Fangqun Yu

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Education

Peking University, China	Atmospheric Science	B.Sc., 1991
Institute of Atmospheric Physics, China	Atmospheric Physics	M.S., 1994
University of California at Los Angeles (UCLA)	Atmospheric Sciences	M.S., 1996
University of California at Los Angeles	Atmospheric Sciences	Ph. D., 1998

Employment

10/2000 –	Senior Research Associate (tenured faculty member), Atmospheric Sciences Research Center, State University of New York at Albany
07/2000 - 09/2000	Associate Researcher, Department of Atmospheric Sciences, UCLA
12/1998 – 06/2000	Staff Research Associate, Department of Atmospheric Sciences, UCLA
09/1994 – 11/1998	Research Assistant, Department of Atmospheric Sciences, UCLA
09/1991 – 07/1994	Research Assistant, Institute of Atmospheric Physics, Beijing, China

Synergistic activities

Editor, Atmospheric Chemistry and Physics (ACP), 2011 – present.

Member of GEOS-Chem Steering Committee, Aerosols Working Group co-Chair, 2017 –present.

Reviewed many proposals for major funding agencies and manuscripts for journals including Science, Nature, PNAS, Phys. Rev. Lett., J. Geophys. Res., Geophys. Res. Lett., Rev. of Geophysics, Atmos. Environ., Atmos. Chem. and Phys., Environ. Sci. Tech., Aerosol Sci. Tech., etc..

Tutorial speaker, "Aerosol nucleation: Bridging sub-nanoscale processes to global-scale impacts", 35th American Association for Aerosol Research (AAAR) Annual Meeting, October 17-21, 2016, Portland, Oregon.

Tutorial speaker, "Aerosol Nucleation: Bridging Sub-nanoscale Processes to Global-Scale Climate Change", The AAAR 27th annual conference, Orlando, FL, Oct. 19-24, 2008.

Chair, Aerosol Physics working group, American Association for Aerosol Research (AAAR), 2009-2010.

Participated ACCESS V: 1999 Atmospheric Chemistry Colloquium for Emerging Senior Scientists, Narragansett, RI, June 10-13, 1999.

Jacob A. Bjerknes Memorial Award for Outstanding Research, UCLA, 1998.

Dissertation Year Fellowship, UCLA, 1998.

Global Change Consortium Fellowship, UCLA, 1994, 1995, 1996, 1997.

Selected publications (from ~160 peer-reviewed papers, Google Scholar H-index of 49)

Yu, F., Luo, G., Nair, A. A., Eastham, S., Williamson, C. J., Kupc, A., and Brock, C. A.: Particle number concentrations and size distributions in the stratosphere: Implications of nucleation mechanisms and particle microphysics, Atmos. Chem. Phys. Discuss. [preprint], https://doi.org/10.5194/acp-2022-487, in review, 2022.

Yu, F., Luo, G., Nair, A. A., Tsigaridis, K., Bauer, S. (2022). Use of machine learning to reduce uncertainties in particle number concentration and aerosol indirect radiative forcing predicted by climate models. Geophysical Research Letters, e2022GL098551. doi:10.1029/2022GL098551

Nair, A. A., Yu, F., Luo, G. (2022). The importance of ammonia for springtime atmospheric new particle formation and aerosol number abundance over the United States. Science of the Total Environment, under review.

Luo, G., Yu, F., and Schwab, J. : Increasing influence of Canadian anthropogenic and the Great Lakes Region shipment SO2 emission on ultrafine particle number concentrations in New York State. Environmental Research Communications, 4(7), 071003. https://doi.org/10.1088/2515-7620/ac82a9, 2022.

Lin, S., I. Ryan, S. Paul, X. Deng, W. Zhnag, G. Luo, G. Dong, A. Nair, and F. Yu, Particle surface area, ultrafine particle number concentration, and cardiovascular hospitalizations, Environmental Pollution 310 (2022) 119795.

