CURRICULUM VITAE

Name: IRINA PETROPAVLOVSKIKH

TITLE AND AFFILIATION

CIRES Research Scientist III
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EDUCATION

1980-1986	BS and MS in Engineering-Physics, Moscow Physical-Technical Institute, Russia
1991-1994	Graduate Fellowship, ASP, NCAR, Boulder, Colorado, USA
1993-1995	Ph.D. in Physics, Free University of Brussels, Belgium

PROFESSIONAL EXPERIENCE

Graduate Fellowship, NCAR, Boulder, Colorado, 1991-1994
Research Assistant, CIRES, CU, Boulder, Colorado, 1994-1995
Research Scientist I, CIRES, CU, Boulder, Colorado, 1995-1998
Research Scientist II, CIRES, CU, Boulder, Colorado, 1999-2008
Research Scientist III, CIRES, CU, Boulder, Colorado, 2008-present

PROFESSIONAL ACTIVITIES AND MEMBERSHIPS

American Geophysical Union
OMPS (OZONE MAPPING AND PROFILER SUITE) OPERATIONAL ALGORITHM TEAM (OOAT) ADVISOR

RESPONSIBILITIES AND INTERESTS

Dr. Irina Petropavlovskikh is a Research Scientist III at CIRES, University of Colorado. She is also a member of Ozone and Water vapor Group at NOAA/ESRL/GMD. She had successfully collaborated in her research with national and international scientists for a number of years. She had recently developed an algorithm to retrieve trend-quality ozone profiles from Dobson zenith sky measurements. The updated Umkehr algorithm (UMK04) was finished and published in 2005 (http://www.srrb.noaa.gov/research/umkehr). She currently works on similar algorithm for the NOAA/EPA UV Brewer network instruments under EPA STAR grant funded project.

Her area of scientific interest is in theoretical modeling of polarized UV radiation to improve our understanding of radiative effects of clouds and aerosols on ground-based UV radiation measurements. Dr. Petropavlovskikh is involved in the US science team effort to validate the OMI instrument on the board of the AURA satellite. She developed and successfully applied algorithm to retrieve ozone partial column from actinic fight measurements from CAFS instrument flown aboard of DC-8 and WB-57 NASA aircrafts in 4 validation missions. Irina also serves on the science advisory board for the National Polar-orbiting Operational Environmental Satellite System (NPOESS), Ozone Mapping and Profiler Suit (OMPS). Dr. Petropavlovskikh provides an expertise and consulting for the international group of experts on Umkehr data organized by WMO, IOC Umkehr sub-committee and Ozone SAG committee under WMO.

Dr. Petropavlovskikh is the recipient of the 2008 Stratospheric Ozone Protection Award from the U.S. Environmental Protection Agency (EPA) for outstanding scientific contributions to stratospheric ozone protection.

Dr. Petropavlovskikh taught PAOS graduate level course " Radiative processes in Planetary Atmosphere", ATOC 5560 Fall 2003, with 11 students attending and 3 hours of credit.

PUBLICATIONS

Papers in press:

Wenny, B. N., J. S. Schafer, J. J. DeLuisi, V. K. Saxena, W. F. Barnard, I. V. Petropavlovskikh, and A. J. Vergamini, Field Experiment Determination of aerosol radiative properties and effects in the Ultraviolet-B region, J. Geophys. Res., 103, D14, 17,083-17,097, 1998

Petropavlovskikh, I. V., J. J. DeLuisi, R. Loughman, B. Herman, A Comparison of UV Intensities Calculated by Spherical-Atmosphere Radiation Transfer Codes: Implications for Improvement to the Umkehr Method, Journal of Geophysical Research-Atmospheres, 105, 14,373-14,746, 2000.

