor, [In “States of the Climate in 2013”. *Bul. Amer. Meteor. Sci.*, (*in press*).
 20. Kumar, V., S. K. Dhaka, K. K. Reddy, A. Gupta, S. B. Surendra Prasad, V. Panwar, N. Singh, **Shu-Peng Ho**, and M. Takahashi (2014), Impact of Quasi-Biennial Oscillation on the inter-annual variability of the tropopause height and temperature in the tropics: A study using COSMIC/ FORMOSAT-3 observations, *Atmospheric Research*, doi: 10.1016/ j.atmosres.2013.12.014, 139, 62-70.
 21. Blackwell W. J., Rebecca Bishop, Clayton Crail, Kerri Cahoy, Brian Cohen, Lidia Cucurull, Pratik Dave, Michael DiLiberto, Neal Erickson, Chad Fish, **shu-peng Ho**, R. Vincent Leslie, Idahosa A. Osaretin (2014), Radiometer Calibration Using Co-located GPS Radio Occultation Measurements, *IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING*, 2013.
 22. Huang, Ching-yuang, Wen-hsin Teng, **S.-P. Ho**, Y. H. Kuo (2013), Global Variation of COSMIC Precipitable Water over Land: Comparisons with Ground-based GPS Measurements and NCEP Reanalyses, *GRL*, DOI: 10.1002/grl.50885.
 23. Mears C., J. Wang, **S.-P. Ho**, L. Zhang, and X. Zhou (2013), Total Column Water Vapor, [In “States of the Climate in 2012”. *Bul. Amer. Meteor. Sci.*, (*in press*).
 24. Teng*, Wen-Hsin, Ching-Yung Huang, **S.-P. Ho**, Ying-Hwa Kuo, and Xin-Jia Zhou (2013), Characteristics of Global Precipitable Water in ENSO Events Revealed by COSMIC Measurements, *J. Geophys. Research*, Vol. 118, 1–15, doi:10.1002/jgrd.50371.
 25. Biondi*, R., **S.-P. Ho**, W. Randel, T. Neubert and S. Syndergaard (2013), Tropical

- cyclone cloud-top heights and vertical temperature structure detection using GPS radio occultation measurements, *J. Geophys. Research*, VOL. 118, 1–13, doi:10.1002/jgrd.50448.
26. 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, and J. Wickert (2013), Quantification of Structural Uncertainty in Climate Data Records from GPS Radio Occultation, *ACP* doi:10.5194/acp-13-1469-2013.
 27. Scherllin-Pirscher* B., C. Deser, **S.-P. Ho**, C. Chou, W. Randel, and Y.-W. Kuo, (2012), The vertical and spatial structure of ENSO in the upper troposphere and lower stratosphere from GPS radio occultation measurements, *Geophys. Res. Lett.*, 39, L20801, 6 PP., 2012, doi:10.1029/2012GL053071.
 28. **Ho, S.-P.**, Doug Hunt, Andrea K. Steiner, Anthony J. Mannucci, Gottfried Kirchengast, Hans Gleisner, Stefan Heise, Axel von Engel, Christian Marquardt, Sergey Sokolovskiy, William Schreiner, Barbara Scherllin-Pirscher, Chi Ao, Jens Wickert, Stig Syndergaard, Kent B. Lauritsen, Stephen Leroy, Emil R. Kursinski, Ying-Hwa Kuo, Ulrich Foelsche, Torsten Schmidt, and Michael 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. Research*. VOL. 117, D18111, doi:10.1029/2012JD017665.
 29. Mears, C., J. Wang, **S.-P. Ho**, L. Zhang, and X. Zhou (2012) [Global Climate] Hydrological cycle, Total column water vapor [in “State of the Climate in 2011”]. *Bull. Amer. Meteor. Soc.*, 93(7), S25–S26, doi:10.1175.
 30. Zeng*, Zhen, **S.-P. Ho**, S. Sokolovskiy (2012), The Structure and Evolution of Madden-Julian Oscillation from FORMOSAT-3/COSMIC Radio Occultation Data, *J. Geophys. Research*, 117, D22108, doi:10.1029/2012JD017685.
 31. Biondi*, R., W. Randel, **S.-P. Ho**, T. Neubert, and S. Syndergaard (2012), Thermal structure of intense convective clouds derived from GPS radio occultations, *Atmos. Chem. Phys.*, doi:10.5194/acp-12-5309-2012.
 32. Mears, C., J. Wang, **S.-P. Ho**, L. Zhang, and X. Zhou (2011) [Global Climate] Hydrologic cycle, Total column water vapor [in “State of the Climate in 2010”]. *Bull. Amer. Meteor. Soc.*, 92(6), S41–S42, doi:10.1175/1520-0477-92.6.S1.
 33. **Ho, S.-P.**, IPCC AR5 report (invited).
 34. Illingworth, S. M., Remedios, J. J., Boesch, H., **Ho, S.-P.**, Edwards, D. P., Palmer, P. I., and Gonzi, S. (2011), A comparison of OEM CO retrievals from the

