A Citation Analysis of Air Resource Laboratory Publications (1995-2015)

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ABOUT THIS REPORT

This report presents a summary-level bibliometric analysis of peer-reviewed journal articles produced by authors affiliated with NOAA's Air Resource Laboratory (ARL) between 1995 and 2015 and was produced as a supplement to ARL's 2016 laboratory review. The analysis was conducted using data collected from Web of Science (WoS). Publications not indexed in WoS were not within the scope of this analysis and thus not included as were other sources such as book chapters, conference proceedings, or technical reports. All figures in this report are accurate as of May 3, 2016.

SUMMARY METRICS

Bibliometric Indicator	Value
Number of Papers (p)	972
Number of Citations Received (c)	58,497
Average Number of Citations per Paper (c/p)	60.18
H-Index	99

Table 1: Basic bibliometric indicators for ARL-authored publications (1995-2015) in WoS. An H-Index of 99 indicates that of 972 publications included in this analysis, 99 have 99 or more citations.

PUBLICATION ANALYSIS

The following figures represent the number of publications produced by ARL-affiliated authors between 1995 and 2015. For clarity the figures showing the number of publications per author, journal title, and subject category list only the top ten results in each category.

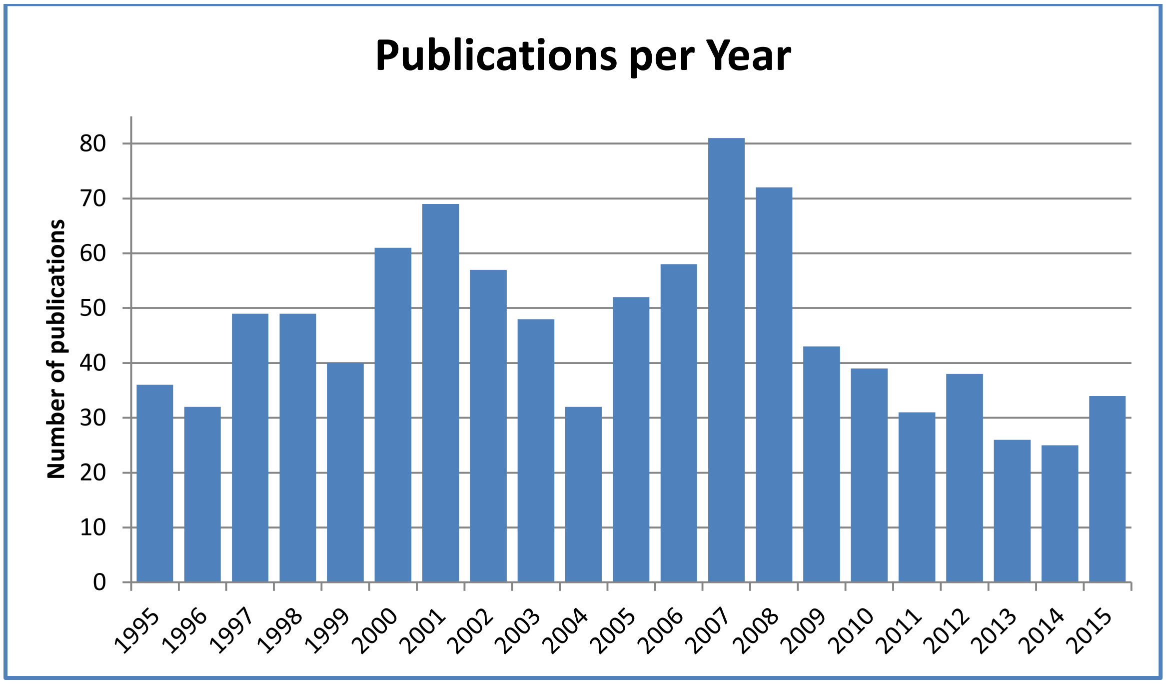

Figure 1: Non-cumulative number of ARL-authored publications per calendar year 1995-2015. Note the decrease in publications after 2008 reflects loss of a joint U.S. EPA-NOAA division located in Research Triangle Park, NC. That division included ~55 people.