Stevermer, A. J., I. V. Petropavlovskikh, J. J. DeLuisi, J. M. Rosen, Development of a global stratospheric aerosol climatology: optical properties and applications for UV, JGR, V. 105, pp. 22,763-22,776, 2000

Yu SC, Saxena VK, Wenny BN, DeLuisi JJ, Yue GK, Petropavlovskikh IV, A study of the aerosol radiative properties needed to compute direct aerosol forcing in the southeastern United States, J. Geophys. Res., 105 (D20), pp. 24739-24749, 2000

Petropavlovskikh, I. V., J. J. DeLuisi, D. Theisen, R. D. Bojkov and E. Kosmidis, On shifts in the long-term Umkehr Radiance Records and their influence on retrieved ozone profiles, Geophys. Res. Lett., 28, 255-258, 2001

Rumen D. Bojkov, Evangelis Kosmidis, John J. DeLuisi, Irina Petropavlovskikh, Vitali E. Fioletov, Sophie Godin and Christos Zerefos, Vertical Ozone Distribution Characteristics Deduced from ~40,000 Re-evaluated Umkehr Profiles (1957-2000), Meteorol. Atmos. Phys., 79, Issue 3-4, pp 127-158, 2002.

Petropavlovskikh, I., C. Ahn, P. K. Bhartia, and L. E. Flynn (2005), Comparison and covalidation of ozone anomalies and variability observed in SBUV(/2) and Umkehr northern midlatitude ozone profile estimates, *Geophys. Res. Lett.*, 32, L06805, doi:10.1029/2004GL022002.

Petropavlovskikh, I., P. K. Bhartia, and J. DeLuisi (2005), New Umkehr ozone profile retrieval algorithm optimized for climatological studies, Geophys. Res. Lett., 32, L16808, doi:10.1029/2005GL023323.

Fioletov, V. E., D. W. Tarasick, and I. Petropavlovskikh , 2006: Estimating ozone variability and instrument uncertainties from SBUV(/2), ozonesonde, Umkehr, and SAGE II measurements: 1. Short-term variations. *J. Geophys. Res.*: Vol. 111, 10.1029/2005JD006340

Miller,A.J., A. Cai, G. C. Tiao, D. J. Wuebbles, L. E. Flynn, S.-K. Yang, E. C. Weatherhead, V. Fioletov, I. Petropavlovskikh, X.-L. Meng, S. Guillas, R. M. Nagatani , and G. C. Reinsel, 2006: Examination of ozonesonde Data for Trends and Trend Changes Incorporating Solar and Arctic Oscillation Signals. *JGR*: Vol. 111, 101029/2005JD00684

Petropavlovskikh, R. Shetter, S. Hall, K. Ullmann, P. K. Bhartia (2007a), An algorithm for the CAFS ozone retrieval in support of the Aura satellite validation, *J. of Atmos. Remote Sens,* 01(01), 013540, doi: 10.1117/12.782667.

Petropavlovskikh, I., Lucien Froidevaux , Richard Shetter , Sam Hall , Kirk Ullmann , Pawan Bhartia (2007), "In-flight validation of Aura MLS ozone with CAFS partial ozone columns", J. Geophys. Res., 112, doi:10.1029/2007JD008690

Kroon, M, I. Petropavlovskikh, R. Shetter, S. Hall, K. Ullmann, J.P. Veefkind, R. D. McPeters, and P.F. Levelt (2007), "OMI Total Ozone Column Validation with Aura-AVE CAFS Observations", J. Geophys. Res., 112, doi:10.1029/2007JD008795

R. McPeters, M. Kroon, G. Labow, E. Brinksma, D. Balis, I. Petropavlovskikh, J.P. Veefkind, P.K. Bhartia, P.F. Levelt (2007), "Validation of the Aura Ozone Monitoring Instrument Total Column Ozone Product", J. Geohpys. Res., 112, doi:10.1029/2007JD008

Petropavlovskikh, I, Evans R. D., Carbaugh G. L., Maillard E. And Stubi R., 2008, Towards a better knowledge of Umkehr measurements: A detailed study of data from thirteen Dobson intercomparisons, *World Meteorological Organization Global Atmosphere Watch*, GAW No. 180.

