

朱雷

南方科技大学
台州楼 429, 学苑大道 1088 号, 深圳, 518055
<https://www.acmrsg.org/zhu>

zhul3@sustech.edu.cn
0755-26601426

职业经历

2019.12 至今	南方科技大学 助理教授
2019.07 – 2019.12	哈佛-史密松天体物理中心 研究员
2017.01 – 2019.07	哈佛大学 博士后

教育背景

2016.12	博士 (工程科学) 哈佛大学 导师: Daniel J. Jacob
2011.06	硕士 (环境科学) 北京大学 导师: 宋宇
2008.06	学士 (环境科学) 南开大学

发表论文

第一及通讯作者 (*)

- Zhu, L.***, G. González Abad, C. R. Nowlan, *et al.*: Validation of satellite formaldehyde (HCHO) retrievals using observations from 12 aircraft campaigns, *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2019-1117>, in review, 2020.
- Zhu, L.***, Jacob, D. J., Eastham, S. D., *et al.*: Effect of sea salt aerosol on tropospheric bromine chemistry, *Atmos. Chem. Phys.*, 19, 6497–6507, 2019.
- Zhu, L.***, L. J. Mickley, D. J. Jacob *et al.*: Long-term (2005–2014) trends in formaldehyde (HCHO) columns across North America as seen by the OMI satellite instrument: Evidence of changing emissions of volatile organic compounds, *Geophys. Res. Lett.*, 44, 7079–7086, 2017.
- Zhu, L.***, D. J. Jacob, F. N. Keutsch *et al.*: Formaldehyde (HCHO) as a Hazardous Air Pollutant: Mapping surface air concentrations from satellite and inferring cancer risks in the United States, *Environ. Sci. Technol.*, 51, 5650–5657, 2017.
- Zhu, L.***, D. J. Jacob, P. S. Kim *et al.*: Observing atmospheric formaldehyde (HCHO) from space: validation and intercomparison of six retrievals from four satellites (OMI, GOME2A, GOME2B, OMPS) with SEAC⁴RS aircraft observations over the southeast US, *Atmos. Chem. Phys.*, 16, 13477–13490, 2016.
- Zhu, L.***, D. J. Jacob, L. J. Mickley *et al.*: Anthropogenic emissions of highly reactive volatile organic compounds in eastern Texas inferred from oversampling of satellite (OMI) measurements of HCHO columns, *Environ. Res. Lett.*, 9, 114004, 2014.
- Zhu, L.**, X. Huang, H. Shi *et al.*: Transport pathways and potential sources of PM₁₀ in Beijing, *Atmos. Environ.*, 45, 594–604, 2011.

合作作者

- Wang, X. *et al.* including **L. Zhu**: Direct links between hygroscopicity and mixing state of ambient aerosols: estimating particle hygroscopicity from their single-particle mass spectra, *Atmos. Chem. Phys.* 2020.
- Souri, A. *et al.* including **L. Zhu**: An Inversion of NO_x and NMVOC Emissions using Satellite Observations during the KORUS-AQ Campaign and Implications for Surface Ozone over East Asia, *Atmos. Chem. Phys. Discuss.*, 2020.