- IASI and MOPITT instruments, *Atmos. Meas. Tech.*, 4, 775-793, doi:10.5194/amt-4-775-2011.
35. **Ho, S.-P.**, Y.-H. Kuo, X.-J. Zhou, P. Callaghan (2011), The Use of the COSMIC/FORMOSAT-3 Global Positioning System Radio Occultation Data as Global Reference Observations in Orbit and Their Applications in Meteorology, *Horizons in Earth Science Research, Vol. 5*, B. Veress and J. Szigehty, Eds. NOVA Publishers, in press (invited).
 36. **Ho, S.-P.**, Zhou X., Kuo Y.-H., Hunt D., Wang J.-H., (2010a), Global Evaluation of Radiosonde Water Vapor Systematic Biases using GPS Radio Occultation from COSMIC and ECMWF Analysis. *Remote Sensing*. 2010; 2(5):1320-1330.
 37. **Ho, S.-P.**, Ying-Hwa Kuo, William Schreiner, Xijia Zhou (2010b), Using SI-traceable Global Positioning System Radio Occultation Measurements for Climate Monitoring [In "States of the Climate in 2009"]. *Bul. Amer. Meteor. Sci.*, **91** (7), S36-S37. (invited).
 38. Mears C., J. Wang, **S.-P. Ho**, L. Zhang, and X. Zhou (2010), Total Column Water Vapor, [In "States of the Climate in 2009"]. *Bul. Amer. Meteor. Sci.*, **91** (7), S29-S31 invited).
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Section 3: Papers in Preparation

58. Liang. P., **S.-P. Ho** (2015), Evaluation of radiosonde water vapor measurements over Lands using COSMIC, Remote Sensing (*Submitted*).
59. **Ho, S.-P.** and L. Peng (2015), Correction of the Long-term Performance of Radiosonde Temperature Observations in the Lower Stratosphere using COSMIC, CHAMP, and GRACE from 2006 to 2014, *J. of Climate* (*Submitted*).
60. **Ho, S.-P.**, P. Liang (2015), Validation of COSMIC Atmospheric Precipitable Water using Ground-based GPS data from 2006 to 2015, *ACP* (*Submitted*).