Miyagawa, K., T. Sasaki, H. Nakane, I. Petropavlovskikh, and R. D. Evans (2009), - Reevaluation of long-term Umkehr Data and Ozone profiles, *J. Geophis. Res.,* 114, D07108, doi:10.1029/2008JD010658.

Flynn, L.E., D. McNamara, C.T. Beck, I. Petropavlovskikh, E Beach, Y. Pachepsky, Y.P. Li, M. Deland, L.K. Huan, C.S. Long, C.S. Seftor, R. Tiruchirapalli, and S. Taylor (2009), "Measurements and Products from the Solar Backscatter Ultraviolet (SBUV/2) and the Ozone Mapping and Profiler Suite (OMPS) Instruments", *International Journal of Remote Sensing*, **30** (15), 4259 - 4272, doi: 10.1080/01431160902825040

Evans, R, G. Mcconville, S. Oltmans, I. Petropavlovskikh, D. Quincy (2009), "Measurement of internal stray light within Dobson ozone spectrophotometers", *International Journal of Remote Sensing*, **30**(15), 4247 – 4258, doi: 10.1080/01431160902825057

Petropavlovskikh, I. , R. Evans, G. Mcconville, K. Miyagawa, S. Oltmans (2009), "Effect of the out-of-band stray light on the retrieval of the Umkehr Dobson ozone profiles", *International Journal of Remote Sensing*, **30** (24), 6461 – 6482, doi: 10.1080/01431160902865806

Petropavlovskikh I., E. Ray, S. M. Davis, K. Rosenlof, G. Manney, R. Shetter, S. R. Hall, K. Ullmann, L. Pfister, J. Hair, M. Fenn, M. Avery, A. M. Thompson (2010), Low ozone bubbles observed in the tropical tropopause layer during the TC4 campaign in 2007**.** *J. Geophys. Res.-Atmos., 115 , Art. No. D00J16, issn: 0148-0227, ids: 649GH, doi: 10.1029/2009JD012804, 2010.*

A. Douglass, V. Fioletov, S. Godin-Beekmann, R. Müller, R.S. Stolarski, A. Webb, A. Arola, J.B. Burkholder, J.P. Burrows, M.P. Chipperfiel, R. Cordero, C. David, P.N. den Outer, S.B. Diaz, L.E. Flynn, M. Hegglin. J.R. Herman, P. Huck, S. Janjaim I.M. Jánosi, J.W. Krzyścin, Y. Liu, . Logan, K. Matthes, R.L. McKenzie, N.J. Muthama, I.Petropavlovskikh, M. Pitts, S. Ramachandran, M. Rex, R.J. Salawitch, B.-M. Sinnhuber. J. Staehelin, S. Strahan, K. Tourpali, J. Valverde-Canossa, C. Vigouroux (2011), Stratospheric Ozone and Surface Ultraviolet Radiation. Scientific Assessment of Ozone Depletion: 2010 , World Meteorological Organization.

Petropavlovskikh, R. Evans, G. McConville , S. Oltmans , D. Quincy, K. Lantz, P.Disterhoft, M. Stanek, L. Flynn (2011), Sensitivity of Dobson and Brewer Umkehr ozone profile retrievals to ozone cross-sections and stray light effects. *Atmospheric Measurement Techniques*, *4* 1-29, doi: 10.5194/amtd-4-1-2011

Nair, P. J., Godin-Beekmann, S., Pazmiño, A., Hauchecorne, A., Ancellet, G., Petropavlovskikh, I., Flynn, L. E., and Froidevaux, L.: Coherence of long-term stratospheric ozone vertical distribution time series used for the study of ozone recovery at a northern mid-latitude station, Atmos. Chem. Phys., 11, 4957-4975, doi:10.5194/acp-11-4957-2011, 2011.