- Lu, X. *et al.* including **L. Zhu**: Development of the global atmospheric general circulation-chemistry model BCC-GEOS-Chem v1.0: model description and evaluation, *Geosci. Model Dev.*, 2019.
- Chance, K. *et al.* including **L. Zhu**: TEMPO Green Paper; Chemistry, physics, and meteorology experiments with the Tropospheric Emissions: Monitoring of Pollution instrument, *Proc. SPIE 11151, Sensors, Systems, and Next-Generation Satellites XXIII*, 111510B (10 October 2019).
- Shen, L., D. J. Jacob, **L. Zhu et al.**: The 2005–2016 Trends of Formaldehyde Columns Over China Observed by Satellites: Increasing Anthropogenic Emissions of Volatile Organic Compounds and Decreasing Agricultural Fire Emissions, *Geophys. Res. Lett.*, 46, 2019.
- Zhang, Y. *et al.* including **L. Zhu**: Satellite-Observed Changes in Mexico's Offshore Gas Flaring Activity Linked to Oil/Gas Regulations, *Geophys. Res. Lett.*, 46, 1879–1888, 2019.
- Wang, X. *et al.* including **L. Zhu**: The role of chlorine in tropospheric chemistry, *Atmos. Chem. Phys.*, 19, 3981–4003, 2019.
- Song, S. *et al.* including **L. Zhu**: Possible heterogeneous chemistry of hydroxymethanesulfonate (HMS) in northern China winter haze, *Atmos. Chem. Phys.*, 19, 1357–1371, 2019.
- Sun, K., **Zhu, L.**, K. Cady-Pereira *et al.*: A physics-based approach to oversample multi-satellite, multispecies observations to a common grid, *Atmos. Meas. Tech.*, 11, 6679–6701, 2018.
- Kaiser, J., D. J. Jacob, **L. Zhu et al.**: High-resolution inversion of OMI formaldehyde columns to quantify isoprene emission on ecosystem-relevant scales: application to the southeast US, *Atmos. Chem. Phys.*, 18, 5483–5497, 2018.
- Miller, C. C. *et al.* including **L. Zhu**: Glyoxal yield from isoprene oxidation and relation to formaldehyde: chemical mechanism, constraints from SENEX aircraft observations, and interpretation of OMI satellite data, *Atmos. Chem. Phys.*, 17, 8725–8738, 2017.
- Travis, K. R. *et al.* including **L. Zhu**: Why do models overestimate surface ozone in the Southeast United States?, *Atmos. Chem. Phys.*, 16, 13561–13577, 2016.
- Fisher, J. A. *et al.* including **L. Zhu**: Organic nitrate chemistry and its implications for nitrogen budgets in an isoprene- and monoterpene-rich atmosphere: constraints from aircraft (SEAC⁴RS) and ground-based (SOAS) observations in the Southeast US, *Atmos. Chem. Phys.*, 16, 5969–5991, 2016.
- Yu, K. *et al.* including **L. Zhu**: Sensitivity to grid resolution in the ability of a chemical transport model to simulate observed oxidant chemistry under high-isoprene conditions, *Atmos. Chem. Phys.*, 16, 4369–4378, 2016.
- Marais, E. A. *et al.* including **L. Zhu**: Aqueous-phase mechanism for secondary organic aerosol formation from isoprene: application to the southeast United States and co-benefit of SO₂ emission controls, *Atmos. Chem. Phys.*, 16, 1603–1618, 2016.
- Kim, P. S. *et al.* including **L. Zhu**: Sources, seasonality, and trends of southeast US aerosol: an integrated analysis of surface, aircraft, and satellite observations with the GEOS-Chem chemical transport model, *Atmos. Chem. Phys.*, 15, 10411–10433, 2015.
- Li, M., X. Huang, **L. Zhu et al.**: Analysis of the transport pathways and potential sources of PM₁₀ in Shanghai based on three methods, *Sci. Tot. Environ.*, 414, 525–534, 2012.
- Huang, X. *et al.* including **L. Zhu**: Mercury Emissions from Biomass Burning in China, *Environ. Sci. Technol.*, 45, 5650–5657, 2011.
- Song, Y. *et al.* including **L. Zhu**: A new emission inventory for nonagricultural open fires in Asia from 2000 to 2009, *Environ. Res. Lett.*, 5, 014014, 2011.
- Wang, B., **L. Zhu**, Z. Gong *et al.*: Introduction to the methods of parameter estimation for environmental monitoring data set with truncated data below a detection limit, *Acta Science Circumstantiae.*, 29, 1345–1350, 2009.

部分所获奖项

学术认可

美国气象学会年度特殊奖项	2020
<i>Atmospheric Pollution Research</i> 认可审稿人	2019

NASA、美国内政部 William T. Pecora 团队奖	2018
<i>Atmospheric Environment</i> 杰出审稿人	2017
NASA 团队成就奖	2015
南开大学优秀毕业生	2008

教学

哈佛大学杰出教学认证	2013
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奖学金

史密松天体物理观测台访问科学家奖学金	2019
哈佛大学能源与环境研究生奖学金	2014 – 2016
北京大学研究生奖学金	2008 – 2010
诺维信奖学金	2007
国家奖学金	2007
南开大学奖学金	2005 – 2006

学术报告

口头报告

- Validation of satellite formaldehyde (HCHO) retrievals using observations from 12 aircraft campaigns, *AGU Fall Meeting*, 2019, San Francisco, CA, USA.
- Satellite remote sensing of trace gases: principles, methods, and applications for air quality studies, *Atmospheric Chemistry Forum* (online), November 30, 2019 (受邀).
- Satellite remote sensing for air quality applications, with a focus on formaldehyde (HCHO), University of Illinois at Urbana–Champaign, Champaign, IL, 2019 (受邀).
- Satellite remote sensing for air quality applications, with a focus on formaldehyde (HCHO), Institute of Atmospheric Physics Chinese Academy of Sciences, Beijing, China, 2019, (受邀).
- Satellite remote sensing for air quality applications, with a focus on formaldehyde (HCHO), Peking University, Beijing, China, 2019 (受邀).
- Satellite remote sensing for air quality applications, with a focus on formaldehyde (HCHO), Southern University of Science and Technology, Shenzhen, China, 2019 (受邀).
- Modeling of tropospheric halogen (Cl-Br-I) chemistry: cycling, debromination, and impact, *The 1st Regional GEOS-Chem Asia Meeting*, Nanjing, China, 2018.
- Mapping surface air concentrations from OMI and inferring cancer risks: implications for TEMPO, *TEMPO Science Meeting*, Cambridge, MA, 2017 (受邀).
- Observing atmospheric formaldehyde from space: validation, intercomparison, trend analysis and public health implications, *AGU Fall Meeting*, San Francisco, CA, 2016.
- Observing atmospheric formaldehyde from space: Validation, intercomparison, trend analysis and public health implications, *Aura Science Meeting*, Rotterdam, The Netherlands, 2016.
- Mapping of surface formaldehyde (HCHO) from space for air quality management, *The 9th NASA Air Quality Applied Sciences Team Meeting*, St. Louis University, St. Louis, MO, 2015.
- Indirect validation of new OMI, GOME-2B and OMPS formaldehyde retrievals using SEAC⁴RS data, *The 7th International Conference of GEOS-Chem*, Harvard University, Cambridge, MA, 2015.
- Validation of satellite HCHO observations (OMI, GOME-2B, OMPS) using SEAC⁴RS data, *SEAC⁴RS Science Meeting*, Caltech, Pasadena, CA, 2015.
- Anthropogenic emissions of highly reactive volatile organic compounds inferred from oversampling of OMI HCHO columns, *EOS Aura Science Team Meeting 10th year anniversary celebration*, College Park, MD, 2014.
- Anthropogenic emissions of highly reactive VOCs (HRVOCs) inferred from oversampling of OMI

