

Dr. Robert C. Levy, Research Physical Scientist
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Employment History

- Research Physical Scientist, NASA-GSFC Climate and Radiation Laboratory (CRL), Greenbelt, MD: 3/2013-Present.
- Junior→Senior Scientist; Science Systems and Applications, Inc (SSAI), Lanham, MD. On site at NASA-GSFC's, Greenbelt, MD: 8/1998-3/2013.
- Scientific Programmer; Research and Data Corporation (RDC), Greenbelt, MD. On site at NOAA's Climate Prediction Center (CPC), Camp Springs, MD: 6/1996-5/1998.
- Teaching Assistant (TA) and Graduate Research Assistant (GRA), Dept. of Atmospheric Science, Colorado State University (CSU), Fort Collins, CO: 1994-1996.

Education

2007 Ph.D., Atmospheric and Ocean Science, University of Maryland-College Park
1996 M.S., Atmospheric Science, Colorado State University-Fort Collins
1994 B.A. Mathematics, Oberlin College, Oberlin OH.

Research Synopsis

[Dr. Robert Levy](#) is a Research Physical Scientist in NASA-Goddard's [Climate and Radiation Laboratory \(CRL\)](#), retrieving global aerosol properties from satellites and quantifying the role of aerosols in climate and air quality. He developed the modern "[dark-target](#)" aerosol retrieval for [MODIS](#), and he and his team are applying it to newer sensors to create a long-term global aerosol record. Dr. Levy's research has included new algorithm development, monitoring surface air quality, aerosol/cloud interactions and aerosol trends. Additionally, he contributes to outreach and training on the use and interpretation satellite data. Since 2021, he is the Flight Project Scientist for [GOES-R](#).

Publications

Dr. Levy has contributed to 117 refereed articles, including 30 with >100 citations, and two first-author papers with >1000 cites. His [Publons](#) H-index stands at 46. A selection of papers includes:

- Bian, Q., S. Kreidenweis, J. C. Chiu, et al. 2021. "Constraining aerosol phase function using dual-view geostationary satellites." *J. Geophys Res.-Atmos*, **126**: [10.1029/2021jd035209]
- Hammer, M. S., A. van Donkelaar, R. V. Martin, et al. 2021. "Effects of COVID-19 lockdowns on fine particulate matter concentrations." *Sci. Advance*, **7** (26): eabg7670 [10.1126/sciadv.abg7670].
- Huff, A. K., S. Kondragunta, H. Zhang, et al. 2021. "Tracking Smoke from a Prescribed Fire and its Impacts on Local Air Quality using Temporally Resolved GOES-16 ABI Aerosol Optical Depth (AOD)." *J. Atmos. Ocean. Tech.*, [10.1175/jtech-d-20-0162.1]
- Remer, L. A., R. C. Levy, S. Mattoo, et al. 2020. "The Dark Target Algorithm for Observing the Global Aerosol System: Past, Present, and Future." *Remote Sensing*, **12** (18): 2900, [https://doi.org/10.3390/rs12182900]
- Hammer, M. S., A. van Donkelaar, C. Li, et al. 2020. "Global Estimates and Long-Term Trends of Fine Particulate Matter Concentrations (1998–2018)." *Environ. Sci. & Tech.*, **54** (13): 7879-7890 [https://doi.org/10.1021/acs.est.0c01764]
- Sawyer, V., R. C. Levy, S. Mattoo, et al. 2020. "Continuing the MODIS Dark Target Aerosol Time

- Series with VIIRS." *Remote Sensing*, **12** (2): 308 [<https://doi.org/10.3390/rs12020308>]
- Yu, H., Y. Yang, H. Wang, et al. 2020. "Interannual variability and trends of combustion aerosol and dust in major continental outflows revealed by MODIS and CAM5 simulations during 2003–2017." *Atmos. Chem. Phys.*, **20**: 139-161 [<https://doi.org/10.5194/acp-20-139-2020>]
- Gupta, P., R. C. Levy, S. Mattoo, et al. 2019. "Retrieval of aerosols over Asia from the Advanced Himawari Imager: Expansion of temporal coverage of the global Dark Target aerosol product." *Atmos. Meas. Tech.*, **12**: 6557–6577 [[10.5194/amt-12-6557-2019](https://doi.org/10.5194/amt-12-6557-2019)]
- Shi, Y. R., R. C. Levy, T. F. Eck, et al. 2019. "Characterizing the 2015 Indonesia fire event using modified MODIS aerosol retrievals." *Atmos. Chem. Phys.*, **19** (1): [<https://doi.org/10.5194/acp-19-259-2019>]
- Levy, R. C., S. Mattoo, V. Sawyer, et al. 2018. "Exploring systematic offsets between aerosol products from the two MODIS sensors." *Atmos. Meas. Tech.*, **11**: 4073-4092 [<https://doi.org/10.5194/amt-11-4073-2018>]
- Gupta, P., P. Doraiswamy, R. Levy, et al. 2018. "Impact of California Fires on Local and Regional Air Quality: The Role of a Low-Cost Sensor Network and Satellite Observations." *GeoHealth*, [<https://doi.org/10.1029/2018gh000136>].
- Chin, M., T. L. Diehl, Q. Tan, et al. 2014. "Multi-decadal aerosol variations from 1980 to 2009: a perspective from observations and a global model." *Atmos. Chem. Phys.*, **14** (7): 3657-3690 [<https://doi.org/10.5194/acp-14-3657-2014>]
- Levy, R. C., S. Mattoo, L. A. Munchak, et al. 2013. "The Collection 6 MODIS Aerosol Products over Land and Ocean." *Atmos. Meas. Tech.*, **6**: 2989-3034 [<https://doi.org/10.5194/amt-6-2989-2013>]
- Levy, R. C., G. Leptoukh, R. A. Kahn, et al. 2009. "A Critical Look at Deriving Monthly Aerosol Optical Depth From Satellite Data." *IEEE Trans. Geosci. Remote Sensing*, **47** (8): 2942-2956 [<https://doi.org/10.1109/TGRS.2009.2013842>]
- Levy, R. C., R. C. Levy, S. Mattoo, E. F. Vermote, and Y. Kaufman. 2007. "Second-generation operational algorithm: Retrieval of aerosol properties over land from inversion of MODIS spectral reflectance." *J Geophys Res*, **112** (D13211), [<https://doi.org/10.1029/2006JD007815>]
- Levy, R. C., L. A. Remer, and O. Dubovik. 2007. "Global aerosol optical properties and application to Moderate Resolution Imaging Spectroradiometer aerosol retrieval over land." *J. Geophys. Res.*, **112** (D13): [<https://doi.org/10.1029/2006jd007815>]

Professional Awards

- Robert H. Goddard Award for Science – NASA/GSFC: 7/2021
- Mentoring award - NASA-GSFC Earth Science Division – Atmospheres: 10/2020
- Best Science Highlight award for research highlight of 6/2018 – GSFC-Earth Science
- NASA Group Achievement for MODIS Calibration Support Team (MCST): 2016
- International Radiation Commission (IRC) “Young Scientist Award”: 8/2012.
- Best 1st-Author Paper Award, NASA-GSFC Climate and Radiation Branch (CRB): 1/2011
- Outstanding Scientific Leadership Award, NASA-GSFC CRB: 2009
- Outstanding Performance Award – Software Development, NASA-GSFC: 2006.

Professional Society Memberships

- Air and Waste Management Association (A&WMA): 2021-present
- American Geophysical Union (AGU): 1998-present
- American Meteorological Society (AMS): 1996-present.