

CURRICULUM VITAE

Name: IRINA PETROPAVLOVSKIKH

TITLE AND AFFILIATION

CIRES Senior Research Scientist
NOAA/ESRL/GMD,
325 Broadway, Boulder, CO 80305, USA,
Voice: (303) 497-6279, Fax: (303) 497-6546,
e-mail: irina.petro@noaa.gov

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, 2008-2014
Senior research Scientist, CIRES, CU, Boulder, Colorado, 2015-present

PROFESSIONAL ACTIVITIES AND MEMBERSHIPS

American Geophysical Union
OMPS (OZONE MAPPING AND PROFILER SUITE) OPERATIONAL ALGORITHM TEAM (OoAT)
ADVISOR
SECRETARY OF THE INTERNATIONAL OZONE COMMISSION (IOC) OF INTERNATIONAL ASSOCIATION OF METEOROLOGY AND ATMOSPHERIC SCIENCES (IAMAS)
NETWORK FOR THE DETECTION OF ATMOSPHERIC COMPOSITION CHANGES (NDACC),
REPRESENTATIVE OF THE DOBSON/BREWER WORKING GROUP

RESPONSIBILITIES AND INTERESTS

CIRES lead of Ozone and Water Vapor (OZWV) group in the Global Monitoring Division (GMD), NOAA/ESRL. Dr. Irina Petropavlovskikh is a Senior Scientist at CIRES, University of Colorado. The primary mission of the group is to carry out original global monitoring of ozone variability in the Earth's upper and lower atmosphere, with emphasis on the stratospheric ozone depletion/recovery, climate change and regional air quality. The measurement methods deployed by NOAA's ozone monitoring program are remote sensing techniques available from the ground based instruments such as the Dobson spectrophotometer (15 stations), Brewer spectrometer (five stations) and from the NOAA satellite platforms. In addition, the balloon borne methods are used to monitor ozone (15 stations) and water vapor (three stations) vertical distribution in troposphere and low stratosphere. The air-quality monitoring ozone program is supported by the light aircraft boundary layer profiling and through continuous surface and tower ozone sampling. The program also focuses on data analysis, development and validation of the data processing methods for obtaining quality assured and calibrated data for NOAA and WMO-guided archival centers, and for open access distribution.

For the past 25 years Dr. Petropavlovskikh was affiliated with CIRES and worked on numerous NOAA projects. She had successfully collaborated in her research with national and international scientists. Among a few accomplishments she lists development and deployment of an

algorithm to retrieve trend-quality ozone profiles from Dobson zenith sky measurements in the frame of the WMO Dobson network. The updated Umkehr algorithm (UMK04) was finished and published in 2005 (<http://www.srrb.noaa.gov/research/umkehr>). She also worked on similar algorithm for the NOAA/EPA UV Brewer network instruments under EPA STAR grant funded project. The PC software for Brewer data processing was developed in collaboration with international community and implemented in the world-wide Brewer network operations (<http://www.o3soft.eu/o3bumkehr.html>). Further improvements and modifications to the algorithm were made under the 2010 NASA grant-funded project, as the wide-network distribution is pending based on the outcome of validation result.

Dr. Petropavlovskikh area of scientific interest is in the tropospheric and stratospheric ozone long-term changes in association with atmospheric chemistry and long-range transport processes. She is skilled in theoretical modeling of polarized UV radiation. She uses airborne and ground-based spectral radiation measurements to improve understanding of radiative effects of clouds and aerosols on the quality of the retrieved ozone information. Since 2004 Dr. Petropavlovskikh has been 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 flight measurements from CAFS instrument flown aboard of DC-8 and WB-57 NASA aircrafts in four validation missions. Since 2001 Dr. Petropavlovskikh 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 the WMO. She is the representative of the Dobson/Brewer working group for the Network for the Detection of the Atmospheric Composition changes (NDACC).

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.

Dr. Petropavlovskikh is co-lead on the new SPARC Activity LOTUS – Long-term Ozone Trends and Uncertainties in the Stratosphere. She is also co-lead on the SPARC activity OCTAV-UTLS – Observed Composition Trends And Variability in the Upper Troposphere and Lower Stratosphere.

Dr. Petropavlovskikh has been elected Secretary of the International Ozone Commission to serve for 2016-2020 term.

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

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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,

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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.

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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, 101029/2005JD006684

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

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