Deng, X.; S. Friedman; I. Ryan; W. Zhang; G. Dong; H. Rodriguez; F. Yu; W. Huang; A. Nair; G. Luo; S. Lin, The independent and synergistic impacts of power outages and hurricanes/floods on hospital admissions for multiple diseases Corresponding, Science of the Total Environment, 828, 154305, 2022. https://doi.org/10.1016/j.scitotenv.2022.154305

Zhang, Y., Yu, F., Luo, G., Fan, J., and Liu, S.: Impacts of long-range-transported mineral dust on summertime convective cloud and precipitation: a case study over the Taiwan region, Atmos. Chem. Phys., 21, 17433-17451, https://doi.org/10.5194/acp-21-17433-2021, 2021.

Nair, A. A., Yu, F., Campuzano-Jost, P., DeMott, P. J., Levin, E. J. T. L., Jimenez, J. L., ... & Peng, Q. Machine learning uncovers aerosol size information from chemistry and meteorology to quantify potential cloud-forming particles. Geophysical Research Letters, 48, e2021GL094133, https://doi.org/10.1029/2021GL094133, 2021.

Zhai, S., D. Jacob, X. Wang , Z. Liu , T. Wen , V. Shah , K. Li , J. Moch , K. Bates , S. Song , L. Shen , Y. Zhang , G. Luo , F. Yu , Y. Sun , L. Wang , M. Qi , J. Tao , K. Gui , H. Xu , Q. Zhang , T. Zhao , H. C. Lee , H. Choi , H. Liao, Control of particulate nitrate air pollution in China. Nat. Geosci. 14, 389‑395 (2021). https://doi.org/10.1038/s41561-021-00726-z.

Liu, L., F. Yu , L. Du , Z. Yang , J. Francisco, and X. Zhang, Rapid sulfuric acid-dimethylamine nucleation enhanced by nitric acid in polluted regions, PNAS, 118 (35) e2108384118, https://doi.org/10.1073/pnas.2108384118, 2021.

Mao, J., Y. Zhang, F. Yu, A. A. Nair, Q. Yu, L. Wang, W. Ma, and L. Chen, On the ship particle number emission index: Size-resolved microphysics and key controlling parameters, Journal of Geophysical Research: Atmospheres, doi: 10.1029/2020JD034427, https://doi.org/10.1029/2020JD034427, 2021.

McDuffie, E. E., R. V. Martin, J. V. Spadaro, R. Burnett, S. J. Smith, P. O Rourke, M. S. Hammer, A. van Donkelaar, L. Bindle, V. Shah, L.t Jaegle, G. Luo, F. Yu, J. A. Adeniran, J. Lin & M. Brauer, Source sector and fuel contributions to ambient PM2.5 and attributable mortality across multiple spatial scales, Nature Communications, 12, 3594, 2021.

Zhang, Y., Cai, Y.J., Yu, F., Luo, G., Chou, C.C.K.. Seasonal Variations and Long-term Trend of Mineral Dust Aerosols over the Taiwan Region. Aerosol Air Qual. Res. https://doi.org/10.4209/aaqr.2020.07.0433, 2021.

Jia, H., X. Ma, F. Yu, and J. Quaas, Significant underestimation of radiative forcing by aerosol-cloud interactions derived from satellite-based methods, Nature Communications, 12, 3649, 2021.

Nair, A., and F. Yu, Using machine learning to derive cloud condensation nuclei number concentrations from commonly available measurements, Atmos. Chem. Phys., 20, 12853-12869, https://doi.org/10.5194/acp-20-12853-2020, 2020.

Zhang, Y., F. Yu, G. Luo, J.P. Chen, and C. Chou, Significant impact of mineral dust on summer-time precipitation over the Taiwan region, Journal of Geophysical Research: Atmospheres, 125(19), e2020JD033120, https://doi.org/10.1029/2020JD033120, 2020.