Conference/Meeting presentations:

Petropavlovskikh, I. and P. K. Bhartia, Comparison of ozone profile retrieved using Brewer and Dobson instruments with satellite observations, 7th Biennial WMO/GAW Brewer Users Group Meeting, Toronto, Canada, September 2002.

Petropavlovskikh, P.K Bhartia, G. Labow, Ch. Wellemeyer, The updated Umkehr ozone retrieval algorithm and its validation against satellite data, American Geophysical Union Spring Meeting, Nice, France April 2003.

Petropavlovskikh, I. and P. K. Bhartia, Measurement errors in Brewer and Dobson Umkehr data, 8th Biennial WMO/GAW Brewer Users Group Meeting, El Arenosillo, Spain, September 2003.

Petropavlovskikh I., P.K Bhartia, T. McElroy,"Assessment of information content of automated Dobson and Brewer Umkehr measurements", Proceedings of the 2004 Quadrenial Ozone Symposium, Kos, Greece, 2004.

S.V. Kireev, L.E. Flynn, and I. Petropavlovskikh, 2004-12-12: Comprehensive Intercomparison of SBUV and Umkehr Ozone Data Using TOMRAD Code. *2004 AGU Fall meeting*, San Francisco, CA, USA.

Petropavlovskikh, I., R. Shetter, L. Froidevaux, P.K. Bhartia, M. Kroon, T. Beck, 2005, "CAFS partial ozone column data for in-flight validation of the AURA ozone products, *EGU Spring meeting*, Vienna, Austria

Petropavlovskikh, I., S. Kireev, E. Maillard, R. Stube, and P. K. Bhartia, New Brewer algorithm for a single pair, 9th Biennial WMO/GAW Brewer Users Group Meeting, Delft, Netherlands, June 2005.

Petropavlovskikh, R. Shetter, S. Hall, P.K. Bhartia, 2006, CAFS ozone data for validation of AURA products", *AURA Science Team Meeting*, Boulder, CO, USA

Petropavlovskikh, R. Shetter, S. Hall, K. Ullmann, M. Kroon, R. McPeters, G. Labow, 2006, "Combining CAFS stratospheric ozone with lidar mesurements for the OMI total ozone validation", *CRAVE Science Team Meeting*, Washington, DC, USA

Petropavlovskikh, S. Oltmans, P. Disterhoft, K. Lantz, P. Kiedron, 2006, "The short-term and long-term tropospheric ozone variability available from zenith sky measurements" *AGU, Fall*, San Francisco, CA, USA, AGU, Fall 2006

Petropavlovskikh, I, V. Fioletov, S. Oltmans, K. Lantz, P. Kiedron, P. Disterhoft, 2007, "The short-term and long-term tropospheric ozone variability available from zenith sky measurements" 10th Biennial WMO/GAW Brewer Users Group Meeting, Northwich, Great Britain, June 2007.

Petropavlovskikh, I., V. Fioletov, E. Hare, S. Oltmans, S. Godin, E. Maillard, R. Stube, G. Bodecker, 2007, "In-depth analysis of the Umkehr retrieved ozone profiles", *AMS,* Portland, OR, USA, August 2007.

Petropavlovskikh, R. Shetter, S. Halls, K. Ullman, R. McPeters, G. Labow, P.K. Bhartia, M. Kroon, E. Browell, J. Hair, M. Fenn 2006, "TC4 campaign results: validating the Aura OMI total ozone data in tropics with the airborne CAFS and DIAL ozone measurements." *AGU, Fall*, San Francisco, CA, USA, December 2007.

Petropavlovskikh, I. et al, 2008, "The Short-Term and Long-Term Stratospheric and Tropospheric Ozone Variability Available from Zenith Sky Measurements", *2008 NOAA ESRL global monitoring annual conference,* Boulder, May 14-15, 2008.

T. Uttal, I. Petropavlovskikh, S. Oltmans, S. Stephenson, and J. Calder, 2008, "An update on the status of a new climatological observatory in Tiksi, Russia", *NEESPI Science Team Meeting*, Helsinki, Finland, 2-6 June 2008.