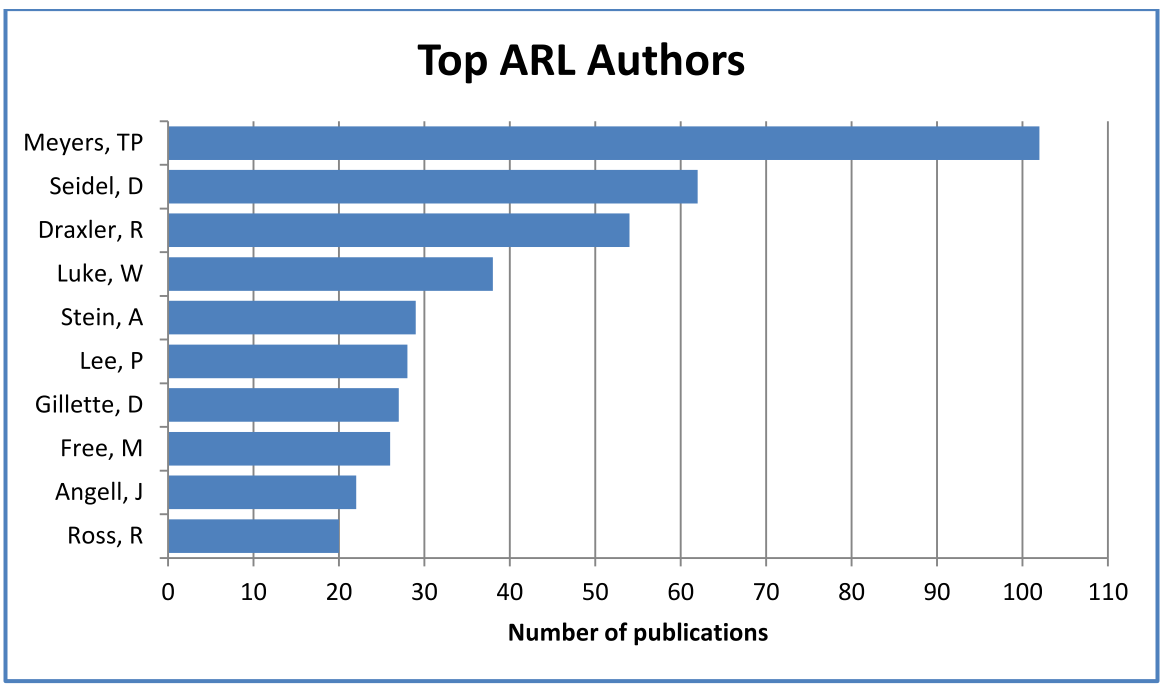

Figure 2: Authors with the most peer-reviewed articles published between 1995-2015 as indexed in WoS. Of these authors, Angell, Draxler, Free, Gillette, Ross, and Seidel are no longer at ARL. D. Seidel also published under the name Gaffen and these publications have been included.