Nair, A.A.; Yu, F. Quantification of Atmospheric Ammonia Concentrations: A Review of Its Measurement and Modeling, Atmosphere, 11, 1092. 2020.

Luo, G., Yu, F., and Moch, J. M.: Further improvement of wet process treatments in GEOS-Chem v12.6.0: impact on global distributions of aerosols and aerosol precursors, Geosci. Model Dev., 13, 2879-2903, https://doi.org/10.5194/gmd-13-2879-2020, 2020.

Yu, F., Nadykto, A. B., Luo, G., and Herb, J.: H2SO4-H2O binary and H2SO4-H2O-NH3 ternary homogeneous and ion-mediated nucleation: lookup tables version 1.0 for 3-D modeling application, Geosci. Model Dev., 13, 2663-2670, https://doi.org/10.5194/gmd-13-2663-2020, 2020.

Yu, F., Luo, G., Nair, A., Schwab, J. J., Sherman, J. P., and Zhang, Y.: Wintertime New Particle Formation and Its Contribution to Cloud Condensation Nuclei in the Northeastern United States, Atmos. Chem. Phys., 20, 2591-2601, https://doi.org/10.5194/acp-20-2591-2020, 2020.

Jia, H., X. Ma, F. Yu, Y. Liu, and Y. Yin, Distinct Impacts of Increased Aerosols on Cloud Droplet Number Concentration of Stratus/Stratocumulus and Cumulus, Geophys. Res. Lett., 46, 13,517-13,525. https://doi.org/10.1029/2019GL085081, 2019.

Zhang, Y, G, Luo, and F. Yu, Seasonal variations and long-term trend of dust particle number concentration over the Northeastern United States, Journal of Geophysical Research: Atmospheres, in review, 2019.

Williamson, C. J., A. Kupc, D. Axisa, K. R. Bilsback, T. Bui, P. Campuzano-Jost, M. Dollner, K. D. Froyd, A. L. Hodshire, J. L. Jimenez, J. K. Kodros, G. Luo, D. M. Murphy, B. A. Nault, E. A. Ray, B. Weinzierl, J. C. Wilson, F. Yu, P. Yu, J. R. Pierce, C. A. Brock, A Large Source of Cloud Condensation Nuclei from New Particle Formation in the Tropics, Nature, 574, 399-403, 2019.

Yu, F., Aerosol formation assumptions reassessed, Nature, News and Views, 565, 574-575, 2019.

Zhu, J., J. E. Penner, F. Yu, S. Sillman, M. O. Andreae & H. Coe, Decrease in radiative forcing by organic aerosol nucleation, climate, and land use change, Nature Communications, 10:423, https://doi.org/10.1038/s41467-019-08407-7, 2019.

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Yu, F., Nadykto, A. B., Herb, J., Luo, G., Nazarenko, K. M., and Uvarova, L. A.: H_2SO_4–H_2O–NH_3 ternary ion-mediated nucleation (TIMN): kinetic-based model and comparison with CLOUD measurements, Atmos. Chem. Phys., 18, 17451-17474, https://doi.org/10.5194/acp-18-17451-2018, 2018.

Ma, X., H. Jia, F. Yu, and J. Quaas, Opposite Aerosol-Cloud Correlations over major Industrial Regions and their Adjacent Oceans, Geophys. Res. Lett., 45, 5771-5778, 2018GL077562, 2018.

Yu, F., A. Nair, and G. Luo, Long term trend of gaseous ammonia in US: Modeling and comparison with observations, Journal of Geophysical Research: Atmospheres, 123, 8315-8325, 2018.

Nadykto, A., J. Herb, F. Yu, and K. Nazarenko, Clustering of highly oxidized organic acid with atmospheric NO3− and HSO4− ions and neutral species, Chemical Physics Letters, 706, 175-181, 2018.

Yu, F., Luo, G., Nadykto, A. B., and Herb, J.: Impact of temperature dependence on the possible contribution of organics to new particle formation in the atmosphere, Atmos. Chem. Phys., 17, 4997-5005, https://doi.org/10.5194/acp-17-4997-2017, 2017.

