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Advanced Study Program (ASP) Postdoctoral Fellow
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EDUCATION

- Jun. 2017 Ph.D. Atmospheric Sciences, University of California Los Angeles (UCLA), USA (GPA: 4.00/4.00)
Ph.D. Advisers: Prof. Kuo-Nan Liou and Prof. Qinbin Li
- Dec. 2013 M.S. Atmospheric Sciences, University of California Los Angeles (UCLA), USA (GPA: 4.00/4.00)
- Jul. 2012 B.S. Applied Mathematics, Peking University, China (GPA: 3.74/4.00)
- Jul. 2012 B.S. Environmental Sciences, Peking University, China (GPA: 3.81/4.00)

RESEARCH INTEREST

Atmospheric Chemistry and Modeling, Interaction between Climate Change and Air Pollution, Aerosol Chemistry and Physics, Aerosol-Snow Interaction, Aerosol-Cloud Interaction, Radiative Transfer and Light Scattering, Land-Atmosphere Interaction, Snow Hydrology, Land Surface Modeling, Machine Learning Application in Atmospheric Sciences

PROFESSIONAL EXPERIENCES

- | | |
|------------------------|---|
| Oct. 2017 – present | Advanced Study Program (ASP) Postdoctoral Fellow, NCAR, USA |
| Jun. – Sept. 2017 | Postdoctoral Scholar, UCLA, USA |
| Sept. 2012 – Jun. 2017 | Graduate Student Researcher, UCLA, USA |
| Jul. 25 – Aug. 5 2016 | Visiting Graduate Student, ASP Summer Colloquium, NCAR, USA |
| Jun. 2010 – Jul. 2012 | Undergraduate Research Assistant, Peking University, China |

PUBLICATIONS

Updated on June 13, 2019

Published:

29. K. Yi, J. Meng, H. Yang, **C. He**, D. Henze, J. Liu, D. Guan, Z. Liu, L. Zhang, X. Zhu, Y. Cheng, and S. Tao (2019): How Do Global Trade Cascade to Large Climate Forcing over the Tibetan Plateau Glaciers, *Nature Communications*, in press.
28. **He, C.** (2019). Radiative properties of atmospheric black carbon (soot) particles with complex structures. In: Kokhanovsky A. (eds) *Springer Series in Light Scattering (Volume 4)*. Springer, Cham, in press.
27. Tang, W., Emmons, L. K., Arellano, A. F., Gaubert, B., Knote, C., Tilmes, S., Buchholz, R. R., Pfister, G. G., Diskin, G. S., Blake, D. R., Blake, N. J., Meinardi, S., DiGangi, J P., Choi, Y., Woo, J., **He, C.**, Schroeder, J. R., Suh, I., Lee, H., Jo, H., Kanaya, Y., Jung, J., Lee, Y., and Kim, D. (2019): Source contributions to carbon monoxide concentrations during KORUS-AQ based on CAM-chem model applications, *J. Geophys. Res. Atmos.*, 124, 2796–2822, doi:10.1029/2018JD029151.