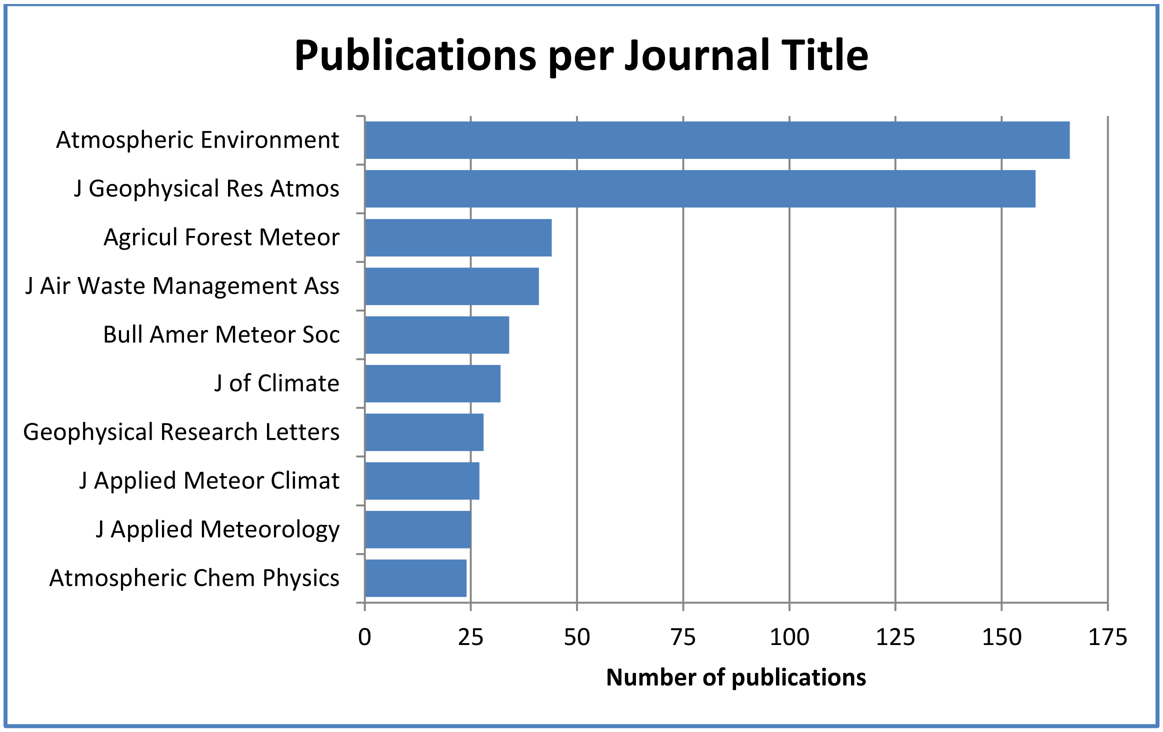

Figure 3: Number of ARL-authored publications per journal title.

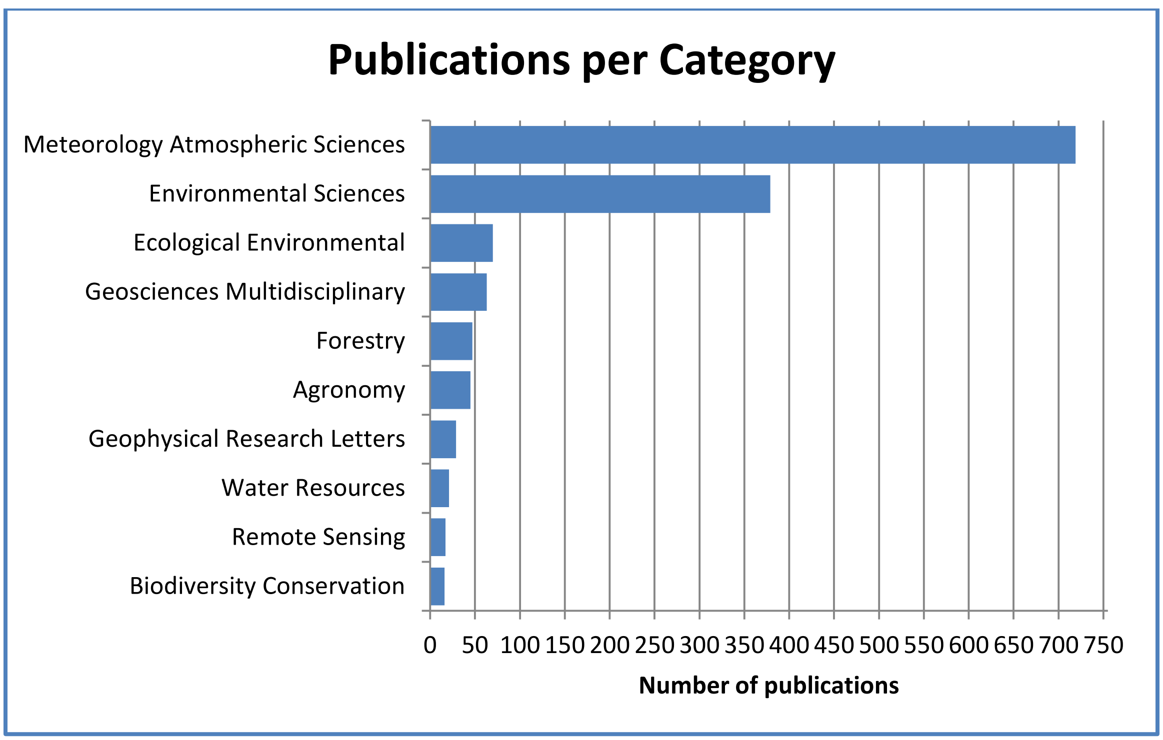

Figure 4: Number of ARL-authored publications assigned to subject categories by WoS based on the journal in which the article appeared. These subject categories are not mutually exclusive.

