

# Kamal Kant CHANDRAKAR

## PERSONAL DATA

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ADDRESS: Mesoscale & Microscale Meteorology Laboratory  
National Center for Atmospheric Research  
Boulder, CO-80301  
E-MAIL: [kkchandr@ucar.edu](mailto:kkchandr@ucar.edu)

## EDUCATION

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*Aug 2014 - Aug 2019* | **PhD. in Atmospheric Sciences**,  
Michigan Technological University, Houghton, MI  
Major: Atmospheric Science  
Thesis: *Aerosol-Cloud Interactions in Turbulent Clouds: A Combined Cloud Chamber and Theoretical Study.* | Advisor: Prof. Raymond A. Shaw

*Aug 2011 - Jul 2013* | **Master of Engineering in Mechanical Engineering**,  
Indian Institute of Science, Bangalore (INDIA)  
*First Class* | Major: Fluid Dynamics  
Thesis: *Unsteady Flow Through Flexible Opening.* | Advisor: Prof. Jaywant H. Arakeri

*Aug 2006 - Jun 2010* | **Bachelor of Engineering in Mechanical Engineering**  
CSVTU, Bhilai (INDIA)  
*First Class* | Major: Mechanical Engineering

## RESEARCH EXPERIENCE

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*Fall 2019 - Current* | **NCAR ASP Postdoc Fellow at National Center for Atmospheric Research, Boulder**

*Fall 2014 - Fall 2019* | **Graduate Research at Michigan Technological University**  
II-Chamber Group | Advisor : Prof. Raymond A. Shaw

*Jan 2012 - Jun 2013* | **Graduate Research at Indian Institute of Science**  
Fluid Mechanics Laboratory | Advisor : Prof. Jaywant H. Arakeri

*Jul 2013 - Jun 2014* | **Research Associate at Indian Institute of Science**  
Fluid Mechanics Laboratory | Advisor : Prof. Jaywant H. Arakeri

## TEACHING EXPERIENCE

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*Fall 2014 & 2015* | **Teaching Assistant at Michigan Technological University**  
*Physics by Inquiry I*

## AWARD & FELLOWSHIP

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2019 **Dean's Award for Outstanding Scholarship, MTU**  
2017-19 **NASA Earth and Space Science Fellowship**  
2017 **Best Graduate Poster Presentation Award, MTU (Physics)**  
2011-13 **Ministry of Human Resource Development Scholarship by the Government of India to pursue Master's at IISc**

## REVIEWER

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### Geophysical Research Letters

## PUBLICATIONS

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2016

K. K. Chandrakar, W. Cantrell, K. Chang, D. Ciochetto, D. Niedermeier, M. Ovchinnikov, R. A. Shaw, and F. Yang. Aerosol indirect effect from turbulence-induced broadening of cloud-droplet size distributions. *Proc. Nat. Acad. Sci.*, 113:14243–14248, 2016

K. Chang, J. Bench, M. Brege, W. Cantrell, K. K. Chandrakar, D. Ciochetto, C. Mazzoleni, L. R. Mazzoleni, D. Niedermeier, and R. A. Shaw. A laboratory facility to study gas–aerosol–cloud interactions in a turbulent environment: The  $\pi$  chamber. *Bulletin of the American Meteorological Society*, 97(12):2343–2358, 2016

2017

K. K. Chandrakar, W. Cantrell, D. Ciochetto, S. Karki, G. Kinney, and R. A. Shaw. Aerosol removal and cloud collapse accelerated by supersaturation fluctuations in turbulence. *Geophysical Research Letters*, 44(9):4359–4367, 2017

2018

N. Desai, K. K. Chandrakar, K. Chang, W. Cantrell, and R. A. Shaw. Influence of microphysical variability on stochastic condensation in a turbulent laboratory cloud. *Journal of the Atmospheric Sciences*, 75(1):189–201, 2018

D. Niedermeier, K. Chang, W. Cantrell, K. K. Chandrakar, D. Ciochetto, and R. A. Shaw. Observation of a link between energy dissipation rate and oscillation frequency of the large-scale circulation in dry and moist rayleigh-bénard turbulence. *Physical Review Fluids*, 3(8):083501, 2018

K. K. Chandrakar, W. Cantrell, and R. A. Shaw. Influence of turbulent fluctuations on cloud droplet size dispersion and aerosol indirect effects. *Journal of the Atmospheric Sciences*, 75(9):3191–3209, 2018

K. K. Chandrakar, W. Cantrell, A. B. Kostinski, and R. A. Shaw. Dispersion aerosol indirect effect in turbulent clouds: Laboratory measurements of effective radius. *Geophysical Research Letters*, 2018

2019

N. Desai, K. K. Chandrakar, G. Kinney, W. Cantrell, and R. A. Shaw. Aerosol mediated glaciation of mixed phase clouds: Steady state laboratory measurements. *Geophysical Research Letters*, 2019

J. Bhandari, S. China, K. K. Chandrakar, G. Kinney, W. Cantrell, R. A. Shaw, L. R. Mazzoleni, G. Giroto, N. Sharma, K. Gorkowski, et al. Extensive soot compaction by cloud processing from laboratory and field observations. *Scientific reports*, 9(1):1–12, 2019

K. K. Chandrakar, I. Saito, F. Yang, W. Cantrell, T. Gotoh, and R. A. Shaw. Droplet size distributions in turbulent clouds: experimental evaluation of theoretical distributions. *Quarterly Journal of the Royal Meteorological Society* (accepted), 2019

K. K. Chandrakar, W. Cantrell, S. Krueger, R. A. Shaw, and S. Wunsch. Supersaturation fluctuations in moist turbulent Rayleigh-Bénard convection: a two-scalar transport problem, *J. Fluid Mech.* (accepted), 2018

## CONFERENCES

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- 2016 Chandrakar *et al.* Correlation of cloud droplet growth with the scalar fluctuations in a turbulent moist convection. In *APS Meeting Abstracts*, 2016
- 2017 Chandrakar *et al.* Experimental investigation of cloud formation and growth in turbulent moist convection: turbulence induced droplet activation and growth. In *Summer school and Discussion Meeting on Buoyancy-driven flows*, 2017
- 2018 Chandrakar *et al.* Influence of turbulent fluctuations on cloud droplet size dispersion and aerosol indirect effects. In *AMS: 15th Conference on Cloud Physics*, 2018
- Chandrakar *et al.* Aerosol removal and cloud collapse accelerated by supersaturation fluctuations with a positive feedback in a turbulent cloud: a cloud-chamber study. In *International Workshop on Cloud Dynamics, Microphysics, and Small-Scale Simulation, Pune*, 2018
- Chandrakar *et al.* Supersaturation fluctuations from scalar transport in moist Rayleigh-Bénard convection: One-dimensional-turbulence simulation. In *AGU Fall Meeting*, 2018