Petropavlovskikh, I. I., Disterhoft, P., Lantz, K, Kiedron, P., Evans, R. and Oltmans, S., Flynn, L., M. DeLand, Fioletov, V., and Stanek, M. (2008), "The Short-Term and Long-Term Stratospheric and Tropospheric Ozone Variability Available from Zenith Sky Measurements", 2008 NOAA ESRL global monitoring annual conference, Boulder, May 14-15, 2008 (presentation).

Kroon, M., R.D. McPeters, J.P. Veefkind, G. Labow, D. Balis, I. Petropavlovskikh, P.K. Bhartia, R. Shetter, P.F. Levelt (2008), "Validation of the Ozone Monitoring Instrument total ozone column data and implications for trend studies", Quadrennial Ozone symposium, Tromso, Norway, June 28-July 5, 2008 (presentation)

Flynn, L. E., D. McNamara, C.T. Beck, I. Petropavlovskikh, E Beach, Y. Pachepsky, Y.P. Li, M. Deland, L.K. Huan, C.S. Long, C.S. Seftor, R. Tiruchirapalli, and S. Taylor (2008), "Measurements and Products from the Solar Backscatter Ultraviolet (SBUV/2) and the Ozone Mapping and Profiler Suite (OMPS) Instruments", Quadrennial Ozone symposium, Tromso, Norway, June 28-July 5, 2008

(presentation)

Petropavlovskikh, I., Disterhoft, P., Lantz, K, Kiedron, P., Evans, R. and Oltmans, S., Flynn, L., M. DeLand, Fioletov, V., and Stanek, M. (2008),"The short-term and long-term stratospheric and tropospheric ozone variability available from zenith sky measurements", Quadrennial Ozone symposium, Tromso, Norway, June 28-July 5, 2008 (poster).

Petropavlovskikh, I., R. Evans, S. Oltmans, and K. Miyagawa (2008) "Improvement to ozone profiles derived from measurements of the Umkehr effect by correcting for instrumental stray light", Quadrennial Ozone symposium, Tromso, Norway, June 28-July 5, 2008 (poster).

Miyagawa, K., T. Sasaki, H. Nakane, I. Petropavlovskikh, and R. Evans (2008)," Re-evaluation of long-term Umkehr Data and Ozone profiles", Quadrennial Ozone symposium, Tromso, Norway, June 28-July 5, 2008 (poster).

Evans, R, G. Mcconville, S. Oltmans, I. Petropavlovskikh, D. Quincy (2008), "Measurement of internal stray light within Dobson ozone spectrophotometers", Quadrennial Ozone symposium, Tromso, Norway, June 28-July 5, 2008 (poster).

Walsh, B., R. Evans, E. Hare, C.T. McElroy, D. Quincy (2008) "An in-depth analysis of ground-based ozone measurements at Mauna Loa Observatory", Quadrennial Ozone symposium, Tromso, Norway, June 28-July 5, 2008 (poster).

Petropavlovskikh, I., R. Shetter, S. Hall, K. Ullmann, E. Browell, J. Hair, M. Fenn, M. Avery, K. Rosenlof, L. Pfister, R. McPeters, G. Labow, M. Kroon (2008), "Variability of the ozone field in the TTL observed by the DIAL and CAFS instruments during the TC4 mission", IGAC 10th International Conference, Annecy, France, September 2008.

Petropavlovskikh, I., R. Shetter, S. Hall, K. Ullmann, E. Browell, J. Hair, M. Fenn, M. Avery, K. Rosenlof, L. Pfister, R. McPeters, G. Labow, M. Kroon (2008), "Variability of the ozone field in the TTL observed by the DIAL and CAFS instruments during the TC4 mission", EOS Aura Science Team Meeting, 27-30 October 2008, Columbia, MD

Flynn, L., E. Beach, I. Petropavlovskikh, P. Disterhoft, K. Lantz, P. Kiedron, R. Evans, S. Oltmans, G. McConville and K. Miyagawa (2008), "Enhanced operational methods in the NOAA Umkehr ground-based network for the future OMPS validation.", Fall AGU meeting, San Francisco, December 2008 (poster).