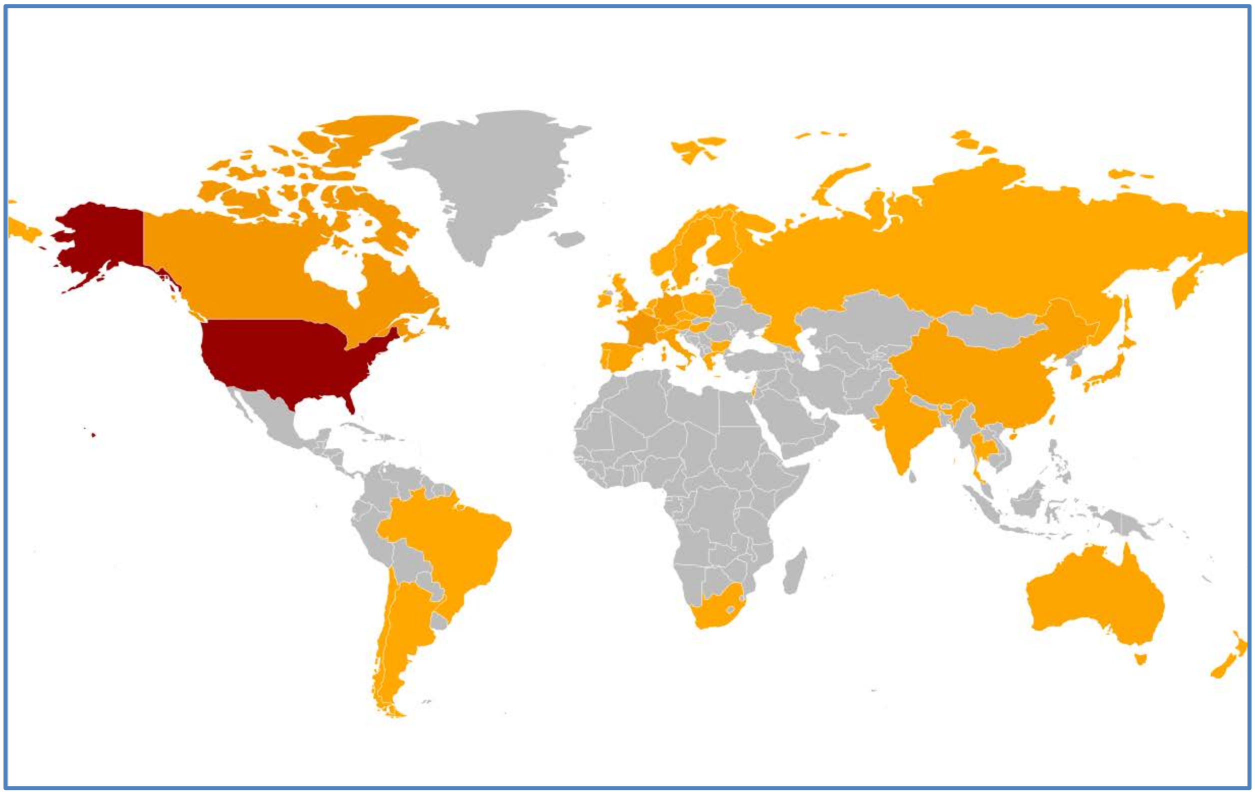

Figure 5: Map representing ARL collaborations with authors affiliated with international institutions.