formaldehyde columns, *The 6th NASA Air Quality Applied Sciences Team Meeting*, Rice University, Houston, TX, 2014.

Math in Nature: finding order in chaos, at Harvard Medical School, *Science in News*, Boston, MA, 2013 (受邀).

Variability of HCHO over the United States: Implications for VOCs Emissions, *The 5th NASA Air Quality Applied Sciences Team Meeting*, University of Maryland, College Park, MD, 2013.

A spike in electricity demand due to severe summer heatwaves: Increase of SO₂ emissions detected from space, *The 18th Seminar of JSPS-MOE Core University Program*, Beijing, China, 2010.

Estimating of fire emissions in Boreal Siberia by satellite data sets, *The 6th Seminar of Environment Modeling and Pollution Controlling*, Beijing, China, 2009.

海报

Validation of satellite formaldehyde (HCHO) retrievals using aircraft observations and implication for TEMPO, *TEMPO Science Meeting*, University of Wisconsin–Madison, WI, 2019.

Effect of sea-salt aerosol on tropospheric bromine chemistry, *The 9th International Conference of GEOS-Chem*, Harvard University, Cambridge, MA, 2019.

Effect of sea-salt aerosol on tropospheric bromine chemistry, *AGU Fall Meeting*, Washington, D.C., 2018.

Observing atmospheric formaldehyde from space: trend analysis and public health implications, *The 8th International GEOS-Chem Meeting*, Cambridge, MA, 2017.

Validation of satellite HCHO retrievals with aircraft (SEAC⁴RS) observations, *Atmospheric Radiation Workshop*, NCAR, Boulder, CO, 2016.

Anthropogenic emissions of highly reactive volatile organic compounds inferred from oversampling of OMI HCHO columns, *AGU Fall Meeting*, San Francisco, CA, 2014.

Indirect validation of GOME-2/MetOp-A and B formaldehyde retrievals using SEAC⁴RS data: Preliminary results, *The 7th NASA Air Quality Applied Sciences Team Meeting*, Harvard University, Cambridge, MA, 2014.

Indirect Validation of GOME-2/MetOp-A and B and New OMI formaldehyde (HCHO) retrievals using SEAC⁴RS data: Preliminary results, *SEAC⁴RS Science Meeting*, NIST, Boulder, CO, 2014.

Variability of HCHO over the Southeastern United States observed from space: Implications for VOC emissions, *AGU Fall Meeting*, San Francisco, CA, 2012.

Spikes in electricity demand during severe summer heat waves: Increased SO₂ emissions detected from space, *AGU Fall Meeting*, San Francisco, CA, 2010.

教学与学生指导

教学助理

- *Atmospheric Chemistry and Physics*, 研究生课程, 哈佛大学, 2017.
- *The Fluid Earth: Oceans, Atmosphere, and Climate*, 本科生课程, 哈佛大学, 2013.

学生指导

- 2 博士生后
- 4 博士生
- 3 本科生

专业服务

委员会

GEMS 卫星科学委员成员	2019 至今
OMPS (NPP and NOAA-20) 卫星科学委员成员	2018 至今
TEMPO 卫星科学委员成员	2017 至今

Aura 卫星科学委员成员	2016 至今
哈佛学院大气科学讲座召集人	2016 – 2017
SEAC ⁴ RS 航测科学委员成员	2012 – 2015
NASA 空气质量卫星应用科学委员成员	2011 – 2015

客座编辑

Remote Sensing

审稿人期刊

Atmosphere, Atmospheric Environment, Atmospheric Chemistry and Physics, Atmospheric Measurement Techniques, Atmospheric Pollution Research, Environmental Science & Technology, Geophysical Research Letters, Journal of Geophysical Research, Nature Climate Change, Remote Sensing

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