

ROBERT BENJAMIN LEE, III

Post Doctoral Fellow

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Dr. Lee has 45 years of experience in atmospheric sensing using aircraft, ground-based, in situ, and spacecraft sensors, as well as in using atmospheric density drag techniques.

Education

- PhD in Physics/Atmospheric Sciences, Hampton University (2013)
- M.S. Engineering Physics, University of Virginia (1972)
- B.S. Physics, Norfolk State University

Professional Experience

- Lidar investigations related to tropospheric aerosol and temperature measurements
- Aero-Space Technologist, NASA Langley Research Center (LaRC) 1964-1981
- LaRC Equal Opportunity Officer, 1981-1984
- Senior Research Scientist, NASA LaRC, 1984-2004
- Assistant Head NASA LaRC Radiation Branch, Atmospheric Sciences Division, 1990
- Co-Investigator and instrument working group leader for the international 1984-2004
- Earth Radiation Budget Experiment (ERBE), 1989-2000 Clouds and the Earth's
- Radiant Energy System (CERES) spacecraft science teams
- Co-investigator for the Belgium SOLCON (Solar Constant), and for French-Russian-
- German Scanner for Radiation Budget (ScaRaB) spacecraft experiments
- Consultant for the National Institute of Aerospace (NIA)
- Served as a member of the international NASA's Technology Subcommittee of the
- NASA Earth System Science and Applications Advisory Committee (ESSAAC), and
- National Polar Operational Earth Satellite System (NPOESS) Total Solar Irradiance
- Sensor (TSIS) Operational Algorithm Team (OAT)
- Physics instructor, Hampton University (1974).

Professional Memberships

- American Geophysical Union, Americal Meteorological Society, and National
- Technical Association.

Awards

- 1998 induction into the National Black College Alumni Hall of Fame in Science in Atlanta, Georgia
- 1989 NAFEO Award - for scientific accomplishments
- 1997 National Technical Association A. T. Weathers Technical Achievement Award
- 1998 NASA Exceptional Achievement Medal

Publications

- Authored or Co-Authored more than 200 technical papers and journal articles in the areas of aircraft, ground-based, and spacecraft remote sensing of the Earth's and planetary atmospheres, as well as in sensor calibration/metrology [The complete publication list can be made available upon request]. Selected recent 2004-2013 publications follow:

Refereed Published Formal Publications

- Smith, G. Louis, Z. Peter Szewczyk, David A. Rutan, and Robert B. Lee III: Comparison of measurements from satellite radiation budget instruments. *J. of Geophysical Research*, vol. 111, no. d04101, 1-9, 2006.
- Takmeng Wong, Bruce A. Wielicki, Robert B. Lee III, G. Louis Smith, Kathryn A. Bush, and Joshua K. Willis: Reexamination of the observed decadal variability of the earth radiation budget using altitude-corrected ERBE/ERBS nonscanner WFOV data, *J. of Climate*, **19**, 4028-4040, 2006.
- Su, Jia, M. P. McCormick, Z. Liu, K. Leavor, R. B. Lee III, J. Lewis, and M. T. Hill, Obtaining ground-based lidar geometrical form factors using coincident spaceborne lidar measurements, *Appl. Optics*, **49**, 108-113, 2010.
- Kory J. Priestley, G. Louis Smith, Susan Thomas, Denise Cooper, Robert B. Lee III, Dale Walikainen, Phillip Hess, Z. Peter Szewczyk, and Robert Wilson, Radiometric performance of the CERES earth radiation budget climate sensors on the EOS Aqua and Terra Spacecraft through April 2007, *Journal of Atmospheric and Oceanic Technology*, **28**, 3-21, 2011.
- Su, Jia, M. Patrick McCormick, Zhaoyan Liu, Robert B. Lee, Kevin R. Leavor, and Liqiao Lei, Transmittance ratio constrained retrieval technique for lidar cirrus measurements, *Optics Letters*, **37**, Issue 9, 1595-1597, 2012.
- Su, Jia, M. Patrick McCormick, Y. Wu, Robert B. Lee III, L. Lei, Z. Liu, and K. R. Leavor, Cloud temperature measurement using rotational Raman lidar, *Journal of Quantitative Spectroscopy & Radiative Transfer*, **125**, 45-50, 2013.
- Lee, Robert B., III; *Tropospheric temperature measurements using a rotational Raman lidar*, PhD dissertation of Hampton University. Ann Arbor: Pro Quest UMI number 3592881, 2013.