26. **He, C.**, Flanner, M. G., Chen, F., Barlage, M., Liou, K. N., Kang, S., Ming, J., and Qian, Y. (2018): Black carbon-induced snow albedo reduction over the Tibetan Plateau: uncertainties from snow grain shape and aerosol–snow mixing state based on an updated SNICAR model, *Atmos. Chem. Phys.*, 18, 11507-11527, doi:10.5194/acp-18-11507-2018.
25. **He, C.**, K. N. Liou, and Y. Takano (2018): Resolving size distribution of black carbon internally mixed with snow: impact on snow optical properties and albedo, *Geophys. Res. Lett.*, 45, 2697-2705, doi:10.1002/2018GL077062.
24. **He, C.**, K. N. Liou, Y. Takano, P. Yang, L. Qi, and F. Chen (2018): Impact of grain shape and multiple black carbon internal mixing on snow albedo: parameterization and radiative effect analysis, *J. Geophys. Res.-Atmos.*, 123, doi:10.1002/2017JD027752.
23. Yan, Y.-Y., J. Lin, and **C. He** (2018): Ozone trends over the United States at different times of day, *Atmos. Chem. Phys.*, 18, 1185-1202, doi:10.5194/acp-18-1185-2018.
22. Zhao, B., Liou, K.-N., Gu, Y., Jiang, J. H., Li, Q., Fu, R., Huang, L., Liu, X., Shi, X., Su, H., and **He, C.** (2018): Impact of aerosols on ice crystal size, *Atmos. Chem. Phys.*, 18, 1065-1078, doi:10.5194/acp-18-1065-2018.
21. Wang, Y., F. Liu, **C. He**, L. Bi, T. Cheng, Z. Wang, H. Zhang, X. Zhang, Z. Shi, and W. Li (2017): Fractal dimensions and mixing structures of soot particles during atmospheric processing, *Environ. Sci. Technol. Lett.*, 4, 487-493, doi:10.1021/acs.estlett.7b00418.
20. **He, C.**, Y. Takano, K.-N. Liou, P. Yang, Q. Li, and F. Chen (2017): Impact of snow grain shape and black carbon-snow internal mixing on snow optical properties: Parameterizations for climate models, *J. Climate*, 30(24), 10019-10036, doi:10.1175/JCLI-D-17-0300.1.
19. Qi, L., Q. Li, D. Henze, H.-L. Tseng, and **C. He** (2017): Sources of Springtime Surface Black Carbon in the Arctic: An Adjoint Analysis for April 2008, *Atmos. Chem. Phys.*, 17, 9697-9716, doi:10.5194/acp-17-9697-2017.
18. **He, C.** (2017). Climatic Effects of Black Carbon Aerosols over the Tibetan Plateau, *Doctoral dissertation*, University of California, Los Angeles.
17. Zhao, B., K.-N. Liou, Y. Gu, Q. Li, J. H. Jiang, H. Su, **C. He**, H.-L. Tseng, S. Wang, R. Liu, L. Qi, W.-L. Lee, and J. Hao (2017): Enhanced PM_{2.5} pollution in China due to aerosol-cloud interactions, *Scientific Reports*, 7, 4453, doi:10.1038/s41598-017-04096-8.
16. Qi, L., Li, Q., **He, C.**, Wang, X., and Huang, J. (2017): Effects of the Wegener-Bergeron-Findeisen Process on Global Black Carbon Distribution, *Atmos. Chem. Phys.*, 17, 7459-7479, doi:10.5194/acp-17-7459-2017.
15. **He, C.**, Y. Takano, and K. N. Liou (2017), Close packing effects on clean and dirty snow albedo and associated climatic implications, *Geophys. Res. Lett.*, 44, doi:10.1002/2017GL072916.
14. Li, Z., J. Liu, D. L. Mauzerall, X. Li, S. Fan, L. W. Horowitz, **C. He**, K. Yi, and S. Tao (2017): A potential large and persistent black carbon forcing over Northern Pacific inferred from satellite observations. *Scientific Reports*, 7, 43429, doi:10.1038/srep43429.
13. Qi, L., Li, Q., Li, Y., and **He, C.** (2017): Factors controlling black carbon distribution in the Arctic, *Atmos. Chem. Phys.*, 17, 1037-1059, doi:10.5194/acp-17-1037-2017.
12. Lee, W. L., Liou, K. N., **He, C.**, Liang, H. C., Wang, T. C., Li, Q., Liu, Z. and Yue, Q. (2017): Impact of absorbing aerosol deposition on snow albedo reduction over the southern Tibetan plateau based on satellite observations. *Theor. Appl. Climatol.*, 129(3-4), 1373-1382, doi:10.1007/s00704-016-1860-4.