CITATION COUNT ANALYSIS

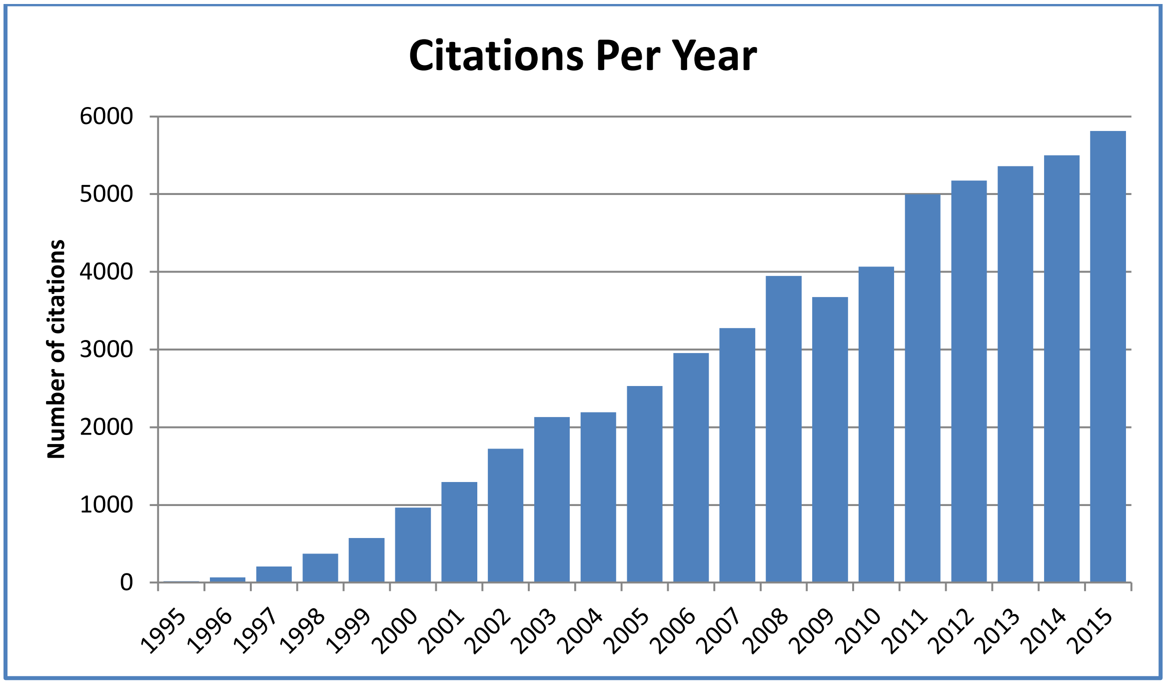

Figure 6: Non-cumulative number of citations received by all 972 ARL-authored publications per year.

CITING ARTICLE ANALYSIS

The following figures analyze the 58,497 publications that have cited ARL-authored publications in an effort to demonstrate how these publications are used. For clarity, each figure includes only the top ten results in each category.