Petropavlovskikh, I., K. Rosenlof, E. Ray, L. Pfister, R. Shetter, S. Hall, J. Hair, M. Fenn, and M. Avery (2008), "Low-ozone bubbles observed in the TTL during TC4 campaign", Fall AGU meeting, San Francisco, December 2008 (poster).

Petropavlovskikh, I., G. McConville, Evans R, S. Oltmans, D. Quincy, K. Lantz, P. Disterhoft (2009), "Sensitivity of Dobson and Brewer Umkehr ozone profile retrievals to the choice of the ozone cross-section.", GAW 2009 Ozone theme meeting of ACSO experts, Geneva, 11-14 May 2009 (Presentation)

Evans, R, G. McConville, S. Oltmans, I. Petropavlovskikh, D. Quincy (2009), "Effect of a proposed change of ozone cross-sections on the historical record of stratospheric ozone at selected stations using Dobson ozone spectrophotometers in the US network", GAW 2009 Ozone theme meeting of ACSO experts, Geneva, 5-7 May 2009 (presentation)

Petropavlovskikh, I., S. Oltmans, R. Evans, V. Fioletov, M. Kirchmier, L. Flynn (2009), "Interpretation of ozone trend analysis in data with different vertical resolution", IAMAS, MOCA-09, 19-29 July 2009, Montreal, Canada (poster).

Petropavlovskikh, I., R. Evans, P. Disterhoft, M. Kirchmier (2009), " An update on Brewer Umkehr retrieval", 12th Biennial WMO-GAW Brewer Users Group Meeting, 21-25 September 2009, Aosta, Italy (presentation).

Kirchmeier, M. and I. Petropavlovskikh (2010), "The use of meteorological parameters to

compare tropospheric ozone measurements over Boulder, CO", AMS, 18-23 January 2010, Atlanta, Georgia (poster)

L. Flynn, D. Rault, S. Janz, I. Petropavlovskikh, C. Long, S. Yang, E. Beach, S. Farrow (2010), "NPOESS Preparatory Project Validation Program for the Ozone Mapping and Profiler Suite", AMS, 18-23 January 2010, Atlanta, Georgia (poster)

Petropavlovskikh, I, McConville, G., Evans, R., Oltmans, S., Quincy, D., Lantz, K.., Disterhoft. P., 2010-3-23: Sensitivity of Dobson and Brewer Umkehr ozone profile retrievals to ozone cross-sections and stray light effects.. 2nd WMO O3 x-section meeting, Geneva, Switzerland

Petropavlovskikh, I., Logan, J.A., Fioletov, V., Frith, S.M., Stolarski, R., Flynn, L., Godin-Beekmann, S., Oltmans, S., Yang S.K., 2010-5-17: Ozone profile trends from ground-based and satellite data.. ESRL/GMD Annual Meeting, Boulder, CO, USA

Petropavlovskikh, I., Logan, J.A., Fioletov, V., Frith, S.M., Stolarski, R., Flynn, L., Godin-Beekmann, S., Oltmans, S., Yang S.K., 2010-7-11: Ozone profile trends from ground-based and satellite data.. IGAC Meeting (Int'l Global Atmosphere Chemistry Project)., Halifax, Canada

Lantz, K., Petropavlovskikh, I., Long, C., 2010-12-11: The Effect of Measured Ozone Profiles and Tropospheric Ozone on UV Photolysis Rate Coefficients in the Troposphere in Houston, TX. AGU, San Francisco, CA, USA

L. Flynn, D. Rault, S. Janz, I. Petropavlovskikh, C. Long, S. Yang, E. Beach, (2011): "NPOESS Preparatory Project Validation Program for the Ozone Mapping and Profiler Suite", AMS, 18-23 January 2011, Seattle, Washington (poster).