11. **He, C.**, Y. Takano, K. N. Liou, P. Yang, Q. B. Li, and D. W. Mackowski (2016): Intercomparison of the GOS approach, superposition T-matrix method, and laboratory measurements for black carbon optical properties during aging, *J. Quant. Spectrosc. Radiat. Transf.*, 184, 287–296, doi:10.1016/j.jqsrt.2016.08.004.
10. Zhao, B., K. N. Liou, Y. Gu, **C. He**, W.-L. Lee, X. Chang, Q. Li, S. Wang, H.-L. Tseng, L.-Y. R. Leung, and J. Hao (2016): Impact of buildings on surface solar radiation over urban Beijing, *Atmos. Chem. Phys.*, 16, 5841-5852, doi:10.5194/acp-16-5841-2016.
9. **He, C.**, Li, Q., Liou, K. N., Qi, L., Tao, S., and Schwarz, J. P. (2016): Microphysics-based black carbon aging in a global CTM: constraints from HIPPO observations and implications for global black carbon budget, *Atmos. Chem. Phys.*, 16, 3077-3098, doi:10.5194/acp-16-3077-2016.
8. **He, C.**, Liou, K. N., Takano, Y., Zhang, R., Zamora, M. L., Yang, P., Li, Q., and Leung, L. R. (2015): Variation of the radiative properties during black carbon aging: theoretical and experimental intercomparison, *Atmos. Chem. Phys.*, 15, 11967-11980, doi:10.5194/acp-15-11967-2015.
7. Mao, Y. H., Q. B. Li, D. K. Henze, Z. Jiang, D. B. A. Jones, M. Kopacz, **C. He**, L. Qi, M. Gao, W.-M. Hao, and K. N. Liou (2015): Estimates of black carbon emissions in the western United States using the GEOS-Chem adjoint model, *Atmos. Chem. Phys.*, 15, 7685-7702, doi:10.5194/acp-15-7685-2015.
6. **He, C.**, Q. Li, K. N. Liou, Y. Takano, Y. Gu, L. Qi, Y. Mao, and L. R. Leung (2014): Black carbon radiative forcing over the Tibetan Plateau, *Geophys. Res. Lett.*, 41, 7806 – 7813, doi:10.1002/2014GL062191.
5. **He, C.**, Q. B. Li, K. N. Liou, J. Zhang, L. Qi, Y. Mao, M. Gao, Z. Lu, D. G. Streets, Q. Zhang, M. M. Sarin, and K. Ram (2014): A global 3-D CTM evaluation of black carbon in the Tibetan Plateau, *Atmos. Chem. Phys.*, 14, 7091-7112, doi:10.5194/acp-14-7091-2014.
4. Liou, K. N., Y. Takano, **C. He**, P. Yang, L. R. Leung, Y. Gu, and W. L. Lee (2014): Stochastic parameterization for light absorption by internally mixed BC/dust in snow grains for application to climate models, *J. Geophys. Res.-Atmos.*, 119, doi:10.1002/2014JD021665.
3. **He, C.**, Liu, J., Carlton, A. G., Fan, S., Horowitz, L. W., Levy II, H., and Tao, S. (2013): Evaluation of factors controlling global secondary organic aerosol production from cloud processes, *Atmos. Chem. Phys.*, 13, 1913-1926, doi:10.5194/acp-13-1913-2013.
2. **He, C.** and T.-M. Fu (2013): Air-Sea Exchange of Volatile Organic Compounds: A New Model with Microlayer Effects, *Atmos. Oceanic Sci. Lett.*, 6, 97–102, doi: 10.1080/16742834.2013.11447063.
1. **He, C.**, F. Gao, X. Lu, Z. Hou, and S. Zhang (2012): Eco-toxicological Effects of Multi-Wall Carbon Nanotube on Soil Microorganisms, *Asian Journal of Ecotoxicology*, 7, 148-155.