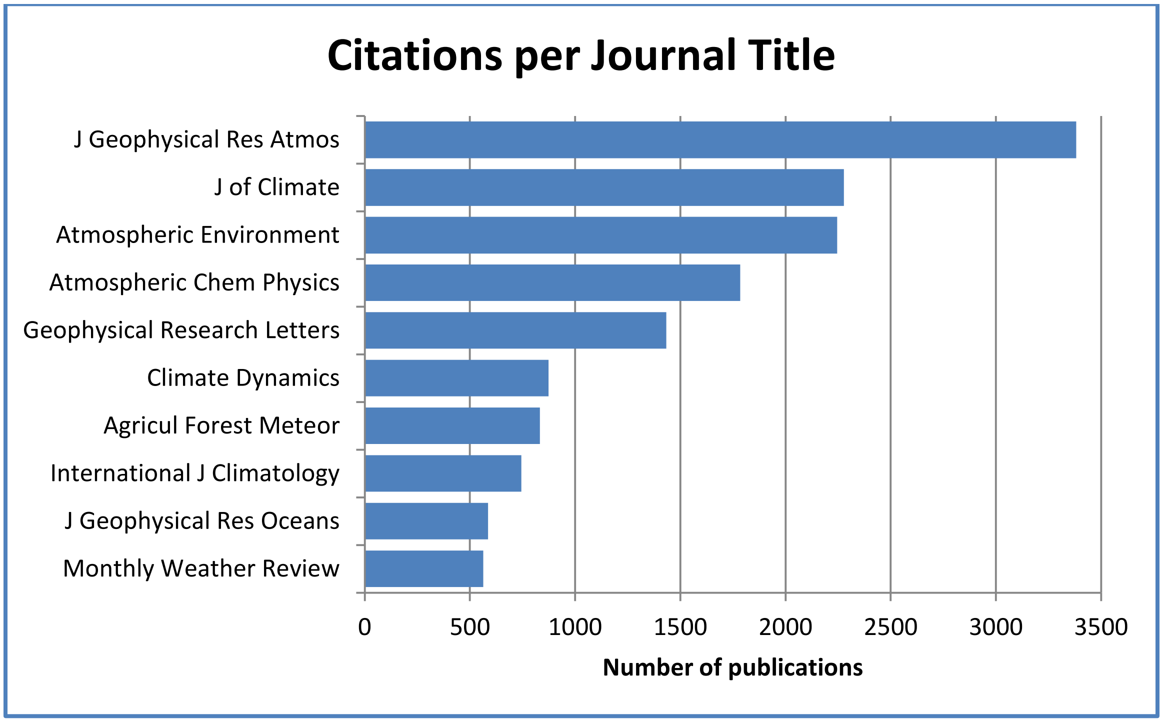

Figure 7: Number of publications per journal for all publications citing ARL-authored publications.

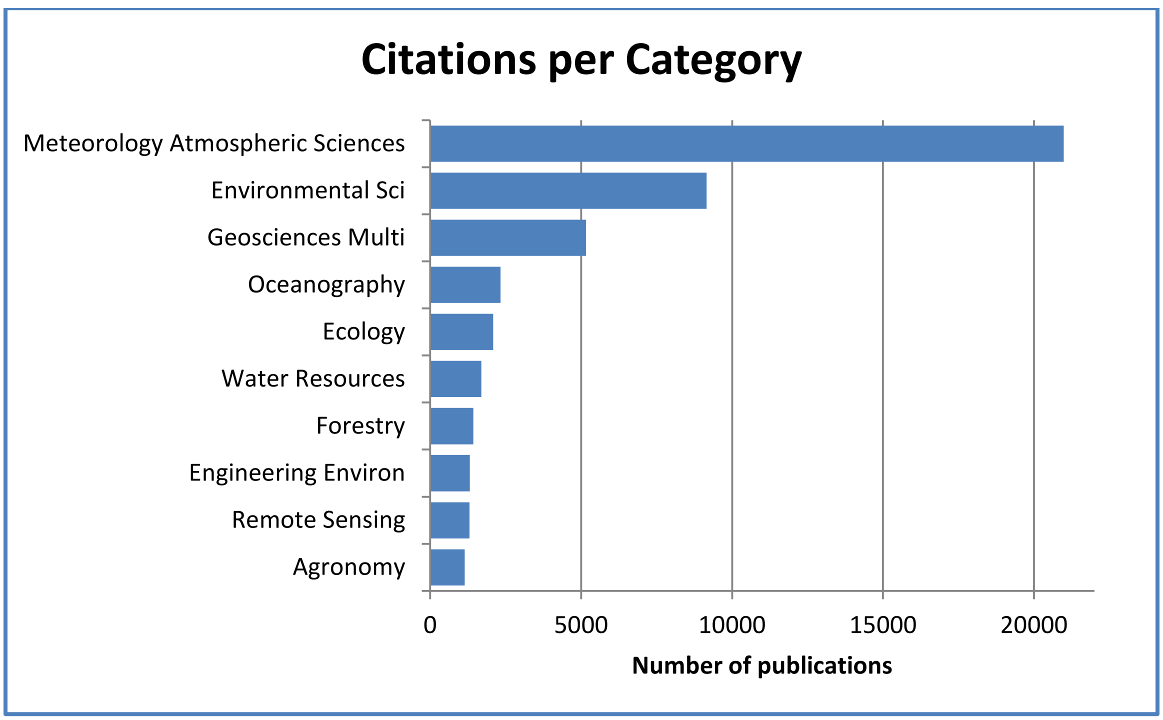

Figure 8: Number of publications citing ARL-authored publications per subject category as assigned by WoS based on the journal in which the publication appeared. These subject catagories are not mutually exclusive.