Section 4: Other Publications and Proceedings

61. **Ho, S.-P.**, J. C. Gille, D. P. Edwards, M. N. Deeter, J. Warner, G. L. Francis, D. Ziskin, Retrieval of surface skin temperature from MOPITT measurements: validation and impacts to the retrievals of tropospheric carbon monoxide profiles Geoscience and Remote Sensing Symposium, 2002. IGARSS apos;02. 2002 IEEE International Volume 6, Issue, 2002 Page(s): 3177 - 3179 vol.6, 10.1109/IGARSS.2002.1027122.
62. **Ho, S.-P.**, J. C. Gille, D. P. Edwards, Juying Warner, M. N. Deeter, G. L. Francis, D. Ziskin, Validation of the retrieval of surface skin temperature and surface emissivity from MOPITT measurements and their impacts on the retrieval of tropospheric carbon monoxide profiles, Proc. SPIE 4891, Optical Remote Sensing of the Atmosphere and Clouds III, (9 April 2003); doi: 10.1117/12.467311
63. **Ho, S.-P.**, David P. Edwards, John C. Gille, Jarnei Chen, and Daniel Ziskin National Ctr. for Atmospheric Research (USA) Improvement of the global surface emissivity from MOPITT measurements and its impacts on the retrievals of tropospheric carbon monoxide profiles, Proc. SPIE, Vol. 5652, 124 (2004); DOI:10.1117/12.579046.
64. Lin B., Patrick Minnis, **Shu-peng Ho**, Jianping Huang, and Alice Fan, Ice Water Path and Overlapping Frequency of Tropical Overcast Clouds, IUGG 2003 Japan. (proceeding)
65. John C. Gille, David P. Edwards, Juying Warner, Merritt N. Deeter, Gene L. Francis, **Shu-peng Ho** and Daniel Ziskin, SPIE's third International Asia-Pacific Symposium on Remote Sensing of the Atmosphere, Environment, and Space, 23-27 October 2002, Hangzhou, China. (proceeding)
66. Louisa Emmons, John C. Gille, David P. Edwards, Merritt N. Deeter, Juying Warner, Gene L. Francis, **Shu-peng Ho**, Validation of MOPITT Retrieval of Carbon Monoxide, IGARSS 02 annual meeting, Toronto, Canada, 24-28 June 2002.
67. Merritt N. Deeter, John C. Gille, David P. Edwards, Jean-Luc Attie, Juying Warner, Gene L. Francis, **Shu-peng Ho** and Daniel Ziskin, Quantitative Radiance Validation for the MOPITT Instrument, IGARSS 02 annual meeting, Toronto, Canada, 24-28 June 2002
68. Bing Lin, Patrick Minnis, Bruce Wielicki, Yongxiang Hu, and **Shu-peng Ho**. Overcast clouds determined by TRMM measurements. IRS, 24-29 July, 2000 Saint Petersburg, Russia. (proceeding)
69. Young, David F., Minnis, Patrick, Lin, Bing, Ayers, J. Kirk, **Shu-Peng Ho**, Albrecht, Bruce A. - Rifkin, Hollis - Fairall, Chris W. - Garreaud, René. Cloud and

Radiation Properties Derived from Satellite Data During the Fall 1999 CIMAR-5 and EPIC Cruises. CLIVAR Pan-American PI Meeting. (proceeding)

70. W. F. Feltz, W. L. Smith, **S.-P. Ho**, T. J. Schmit, X. L. Ma, H. B. Howell : Combined Surface and Satellite Infrared Measurements of Atmospheric Temperature and Water Vapor Profiles. Proceedings of the 10th Symposium on Meteorological Observations and Instrument, Phoenix, AZ, January 11-16, 1998. (proceeding)
71. William L. Smith, S. A. Ackerman, D. H. DeSlover, W. F. Feltz, **S.-P. Ho**, R. O. Knuteson, H. E. Revercomb, and S. A. Clough. ARM Science Applications of AERI Measurements, Atmospheric Radiation Measurement (ARM) Science Team Meeting, San Antonio, TX March 3-7, 1997. (proceeding)
72. Valery A. Yudin, John C. Gille, David P. Edwards, Merritt N. Deeter, Shu-peng Ho, and Louisa K. Emmons, Data assimilation of carbon monoxide in the troposphere, Proc. SPIE, Vol. 6299, 62990K (2006); doi:10.1117/12.680968, Remote Sensing of Aerosol and Chemical Gases, Model Simulation/Assimilation, and Applications to Air Quality, SPIE, Sunday 13 August 2006, San Diego, CA, USA.
73. Ho S.-P., Xinjia Zhou, Ying-Hwa Kuo, Doug Hunt, Cheng-Zhi Zou, Construction of a Consistent Microwave Sensor Temperature Record in the Lower Stratosphere Using Global Positioning System Radio Occultation Data and Microwave Sounding Measurements, joint 2010 CWB Weather Analysis and Forecasting and COAA 5th International Ocean-Atmosphere Conference, June 28-30, 2010, Center Weather Bureau, Taipei.

Section 5: Other Referred Articles

74. William L. Smith, H. L. Huang, M. S. Whipple and **S.-P. Ho**, UW-CIMSS Physical Retrieval System Science Document for AIRS/AMSU/MHS, AIRS science team document, Jet propulsion Laboratory, NASA, Pasadena, Calif., 1996.
75. **Ho, S.-P.**, Smith, William L.; Huang, Hung-Lung Retrieval of atmospheric-temperature and water-vapor profiles by use of combined satellite and ground-based infrared spectral-radiance measurements, NASA Center: Langley Research Center, 2002, NTRS: 2005-09-29, Document ID: 20020069237.
76. **Ho, S.-P.**, B. Lin, P. Minnis, T. F. Fan, Estimation of Cloud Properties over Oceans Using VIRS and TMI Measurements on the TRMM Satellite, NASA Technical Report 2000.
77. Lin, B. P. Minnis, B. Wielicki, Y. X. Hu, **S.-P. Ho**, Overcast clouds determined by TRMM measurements, NASA Technical Report, NASA Center: Langley Research Center, NTRS: 2004-11-03, Document ID: 20000090515, 2000.

