

R. Chris Wilson

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EDUCATION

December 2011 University of Maryland, Baltimore County, Baltimore, Md.
PhD, Atmospheric Physics
May 2006 University of Maryland, Baltimore County, Baltimore, Md.
MS, Atmospheric Physics
May 2003 Westminster College, New Wilmington, PA. BS, Physics

WORK EXPERIENCE

10/2012 - Present Caltech Postdoctoral Scholar. Research directed by Dr. Bill Irion and Dr. Evan Fishbein. Research work analyzes AIRS Cloud Clearing, AIRS and MODIS matchups, and understanding new cloud clearing techniques.
10/2011 – 10/2012 Caltech Postdoctoral Scholar. Research directed by Dr. Simon Hook at NASA JPL. Research work involves studying the warming trends of large inland water bodies.
4/2010 – 11/2011 Graduate Research Assistant, University of Maryland Baltimore County. Dissertation research advised by Dr. Raymond Hoff. Research involved Retrievals of Carbon Monoxide Profiles from the AERI instrument. This culminated in a Ph.D. Dissertation
1/2007 - 3/2010 Graduate Research Assistant, JCET, University of Maryland Baltimore County. Computational work supervised by Dr. Wallace McMillan
1/2006 - 1/2007 Graduate Assistant, Department of Physics, University of Maryland Baltimore County. Laboratory work supervised by Dr. Wallace McMillan involving the Baltimore Bomem Atmospheric Emitted Interferometer (BBAERI) used for measuring temperature and humidity profiles in the PBL. Trace gas analysis of CO and CO₂ was done as well. Attended INTEX-B field experiment in Houston, Texas, in March 2006.
8/2006 - 8/2007 Graduate Assistance in Areas of National Need (GAANN) Fellow, Department of Physics, University of Maryland, Baltimore County. Laboratory work involved the implementation of computers into general physics labs. Other work included preparation of an NMR for modern physics lab. Attended seminars that taught teaching skills to prepare for teaching at the college level.
8/2005 - 8/2006 Graduate Assistant, Department of Physics, University of Maryland Baltimore County. Laboratory Work supervised by Dr. Wallace McMillan involving the comparison of the Bomem NOAA Atmospheric Emitted Interferometer (BNAERI) and the Baltimore Bomem Atmospheric Emitted Interferometer (BBAERI).
8/2004 - 8/2005 Teaching Assistant, Department of Physics, University of Maryland Baltimore County. Instructed recitation sections and laboratory sessions for introductory level undergraduate physics classes. Developed quizzes on learned material, assisted with work in class, and helped the students outside of class time.

Active Research Interests

AIRS Cloud Clearing Methods:

Analyzing operational and new methods of cloud clearing to understand the limitations and benefits of different methods. This includes validation of AIRS Level 2 products post cloud clearing.

Lake Surface Temperature Modeling:

Analyzing the effectiveness of different models and parameterizations to predict lake skin temperatures (~100 μ m) from bulk temperatures (~ 1cm) and different environmental parameters.

Carbon Monoxide Retrieval:

Developing a ground based retrieval algorithm for AERI instrument. This Improves upon the first generation retrieval by retrieving a carbon monoxide profile versus a single column measurement.

Data Assimilation and Data Fusion:

By combining retrieved CO products from the ground based sensor AERI and satellite instruments measuring CO such as AIRS, TES, and IASI, more accurate carbon monoxide profiles in the boundary layer and middle troposphere are obtained.

Boundary Layer Venting:

Using remotely sensed CO profiles to better understand conditions for the vertical transport of pollution.

Past Research Activities

Lake Warming Trends:

Working to combine Sea Surface Temperature (SST) data sets from AVHRR, MODIS, and ATSR satellite instruments in order to analyze warming trends of Large inland water bodies.

Boundary Layer Height:

Used AERI retrieved temperature and water vapor profiles to determine boundary layer heights. AERI determined boundary layer heights were compared to LIDAR determined heights. This work was done to supplement work for the 2008 WAVES campaign.

AERI CO Validation:

Produced averaging kernels and further supported work to validate the first generation AERI carbon monoxide retrieval.