HIGHLY CITED PAPERS

Of the 972 publications analyzed for this report, 23 (2.4 %) have been identified by WoS as a Highly Cited Paper. As of November/December 2015, these papers received enough citations to place them in the top 1% of their corresponding academic fields based on the highly cited threshold for the field and publication year.

Altieri, K. E., Seitzinger, S. P., Carlton, A. G., Turpin, B. J., Klein, G. C., & Marshall, A. G. (2008). Oligomers formed through in-cloud methylglyoxal reactions: Chemical composition, properties, and mechanisms investigated by ultra-high resolution FT-ICR mass spectrometry. *Atmospheric Environment*, 42(7), 1476-1490. doi:10.1016/j.atmosenv.2007.11.015.

Anenberg, S. C., Horowitz, L. W., Tong, D. Q., & West, J. J. (2010). An Estimate of the Global Burden of Anthropogenic Ozone and Fine Particulate Matter on Premature Human Mortality Using Atmospheric Modeling. *Environmental Health Perspectives*, 118(9), 1189-1195. doi:10.1289/ehp.0901220.

Black, P. G., D'Asaro, E. A., Drennan, W. M., French, J. R., Niiler, P. P., Sanford, T. B., Terrill, E.J., Walsh, E.J., and Zhang, J. A. (2007). Air-sea exchange in hurricanes - Synthesis of observations from the coupled boundary layer air-sea transfer experiment. *Bulletin of the American Meteorological Society*, 88(3), 357-374. doi:10.1175/bams-88-3-357.

Byun, D., & Schere, K. L. (2006). Review of the governing equations, computational algorithms, and other components of the models-3 Community Multiscale Air Quality (CMAQ) modeling system. *Applied Mechanics Reviews*, 59(1-6), 51-77. doi:10.1115/1.2128636.

Carlton, A. G., Turpin, B. J., Altieri, K. E., Seitzinger, S., Reff, A., Lim, H. J., & Ervens, B. (2007). Atmospheric oxalic acid and SOA production from glyoxal: Results of aqueous photooxidation experiments. *Atmospheric Environment*, 41(35), 7588-7602. doi:10.1016/j.atmosenv.2007.05.035.

Grell, G. A., Peckham, S. E., Schmitz, R., McKeen, S. A., Frost, G., Skamarock, W. C., & Eder, B. (2005). Fully coupled "online" chemistry within the WRF model. *Atmospheric Environment*, 39(37), 6957-6975. doi:10.1016/j.atmosenv.2005.04.027.

Hudman, R. C., Jacob, D. J., Turquety, S., et al. (2007). Surface and lightning sources of nitrogen oxides over the United States: Magnitudes, chemical evolution, and outflow. *Journal of Geophysical Research-Atmospheres*, 112(D12), 14. doi:10.1029/2006jd007912.

Kleindienst, T. E., Jaoui, M., Lewandowski, M., Offenberg, J. H., Lewis, C. W., Bhave, P. V., & Edney, E. O. (2007). Estimates of the contributions of biogenic and anthropogenic hydrocarbons to secondary organic aerosol at a southeastern US location. *Atmospheric Environment*, 41(37), 8288-8300. doi:10.1016/j.atmosenv.2007.06.045.

Lindberg, S., Bullock, R., Ebinghaus, et al. (2007). A synthesis of progress and uncertainties in attributing the sources of mercury in deposition. *Ambio*, 36(1), 19-32.

Mao, J., Ren, X., Zhang, L., Van Duin, D. M., Cohen, R. C., et al. (2012). Insights into hydroxyl measurements and atmospheric oxidation in a California forest. *Atmospheric Chemistry and Physics*, 12(17), 8009-8020. doi:10.5194/acp-12-8009-2012.