Referenceable Published Conference Presentations

- Lee, R. B., III, G. I. Smith, K. A. Bush, J. Paden, D. K. Pandey, and R. S. Wilson, and: On-orbit radiometric calibration of the Earth Radiation Budget Experiment (ERBE) active-cavity radiometers on the Earth Radiation Budget Satellite (ERBS): 1984-2002. Presented at the SPIE 10th International Symposium Remote Sensing, 8-12 September 2003, Barcelona, Spain, *SPIE Proceedings*, Vol. 5234A, 433-444, 2004.
- Lee, R. B., III, and R. S. Wilson: Validation of spacecraft active cavity radiometer total solar irradiance [TSI] long-term measurement trends using proxy TSI least squares analyses. Presented at 11th SPIE International symposium on Remote Sensing Masopalmos, Gran Canaria Island, Spain, September 13-16, 2004, *SPIE Proc.* 5570, 352-362, 2004.
- Lee, R. B., III, R. S. Wilson, and Susan Thomas: Long-term total solar irradiance (TSI) variability trends: 1984-2004. Presented at the American Metrological Society (AMS) 13th Conference on Satellite Meteorology and Oceanography, Norfolk, VA, September, 20-24, 2004, Proc. of AMS, 2004, paper 6.4.

- Smith, G. Louis, Z. Peter Szewczyk, David A. Rutan, and Robert B. Lee III: Comparison of measurements from satellite radiation budget instruments. Presented at the American Meteorological Society (AMS) 13th Conference on Satellite Meteorology and Oceanography, Norfolk, VA, September, 20-24, 2004, Proc. of AMS, 2004.
- Wong, Takmeng, R. B. Lee III, R. S. Wilson, and Susan Thomas: Long-term total solar irradiance (TSI) variability trends: 1984-2004. Presented at the American Meteorological Society (AMS) 13th Conference on Satellite Meteorology and Oceanography, Norfolk, VA, September, 20-24, 2004, Proc. of AMS, 2004.
- Lee, Robert Benjamin, III, Robert S. Wilson, G. Louis Smith, Kathryn A. Bush, Susan Thomas, Dharendra K. Pandey, and Jack Paden: On-orbit characterizations of Earth Radiation Budget Experiment broadband shortwave active cavity radiometer sensors responses, *SPIE Proc.* **5660**, 23-25, 2004. Presented at the 4th SPIE International Asia-Pacific Environmental Remote Sensing Symposium, Honolulu, Hawaii, November 8-11, 2004.
- Thomas, S., K. J. Priestley, and R. B. Lee III: Determination of CERES flight models 1 and 2 sensor zero-radiance response variability with elevation and azimuth scan angles, on-orbit aboard Terra spacecraft, *SPIE Proc.* **5652**, 299-308, 2004. Presented at the 4th SPIE International Asia-Pacific Environmental Remote Sensing Symposium, Honolulu, Hawaii, November 8-11, 2004.
- Lee, Robert B., III, George L. Smith, Takmeng Wong, Kathryn A. Bush: 1999-2003 Shortwave characterizations of Earth Radiation Budget Satellite (ERBS)/Earth Radiation Budget Experiment (ERBE) broadband active cavity radiometer sensors, [Presented at the SPIE Remote Sensing Symposium, San Diego, California, August 10-14, 2008], *SPIE Proc.* **7081**, 708117-2 thru 708117-9, 2008.
- Smith, G. Louis, Robert B. Lee III, Takmeng Wong, and Pamela E. Mlynczak: Degradation pattern of the ERBE wide field-of-view radiometer aboard the NOAA-9 spacecraft, *SPIE Proc.* **7106**, paper 7106-33, 2008. Presented at the SPIE European SPIE Remote Sensing Symposium, Cardiff, Wales, United Kingdom, September 15-18, 2008.
- Moshary, Fred, Lina Cordero, Yonghua Wu, Barry M. Gross, Daniel Orozco, Patrícia Sawamura, Raymond M. Hoff, Ruben Delgado, Jia Su, Kevin Leavor, Robert B. Lee III, Patrick McCormick, Assessment of long scale plume transport to the US East coast using coordinated CREST lidar network and synergistic AERONET and satellite measurements, *SPIE Proc.* **8894**, paper 8894-19. Presented at the SPIE Remote Sensing Symposium, Internationales Congress Center Dresden Germany, September 23-26, 2013.