TEACHING EXPERIENCES

May – Aug. 2018	UCAR SOARS Research Mentor, NCAR, USA
Jan. – Jul. 2016	Teaching Assistant, Course “AOS2 (Air Pollution)”, UCLA, USA
Summer, 2013–2017	Mentor for undergraduate research intern, UCLA, USA
Spring 2016	Guest Lecturer, Course “AOS141 (Intro. to Atmos. Chem. and Air Pollution)”, UCLA
Jan. 30, 2017	Volunteer Teacher in the Citizens of the World Charter School, Los Angeles, USA
Mar. 23–24, 2016	Volunteer Teacher in the 20th annual Children's Water Education Festival, Irvine, USA
2015–2016	Mentor for high school American Mathematics Competitions, USA

PRESENTATIONS AND CONFERENCES

25. He, C. et al. (poster): From Dirty Snow to Warmer Climate: When Black Aerosols Meet White Snow, Radiation and Climate Gordon Research Conference, Lewiston, ME, USA, Jul 2019.
24. He, C. et al. (poster): Impact of precipitation uncertainty on high-resolution snow simulations over western US mountains, AGU meeting, Washington DC, USA, Dec 2018.
23. He, C. et al. (**Oral, Invited**), Interactions between Aerosols, Snowpack, and Solar Radiation: From Fundamental Physics to Climate Modeling, *PNNL seminar*, Richland, WA, USA, Nov. 2018
22. He, C. et al. (**Oral, Invited**), Interactions between Solar Radiation and Black Carbon Aerosol: From Atmosphere to Surface, *Atmospheric Science Department Seminar*, Univ. of Wyoming, Laramie, Oct. 2018
21. He, C. et al. (**Oral**): Impact of Tibetan Plateau snowpack pollution on South and East Asian Precipitation, *AOGS annual meeting*, Honolulu, HI, USA, June 2018.
20. He, C. et al. (**Oral**): Resolving size distribution of black carbon internally mixed with snow: impact on snow optical properties and albedo, *ELS-XVII/LIP conference*, College Station, TX, USA, Mar. 2018.
19. He, C. et al. (poster): Impact of grain shape and multiple black carbon internal mixing on snow albedo: parameterization and radiative effect analysis, *AMS annual meeting*, Austin, TX, USA, Jan. 2018.
18. He, C. et al. (**Oral, Invited**): Close packing effects on clean and dirty snow albedo and associated climatic implications, *AGU meeting*, New Orleans, LA, USA, Dec. 2017.
17. He, C. et al. (poster): Impact of snow grain shape and black carbon-snow internal mixing on snow optical properties: parameterizations for climate models, *AGU meeting*, New Orleans, LA, USA, Dec. 2017.
16. He, C. et al. (**Oral, Best Student Research Paper Award**): Close packing effects on clean and dirty snow albedo and associated climatic implications, *Los Angeles Environmental Forum*, Los Angeles, CA, Aug. 2017.
15. He, C. et al. (**Oral**): Effects of Light-absorbing Aerosol Deposition on Snow Albedo over the Tibetan Plateau, *Chinese Environmental Scholar Forum*, UC Berkeley, CA, USA, May 2017.
14. He, C. et al. (**Oral**): Black Carbon-Snow-Radiation Interactions and Albedo Effects over the Tibetan Plateau, *GFDL/Princeton seminar*, Princeton, NJ, USA, Feb. 2017.
13. He, C. et al. (**AGU Outstanding Student Paper Award**): A Physically-based Parameterization for BC-Snow Interactions with Application to Snow Albedo Reduction over the Tibetan Plateau, *AGU meeting*, San Francisco, CA, USA, Dec. 2016.
12. He, C. et al. (**Oral**): Investigating black carbon atmospheric aging: microphysics and radiative effects, *AOS Department Seminar*, UCLA, CA, Nov. 2016.
11. He, C. et al. (Poster): Investigating black carbon-snow (“dirty snow”) albedo feedback in climate studies, *IGAC Science Conference*, Breckenridge, Colorado, USA, Sept. 2016.
10. He, C. et al. (**AMS First Place Student Poster Award**): Variation of radiative properties during BC aging: theoretical and experimental intercomparison, *AMS annual meeting*, New Orleans, Louisiana, USA, Jan. 2016.
9. He, C. et al. (Poster): Microphysics-based black carbon aging in a global 3-D CTM: constraints from HIPPO observations and implications for global black carbon budget, *AGU meeting*, San Francisco, CA, Dec. 2015.
8. He, C. et al. (**Oral**): Variation of radiative properties during BC aging: theoretical and experimental intercomparison, *International Aerosol Modeling & Algorithm*, Davis, CA, USA, Dec. 2015.
7. He, C. et al. (**Oral**): Improving BC aging scheme in GEOS-Chem based on aerosol microphysics: Constraints from HIPPO observations, *International GEOS-Chem meeting*, Boston, MA, USA, May 2015.
6. He, C. et al. (Poster): Variation of radiative properties during BC aging: theoretical and experimental intercomparison, *AGU meeting*, San Francisco, CA, USA, Dec. 2014.