Yu,F., G. Luo, and A. G. Hallar, Vertical profiles and seasonal variations of key parameters controlling particle formation and growth at Storm Peak Laboratory, Aerosol and Air Quality Research, 16, 900-908, doi: 10.4209/aaqr.2015.05.0368, 2016.

Yu, F., Luo, G., Pryor, S. C., Pillai, P. R., Lee, S. H., Ortega, J., Schwab, J. J., Hallar, A. G., Leaitch, W. R., Aneja, V. P., Smith, J. N., Walker, J. T., Hogrefe, O., and Demerjian, K. L.: Spring and summer contrast in new particle formation over nine forest areas in North America, Atmos. Chem. Phys., 15, 13993-14003, doi:10.5194/acp-15-13993-2015, 2015.

Nadykto, A.B., Herb, J., Yu, F., Xu, Y., Nazarenko, E.S: Estimating the Lower Limit of the Impact of Amines on Nucleation in the Earth's Atmosphere, Entropy, 17, 2764-2780, 2015.

Ma, X., and F. Yu, Seasonal and spatial variations of global aerosol optical depth: Multi-year modeling and comparisons with multiple-platform observations, Tellus B, 67, 25115, doi:10.3402/tellusb.v67.25115, 2015.

Yu, F., and G. Hallar, Difference in particle formation at a mountain-top location during the spring and summer: Implications for the role of sulfuric acid and organics in nucleation, J. Geophys. Res., 119, DOI: 10.1002/2014JD022136, 2014.

Yu, F., and G. Luo, Modelling of gaseous methylamines in the global atmosphere: Impacts of oxidation and aerosol uptake, Atmos. Chem. Phys. Discuss., 14, 17727-17748, doi:10.5194/acpd-14-17727-2014, 2014.

Ma, X., F. Yu, and J. Quaas, Reassessment of satellite-based estimate of aerosol climate forcing, J. Geophys. Res. Atmos., 119, 10,394-10,409, doi:10.1002/2014JD021670, 2014.

Chen, X., Z. Wang, J. Li, and F. Yu, Development of a Regional Chemical Transport Model with Size-Resolved Aerosol Microphysics and Its Application on Aerosol Number Concentration Simulation over China, SOLA, 10, 83-87, doi:10.2151/sola.2014-017, 2014.

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Yu, F., Ma, X., and Luo, G.: Anthropogenic contribution to cloud condensation nuclei and the first aerosol indirect climate effect, Environ. Res. Lett., 8, 024029, doi:10.1088/1748-9326/8/2/024029, 2013.

Yu, F., Luo, G., Liu, X., Easter, R. C., Ma, X., and Ghan, S. J.: Indirect radiative forcing by ion-mediated nucleation of aerosol, Atmos. Chem. Phys., 12, 11451-11463, 2012.

Yu, F., G. Luo, and X. Ma: Regional and global modelling of aerosol optical properties with a size, composition, and mixing state resolved particle microphysics model, Atmos. Chem. Phys., 12, 5719-5736, doi:10.5194/acp-12-5719-2012, 2012.

Zhang, Y., P. Karamchandani, T. Glotfelty, D. G. Streets, G. Grell, A. Nenes, F. Yu, and R. Bennartz, Development and initial application of the global-through-urban weather research and forecasting

model with chemistry (GU-WRF/Chem), J. Geophys. Res., 117, D20206, doi:10.1029/2012JD017966, 2012.

Yu, F., G. Luo , R. P. Turco , J. Ogren , R. Yantosca: Decreasing particle number concentrations in a warming atmosphere and implications, Atmos. Chem. Phys., 12, 2399-2408, doi:10.5194/acp-12-2399-2012, 2012.