Mastin, L. G., Guffanti, M., Servranckx, R., Webley, et al. (2009). A multidisciplinary effort to assign realistic source parameters to models of volcanic ash-cloud transport and dispersion during eruptions. *Journal of Volcanology and Geothermal Research*, 186(1-2), 10-21. doi:10.1016/j.jvolgeores.2009.01.008.

Pleim, J. E. (2007). A combined local and nonlocal closure model for the atmospheric boundary layer. Part I: Model description and testing. *Journal of Applied Meteorology and Climatology*, 46(9), 1383-1395. doi:10.1175/jam2539.1.

Rasmussen, R., Baker, B., Kochendorfer, J., Meyers, T., Landolt, S., et al. (2012). How well are we measuring snow? The NOAA/FAA/NCAR Winter Precipitation Test Bed. *Bulletin of the American Meteorological Society*, 93(6), 811-829. doi:10.1175/bams-d-11-00052.1.

Reff, A., Eberly, S. I., & Bhave, P. V. (2007). Receptor modeling of ambient particulate matter data using positive matrix factorization: Review of existing methods. *Journal of the Air & Waste Management Association*, 57(2), 146-154. doi:10.1080/10473289.2007.10465319.

Reichstein, M., Falge, E., Baldocchi, D., Papale, D., et al. (2005). On the separation of net ecosystem exchange into assimilation and ecosystem respiration: review and improved algorithm. *Global Change Biology*, 11(9), 1424-1439. doi:10.1111/j.1365-2486.2005.001002.x.

Seidel, D. J., Fu, Q., Randel, W. J., & Reichler, T. J. (2008). Widening of the tropical belt in a changing climate. *Nature Geoscience*, 1(1), 21-24. doi:10.1038/ngeo.2007.38.

Steffen, A., Douglas, T., Amyot, M., Ariya, P., et al. (2008). A synthesis of atmospheric mercury depletion event chemistry in the atmosphere and snow. *Atmospheric Chemistry and Physics*, 8(6), 1445-1482. doi:10.5194/acp-8-1445-2008.

Thorne, P. W., Lanzante, J. R., Peterson, T. C., Seidel, D. J., & Shine, K. P. (2011). Tropospheric temperature trends: history of an ongoing controversy. *Wiley Interdisciplinary Reviews-Climate Change*, 2(1), 66-88. doi:10.1002/wcc.80.

Tong, D. Q., Lamsal, L., Pan, L., Ding, C., et al. (2015). Long-term NO_x trends over large cities in the United States during the great recession: Comparison of satellite retrievals, ground observations, and emission inventories. *Atmospheric Environment*, 107, 70-84. doi:10.1016/j.atmosenv.2015.01.035.

Vet, R., Artz, R. S., Carou, S., Shaw, M., et al. (2014). A global assessment of precipitation chemistry and deposition of sulfur, nitrogen, sea salt, base cations, organic acids, acidity and pH, and phosphorus. *Atmospheric Environment*, 93, 3-100. doi:10.1016/j.atmosenv.2013.10.060.

Xiao, J. F., Zhuang, Q. L., Baldocchi, D. D., Law, B. E., et al. (2008). Estimation of net ecosystem carbon exchange for the conterminous United States by combining MODIS and AmeriFlux data. *Agricultural and Forest Meteorology*, 148(11), 1827-1847. doi:10.1016/j.agrformet.2008.06.015.

Xiao, J. F., Zhuang, Q. L., Law, B. E., Baldocchi, D. D., et al. (2011). Assessing net ecosystem carbon exchange of U.S. terrestrial ecosystems by integrating eddy covariance flux measurements and satellite observations. *Agricultural and Forest Meteorology*, 151(1), 60-69. doi:10.1016/j.agrformet.2010.09.002.

Xiao, J. F., Zhuang, Q. L., Law, B. E., Chen, J. Q., Baldocchi, D. D., et al. (2010). A continuous measure of gross primary production for the conterminous United States derived from MODIS and AmeriFlux data. *Remote Sensing of Environment*, 114(3), 576-591. doi:10.1016/j.rse.2009.10.013.