I. Petropavlovskikh et al, "An analysis of tropospheric ozone over Boulder, CO", Second tropospheric ozone workshop, Tropospheric Ozone Changes: Observations, state of understanding and model performances, 11-13 April 2011, Météo France, Toulouse, France (poster)

S. Olmatns, I. Petropavlovskikh et al, "Long-term tropospheric ozone variations at background measurement sites", Second tropospheric ozone workshop, Tropospheric Ozone Changes: Observations, state of understanding and model performances, 11-13 April 2011, Météo France, Toulouse, France (poster)

I. Petropavlovskikh, "Future of the monitoring for Ozone and Water Vapor: Interannual variability and trends", ESRL/GMD Annual Meeting, May 17-18, 2011, Boulder, CO, USA

Flynn,L., Rault, D., Jaross,G., Petropavlovskikh, I., Long, C., Hornstein, J., Beach, E., Yu, W., Niu, J., and Swales, D. (2011), "NPOESS preparatory project validation plans for the ozone mapping and profiler suite', IGARSS, 25-29 July, 2011, Vancouver, Canada (poster)

Irina Petropavlovskikh, R. Evans, P. Disterhoft, K. Lant, S. Olmatns, 2011-9-11: Advancements in the Brewer Umkehr Retrieval algorithm. *13th Biennial Brewer Workshop*, Beijing, China

I. Petropavlovskikh et al, "An analysis of tropospheric ozone over Boulder, CO", WCRP, Climate Research in Service to Society , 24-28 October 2011, Denver, CO, USA (poster)

I. Petropavlovskikh, P. Disterhoft, K. Lant, S. Olmatns, P.K. Bhartia, R. McPeters, L. Flynn, B. Johnson, M. Stanek, "Brewer ozone profile retrievals", AGU, 5-8 December, 2011, San Francisco, CA, USA

Petropavlovskikh, P. Disterhoft, N. L. Flynn, S. Oltmans, B. Johnson, M. Stanek, T. McElroy, V. Savastyouk, John Rimmer, A. Redondas, "Consolidating and improving Umkehr record", Second SPARC/IOC/IGACO-O3/NDACC (SI2N) workshop on Past Changes in the Vertical Distribution of Ozone 16-18 April, 2012, Columbia, MD, USA

I. Petropavlovskikh , P. Disterhoft, B. Evans, G. McConvile, B. Johnson , L. Flynn, R. McPeters, M. Stanek, "Highlights of the new multi-spectral Brewer Umkehr ozone profile retrieval.", Global Monitoring Annual Conference, Boulder, 15-17May, 2012.

I. Petropavlovskikh, P. Disterhoft, B. Johnson, H. Rieder, G L Manney, W.H. Daffer

“Interpretation of ozone trend analysis in data with different vertical resolution.”, Quadrennial Ozone symposium, Toronto, Canada, August 27-August 31, 2023 (oral).

I. Petropavlovskikh, P. Disterhoft, R. McPeters, L. Flynn, B. Johnson, M. Stanek, “Highlights of the new multi-spectral Brewer Umkehr ozone profile retrieval.”, Quadrennial Ozone symposium, Toronto, Canada, 27-August 31, 2012 (poster).

G L Manney, I Petropavlovskikh, WH Daffer, MI Hegglin, MJ Schwartz, ML Santee, S Pawson, NJ Livesey, “ Upper Troposphere/Lower Stratosphere (UTLS) Jet and Tropopause Characteristics Over Boulder, Colorado, USA: Context for Ground-Based Ozone Measurements” , Quadrennial Ozone symposium, Toronto, Canada, August 27-August 31, 2023 (oral).

I. Petropavlovskikh, P. Disterhoft, B. Johnson, H. Rieder, G L Manney, W.H. Daffe, “Interpretation of tropospheric ozone variability in data with different vertical and temporal resolution.” AGU, 3-7 December, 2012, San Francisco, CA, USA

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