INVITED TALKS

1. **Ho, S.-P.**, New Climate Data Records that Can be Derived from GPS RO Data: Planetary Boundary Layer Heights and Upper Troposphere Humidity, 7, Feb., National Climate Data Center, Asheville NC, 2014.
2. **Ho, S.-P.**, GPS RO-MSU calibration and data record, 2008: NOAA-NIST Workshop on Calibration for Climate-Quality Time Series, Camp Springs, MD, Jan 14, 2008.
3. **Ho, S.-P.**, Validation and Calibration of Microwave Sounders' Lower Stratosphere Temperature Trend using GPS RO Data, COSMIC/FORMAST-3, 4, Dec. Taipei, Taiwan, 2006.
4. **Ho, S.-P.**, Climatological Validation of Microwave Lower Stratosphere Temperature using GPS RO Data, invited seminar given in National Central University, May 8, 2006, Taiwan.
5. **Ho, S.-P.**, Validation and Calibration of MSU/AMSU Measurements using GPS RO Data for Improving Stratospheric Temperature Trend Analysis, invited seminar given in National Technical institute, May 10, Taiwan, 2006.
6. **Ho, S.-P.**, Comparability and reproducibility of RO data, Workshop on the Applications of GPS Radio Occultation to Climate, NCAR Foothills Laboratory, Building #1 Atrium Conference Room 3450 Mitchell Lane, Boulder, CO 80301 March 17-18, 2008.
7. **Ho, S.-P.**, Validation of Microwave Sounders' Lower Stratosphere Temperature Trend using GPS RO Data, NOAA-COSMIC climate meeting, 14th Symposium on Meteorological Observation and Instrumentation, San Antonio, TX 14-18 January 2007.
8. **Ho, S.-P.**, Construction of Consistent Temperature Records using Global Positioning System Radio Occultation Data and Microwave Sounding Measurements, NOAA-COSMIC climate meeting in AMS, New Orleans, LA., 20-24 January 2008.
9. **Ho, S.-P.**, Applications of COSMIC RO to Climate Studies, NRC-CES meeting, Boulder, CO, Sep.22-23, 2008.
10. **Ho, S.-P.** "Enhancement of the AIRS Troposphere and Stratosphere Temperature Climate Data Records using Global Positioning System Radio Occultation Data", tele-conference presentation to JPL, Feb. 17 2010
11. **Ho, S.-P.**, Construction of a Consistent Microwave Sensor Temperature Record in the Lower Stratosphere Using Global Positioning System Radio Occultation Data and Microwave Sounding Measurements, 2010 Workshop on Climate Data Records from Satellite Microwave Radiometry, March 22-24, 2010 at the NOAA Science Center, in Silver Spring, MD.

12. **Ho S.-P.**, Xinjia Zhou, Ying-Hwa Kuo, Construction of a Consistent Microwave Sensor Temperature Record in the Lower Stratosphere Using Global Positioning System Radio Occultation Data and Microwave Sounding Measurements, June 17, 2010, Center Weather Bureau, Taipei (invited).
13. **Ho, S.-P.**, et al., Current Developments on the Applications of COSMIC from the Troposphere to Stratosphere and the Potential Impacts of COSMIC-2 Data, invited seminar given in Department of Atmospheric Science, National Central University, Jan. 29, 2013, Taiwan.
14. **Ho, S.-P.**, et al., Current Developments on the Applications of COSMIC from the Troposphere to Stratosphere and the Potential Impacts of COSMIC-2 Data, invited seminar given in Research Center for Environmental Changes, Academia Sinica, Jan. 31, 2013, Taiwan.
15. **Ho, S.-P.**, Using COSMIC GPS RO Data to Study Atmospheric Trends and Modes of Variability above, within, and below Clouds, invited seminar given in Jet Propulsion Lab, California Institute of Technology, Aug. 28, 2015, CA., USA.