5. He, C. et al. (**Oral**): Evolution of BC optical properties during atmospheric aging, *Caltech YLY Lunch Seminar*, Los Angeles, USA, Oct. 2014.
4. He, C. et al. (**Oral, Best Presentation Award**): Understanding the climatic role of black carbon (BC) over the Tibetan Plateau, *COAA-SCC Annual Workshop*, UC San Diego, CA, Sept. 2014.
3. He, C. et al. (Poster): Evolution of BC optical properties during atmospheric aging: comparison between theoretical calculations and laboratory experiments, *International Conference on Clouds and Aerosols*, Nanjing, China, June 2014.
2. He, C. et al. (Poster): Comprehensive Evaluation of Black Carbon Simulations over the Tibetan Plateau and Implications for Radiative Forcing, *AGU meeting*, San Francisco, CA, USA, Dec. 2013.
1. He, C. et al. (**Oral**): Evaluation of factors controlling global secondary organic aerosol production from cloud processes, *AGU meeting*, San Francisco, CA, USA, Dec. 2012.

SELECTED AWARDS

- 2018 Outstanding Reviewer Awards for Environmental Research Letters (year 2017)
- 2017 Advanced Study Program (ASP) Postdoctoral Fellowship, NCAR
- 2017 Chinese-American Oceanic and Atmospheric Association (COAA) Yuxiang Young Scholar Award
- 2017 Best Student Research Paper Award at 2017 Los Angeles Environmental Forum
- 2017 Outstanding Student Paper Award at 2016 AGU international meeting
- 2016 Jacob A. Bjerknes Memorial Award (distinguished graduate student research award), UCLA
- 2016 Dissertation Year Fellowship, UCLA
- 2016 International Global Atmospheric Chemistry (IGAC) Early Career Travel Grant
- 2016 First Place Student Poster Award in 2016 AMS Mario Symposium
- 2015 Chinese-American Engineers & Scientists Association of Southern California Annual Scholarship Award
- 2015 Phi Tau Phi West America Chapter Annual Scholarship Award
- 2013 Edwin W. Pauley Fellowship, UCLA
- 2013 University Fellowship, UCLA

SERVICES AND OUTREACH

Member: AGU (2012-present), AMS (2015-present), EGU (2016-present), AOGS (2018-present)

Proposal Reviewer: National Science Foundation (NSF, US)

Journal Reviewer: *Geophys. Res. Lett.*, *Atmos. Chem. Phys.*, *J. Geophys. Res.-Atmos.*, *Environ. Res. Lett.*, *Journal of Climate*, *Atmos. Environ.*, *Geosci. Model Dev.*, *International Journal of Climatology*, *The Cryosphere*, *Environmental Pollution*, *Advances in Climate Change Research*, *Theoretical and Applied Climatology*, etc.

Committee member for NCAR ASP Postdoctoral Research Reviews

Judge for 2018 AMS & AGU Student Poster/Oral Presentations

Academic Translation (Chinese to English) of Scientific Papers for CNKI International Publishing Center (2015–present)

Treasurer for Chinese-American Oceanic and Atmospheric Association (COAA) Southern California Chapter (2015-2017)

Board member of *HikingPlusYou* non-profit corporation (2016–present)