Significant Oral Presentations with and without Published Abstracts

- Lee, Robert Benjamin, III, and Robert Samuel Wilson: On-orbit characterization of Earth Radiation Budget Experiment (ERBE) broadband total active cavity radiometer sensors responses using total solar irradiance (TSI) measurements. Presented at the AGU Western Pacific Geophysics Meeting, August 16-20, 2004, Waikiki Beach Marriott Resort, Honolulu, Hawaii USA.
- Lee, Robert B., III, "Hampton University 48-inch Mie & Raman Scattering Lidar System," poster presentation, 88th Annual American Meteorological Society (AMS) Meeting, January 20-25, 2008, New Orleans, LA.
- Lee, Robert B., III, "Hampton University Lidar System," poster presentation, Sixth Annual NOAA-CREST Symposium, February 20-22, 2008, Mayaguez, Puerto Rico.

- Lee, Robert B., III, "Hampton University 48-inch Mie and Raman lidar system," poster presentation, NOAA-EPP Fifth Education and Science Forum, November 11-15, 2009, Howard University, Washington, DC.
- Lee, Robert B., III, M. Patrick McCormick, Jia Su, Kevin Leavor, "Variations in atmospheric aerosols over Southeastern Virginia using HU lidar measurements," Hampton University Physics Colloquium, Hampton, Virginia, February 10, 2011.
- Lee, Robert B., III, M. Patrick McCormick, Jia Su, Kevin Leavor, "Comparisons of Hampton University [HU] lidar atmospheric aerosol optical depth/turbidity measurements with those from a mobile sun photometer and the AERONET Cove Seaprisim sun photometers over Southeastern Virginia," Hampton University School of Science Sixteenth Annual Student Research Day 2011 Symposium, Hampton, Virginia, February 28, 2011.
- Lee, Robert B., III, M. Patrick McCormick, Jia Su, Kevin Leavor, "Tropospheric temperature measurements using a rotational Raman lidar" at the April 12-14, 2011 Thermodynamics Profiling Technologies Workshop, sponsored by the National Science Foundation [NSF] and the National Oceanic and Atmospheric Administration [NOAA], Boulder, CO, April 12, 2011.
- Lee, Robert B., III, M. Patrick McCormick, Jia Su, Kevin Leavor, "Tropospheric temperature measurements using a rotational Raman lidar," April 27-28, 2011 7th Annual NOAA-CREST Symposium, sponsored by the National Oceanic and Atmospheric Administration [NOAA], Hampton University, Hampton, VA, April 27, 2011.
- Lee, Robert B., III, Tropospheric temperature measurements using a rotational Raman lidar at 355 nm, Hampton University Department of Atmospheric and Planetary Sciences seminar series, Hampton University, Hampton, VA, November 30, 2011.
- Lee, Robert B., III, Tropospheric temperature measurements using the Hampton University rotational Raman lidar, Hampton University School of Science's 17th Annual Student Research Day 2011 Symposium, Hampton, Virginia, February 10, 2012.
- Lee, Robert B., III, Professor M. Patrick McCormick, Dr. Jia Su, and Kevin R. Leavor, Tropospheric temperature measurements using the Hampton University rotational Raman lidar, NOAA 6TH EPP, Florida A & M Univ., Tallahassee, Florida, March 26-28, 2012.
- Lee, Robert B., III, Professor M. Patrick McCormick, Dr. Jia Su, Kevin R. Leavor, and Sufia Khatun, Tropospheric temperature measurements using the Hampton University rotational Raman lidar, 8th Annual NOAA CREST Symposium, City College of New York, Manhattan, NY, June 4-5, 2013.