Luo, G., and F. Yu: Simulation of particle formation and number concentration over the Eastern United States with the WRF-Chem + APM model, Atmos. Chem. Phys., 11, 11521-11533, doi:10.5194/acp-11-11521-2011, 2011.

Yu, F.: A secondary organic aerosol formation model considering successive oxidation aging and kinetic condensation of organic compounds: global scale implications, Atmos. Chem. Phys., 11, 1083-1099, doi:10.5194/acp-11-1083-2011, 2011.

Luo, G., and F. Yu: Sensitivity of global cloud condensation nuclei concentrations to primary sulfate emissions parameterizations, Atmos. Chem. Phys., 11, 1949-1959, doi:10.5194/acp-11-1949-2011, 2011.

Yu, F., and R. P. Turco: The size-dependent charge fraction of sub-3-nm particles as a key diagnostic of competitive nucleation mechanisms under atmospheric conditions, Atmos. Chem. Phys., 11, 9451-9463, doi:10.5194/acp-11-9451-2011, 2011.

English, J. M., O. B. Toon , M. J. Mills, and F. Yu: Microphysical simulations of new particle formation in the upper troposphere and lower stratosphere, Atmos. Chem. Phys., 11, 9303-9322, doi:10.5194/acp-11-9303-2011, 2011.

Yu, F.: Diurnal and seasonal variations of ultrafine particle formation in anthropogenic SO_2 plumes, Environ. Sci. & Tech., 44 (6), 2011-2015, DOI: 10.1021/es903228a, 2010.

Yu, F., and G. Luo: Simulation of particle size distribution with a global aerosol model: Contribution of nucleation to aerosol and CCN number concentrations, Atmos. Chem. Phys., 9, 7691-7710, 2009.

Nadykto, A. B., F. Yu, and J. Herb, Towards understanding the sign preference in binary atmospheric nucleation, Physical Chemistry Chemical Physics, 10, 7073 - 7078, DOI: 10.1039/b807415a, 2008.

Yu, F., and R. P. Turco, Case studies of particle formation events observed in boreal forests: Implications for nucleation mechanisms, Atmos. Chem. Phys., 8, 6085-6102, 2008.

Nadykto, A. B., and F. Yu, Strong hydrogen bonding between atmospheric nucleation precursors and organic acids, Chem. Phys. Lett, 435, 14-18, 2007.

Yu, F., From molecular clusters to nanoparticles: Second-generation ion-mediated nucleation model, Atmos. Chem. Phys.,6, 5193-5211, 2006.

Yu, F., Modified Kelvin-Thomson equation considering ion-dipole interaction: Comparison with observed ion-clustering enthalpies and entropies, J. Chem. Phys., 122, 084503, 2005.

Nadykto A., and F. Yu, Dipole moment of condensing monomers: A new parameter controlling the ion-induced nucleation, Physical Review Letters, 93, 016101, 2004.

Yu, F., Altitude variations of cosmic ray induced production of aerosols: Implications for global cloudiness and climate, J. Geophy. Res., 107(A7), 10.1029/2001JA000248, 2002.

Yu, F. and R. P. Turco, From molecular clusters to nanoparticles: The role of ambient ionization in tropospheric aerosol formation, J. Geophy. Res., 106, 4797-4814, 2001.

Yu, F., and R. P. Turco, Ultrafine aerosol formation via ion-mediated nucleation, Geophys. Res. Lett., 27, 883-886, 2000.

Yu, F., R. P. Turco, and B. Karcher, The possible role of organics in the formation and evolution of ultrafine aircraft particles, J. Geophy. Res., 104, 4079-4087, 1999.

Yu, F., and R. P. Turco, The formation and evolution of aerosols in stratospheric aircraft plumes: Numerical simulations and comparisons with observations, J. Geophy. Res., 103, 25,915-25,934, 1998.

Yu, F., and R. P. Turco, The role of ions in the formation and evolution of particles in aircraft plumes, Geophys. Res. Lett., 24, 1927-1930, 1997.