NATIOANL and INTERNATIONAL CONFERENCES PRESENTATIONS (presenting author only for the last 2 years)

1. **Ho, S.-P.**, Liang Peng, Rick Anthes, Ying-Hwa Kuo, Planetary Boundary Layer Heights from COSMIC and CALIOP over Ocean, AMS, Atlanta, GA., 2-6, Feb., 2014.
2. **Ho, S.-P.**, Liang Peng, Rick Anthes, Ying-Hwa Kuo, Estimation of Planetary Boundary Layer Heights from COSMIC, CLIPSO, and High Resolution Radiosondes during the VOCALS-REx, AMS, Atlanta, GA., 2-6, Feb., 2014.
3. **Ho, S.-P.**, Liang Peng, Calibration of Temperature Troposphere / Stratosphere from Advanced Microwave Sounding Unit using High Quality Radiosonde Data Identified by Radio Occultation Data, the 5th international workshop on Occultation for Probing Atmosphere and climate, Graz, Austria, Sep. 8-11, 2013.
4. **Ho, S.-P.**, Tele-conference presentation: JPL talk about the “Enhancement of the AIRS Troposphere and Stratosphere Temperature Climate Data Records using Global Positioning System Radio Occultation Data”, April, 2010.
5. **Ho, S.-P.**, Xinjia Zhou, Ying-Hwa Kuo, Doug Hunt, Cheng-Zhi Zou. Construction of a Consistent Microwave Sensor Temperature Record in the Lower Stratosphere Using Global Positioning System Radio Occultation Data and Microwave Sounding Measurements, 2010 Workshop on Climate Data Records from Satellite Microwave Radiometry, March 22-24 2010 at NOAA Science Center in Silver Spring, MD (invited).

6. **Ho, S.-P.**, Xinjia Zhou, Ying-Hwa Kuo, Doug Hunt, Cheng-Zhi Zou, Construction of a Consistent Microwave Sensor Temperature Record in the Lower Stratosphere Using Global Positioning System Radio Occultation Data and Microwave Sounding Measurements, joint 2010 CWB Weather Analysis and Forecasting and COAA 5th International Ocean-Atmosphere Conference, June 28-30, 2010, Center Weather Bureau, Taipei, Taiwan.
7. **Ho, S.-P.**, Xinjia Zhou, Ying-Hwa Kuo, Construction of a Consistent Microwave Sensor Temperature Record in the Lower Stratosphere Using Global Positioning System Radio Occultation Data and Microwave Sounding Measurements, June 17, 2010, Center Weather Bureau, Taipei (invited).
8. **Ho, S.-P.**, Using SI-traceable Global Positioning System Radio Occultation Measurements for Climate Monitoring, National Central University, Department of Atmospheric Science, and GPS ARC, June 22, Jhongli, Taiwan (invited).
9. **Ho, S.-P.**, Xinjia Zhou, Ying-Hwa Kuo, Climate Calibration Observatory in Orbit: Calibration and Validation of Measurements of AMSU and AIRS using Global Positioning System Radio Occultation Observations, September, 6-10, OPAC-4, Graz, Austria.
10. **Ho, S.-P.**, Xinjia Zhou, Ying-Hwa Kuo, Assessment of Systematic Biases of Radiosonde Temperature and Moisture Measurements using Global Positioning System Radio Occultation from COSMIC, September, 6-10, OPAC-4, Graz, Austria.
11. **Ho, S.-P.**, Construction of Consistent Microwave Sensor Temperature Records and Tropopause Height Climatology using MSU/AMSU Measurements, GPS RO Data, and Radiosonde Observations, Climate Data Records Program Review meeting, August 4-5, 2010 in Asheville, NC.
12. **Ho, S.-P.**, Construction of Consistent Microwave Sensor Temperature Records and Tropopause Height Climatology using MSU/AMSU Measurements, GPS RO Data, and Radiosonde Observations, ARC/SDS Program Review meeting, September, 14-16, 2010 in Asheville, NC.
13. **Ho, S.-P.**, Assessment of Systematic Biases of Radiosonde Moisture Measurements using Global Positioning System Radio Occultation from COSMIC, GEWEX/ESA DUE GlobVapour workshop on long term water vapour data sets and their quality assessment, 8 – 10 March 2011 - ESA/ESRIN, Frascati, Italy (invited).
14. **Ho, S.-P.**, Xinjia Zhou, Ying-Hwa Kuo, Assessment of Systematic Biases of Radiosonde Moisture Measurements using Global Positioning System Radio Occultation from COSMIC, 91st American Meteorological Society Annual Meeting, Seattle, WA, USA.