Awards

2006:

Mulligan Award. A history of physics award culminating in my lecture titled *Newton's Demon's*

2005:

Physics Teaching Assistant of the Year

Refereed Publications

Wilson, R. C., S. J. Hook, P. Schneider, and S. G. Schladow (2013), Skin and bulk temperature difference at Lake Tahoe: A case study on lake skin effect, *J. Geophys. Res. Atmos.*, 118, 10,332-10,346, doi:10.1002/jgrd.50786

Wilsonr, R.C., E. Maddy, E. Manning, E. Fishbein, H. Sun, J. Blaisdale: Comparisons of AIRS Level 2

Temperature using two different cloud clearing algorithms (***in prep**).

Wilson, R.C., L. Yurganov, Maddy, E., Turner, D.D.: Estimating Forward Modeling Errors in the CO band using the Atmospheric Emitted Radiance Interferometer (***in prep**).

Wilson, R.C., L. Yurganov, Maddy, E. Warner, J., Turner, D.D.: Tropospheric CO profiles retrieved using complimentary measurements from AERI and AIRS (***in prep**).

Hook, S., **R. C. Wilson**, S. MacCallum, and C. Merchant, 2012: [Global climate] Lake Surface Temperature [in "State of the Climate in 2011"]. *Bull. Amer. Meteor. Soc.*, 93 (7), S18-S19.

Yurganov, L., McMillan, W. W., **Wilson, C.**, Fischer, M., Biraud, S., Sweeney, C., 2010: Carbon monoxide mixing ratios over Oklahoma between 2002 and 2009 retrieved from Atmospheric Emitted Radiance Interferometer spectra, *Atmos. Meas. Tech.*, 3, 1319-1331, doi:10.5194/amt-3-1319-2010.

Conference Proceedings

- [1] R. Chris Wilson, E. Maddy, E. Fishbein, B. Irion, and B. Kahn, *A Comparison of AIRS Level 2 Temperature Retrievals using two different cloud clearing methods* (poster). AGU Fall Meeting, 2013.
- [2] R. Chris Wilson, S. J. Hook, *Homogenizing Data from Multiple TIR Satellites to Examine Global Climate Change of Large Inland Water Bodies* (poster). NASA Jet Propulsion Laboratory (JPL) Postdoc Research Day, 2012.
- [3] R. Chris Wilson, *Sea Surface Temperature (SST) Algorithms*. Workshop for Remote Sensing of Coastal and Inland Waters, 2012.
- [4] R. Chris Wilson, S. J. Hook, *Homogenizing Data from Multiple Thermal Infrared Radiometers to Examine Global Climate Change of Large Inland Water Bodies* (poster). Global Lake Temperature Collaboration (GLTC) Workshop, 2012.
- [5] R. Chris Wilson, J. X. Warner, L. Yurganov, Z. Wei, *Retrieval of Boundary Layer Carbon Monoxide with the Atmospheric Emitted Radiance Interferometer (AERI)* (poster). AGU Fall Meeting, 2010.
- [6] R. Chris Wilson, W. McMillan, R. Delgado, R. Hoff, M. Weldegaber, Marc Fischer, Sebastien Biraud. *Remote Sensing of Boundary Layer Trace Gases in the Presence of Dynamic Boundary Layer Events* (poster). AGU Fall Meeting, 2008.
- [7] R. Chris Wilson, W. McMillan, R. Delgado, R. Hoff. *Atmospheric Boundary Layer Profiling and Instrument Comparison During Waves 2008* (poster). UMBC Graduate Research Conference, 2008.
- [8] R. Chris Wilson, L. Yurganov, W. McMillan, P. Novelli, M. Fischer, S. Biraud. *Ground-based Remote Sensing of Carbon Trace Gases: Validation of Satellite CO Observations* (poster). AGU Fall Meeting, 2007.
- [9] R. Chris Wilson, W. Wallace McMillan, Joe Shaw. *BBAERI vs. BNAERI: A Comparison of Two Hyperspectral Atmospheric Downwelling Radiance Interferometers* (poster). AGU Fall Meeting, 2006.

Invited Seminar

R. Chris Wilson, W. Wallace McMillan, and Leonid Yurganov. *The Atmospheric Emitted Radiance Interferometer*. International conference on the Physics of the Atmosphere, "The Atmosphere, Climate, and Health", Kislovodsk, Russia

Journal Reviews

Remote Sensing of the Environment (2)
Journal of Geographical Research-Oceans (1)

Professional Memberships

American Geophysical Union (AGU)
Global Lake Temperature Collaboration (GLTC)

***Indicates manuscripts taken from my dissertation chapters**