

## Jennifer D. Small

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### Research Interests

Cloud Microphysics, Aerosols and Climate, Satellite Remote Sensing of Clouds and Aerosol

### Education

University of California, Santa Cruz, Santa Cruz CA

*Ph.D. Earth & Planetary Sciences*, June 2009

Thesis: Observational studies of the microphysics and dynamics of warm cumulus

Rutgers, The State University of New Jersey, New Brunswick, NJ

*B.S. Meteorology*, May 2002

*B.S. Environmental Science*, May 2002

### Research Experience

*Postdoctoral Researcher*, Jet Propulsion Laboratory, 2009-present

Influence of aerosols on clouds, precipitation and climate using multi-satellite data analyses and application of satellite observations to evaluate global climate. Research supervised by Drs. Jonathan Jiang and Dong Wu.

*Graduate Student Researcher*, UC Santa Cruz, 2002-2009

Observational studies of warm clouds using a flight phase Doppler interferometer to measure cloud drop size distributions and drop velocity for understanding the microphysical processes of precipitation initiation and mixing in warm clouds. Research supervised by Dr. Patrick Chuang.

### Refereed Publications

**Small, J.D.**, and P.Y. Chuang, An analysis of entrainment mixing processes in warm cumulus, *in prep.*

**Small, J.D.**, P.Y. Chuang, G. Feingold, H. Jiang, Can aerosol decrease cloud lifetime? *Geophys. Res. Lett.*, 36, L16806, doi:10.1029/2009GL038888.

**Small, J.D.** and P.Y. Chuang, 2008. New observations of precipitation initiation in warm cumulus clouds, *J. Atmos. Sci.*, **65**, 2972-2982.

Chuang, P. Y., E. W. Saw, **J. D. Small**, R. A. Shaw, C.M. Sipperley, G. A. Payne, and W. D. Bachalo, 2008. Airborne phase Doppler interferometry for cloud microphysical measurements, *Aerosol Sci. Tech.*, **42**, 685-703.

Robert M. R., B. Stevens, J. Davison, S. Göke, O. L. Mayol-Bracero, D. Rogers, P. Zuidema, H. T. Ochs III, C. Knight, J. Jensen, S. Bereznicki, S. Bordoni, H. Caro-Gautier, M. Colón-Robles, M. Deliz, S. Donaher, V. Ghate, E. Grzeszczak, C. Henry, A.M. Hertel, I. Jo, M. Kruk, J. Lowenstein, J. Malley, B. Medeiros, Y. Méndez-Lopez, S. Mishra, F. Morales-García, L. A. Nuijens, D. O'Donnell, D. L. Ortiz-Montalvo, K. Rasmussen, E. Riepe, S.

Scalia, E. Serpetzoglou, H. Shen, M. Siedsma, **J. Small**, E. Snodgrass, P. Trivej, J. Zawislak, 2007: In the Driver's Seat – RICO and Education, *Bull. Am. Met. Soc.*, 88 (12): 1929-1937.

Harnack, R. and **J. Small**, 2002: Identification and analysis of dry periods in New Jersey using the New Brunswick precipitation record. *Bull. of the New Jersey Acad. of Sci*, 47(1):1-6.

### **Field Experience**

7 years of experience maintaining and analyzing data from airborne cloud and aerosol flight probes on research aircraft including the phase Doppler interferometer (PDI, Artium, Sunnyvale, CA), forward scattering spectrometer probe (FSSP, DMT Inc., Boulder, CO) and cloud aerosol precipitation spectrometer (CAPS, DMT Inc., Boulder, CO).

Participation in 7 field campaigns both domestic and international in scope:

CLASIC: Cloud and Land Surface Interaction Campaign, June 2007

TexAQS/GoMACCS: Texas Air Quality Study –Gulf of Mexico Aerosol Cloud Characterization Study, Houston, TX, August-September 2006

MASE: Marine Stratus Experiment, Marina, CA, July 2005

RICO: Rain in Cumulus over the Ocean, Antigua, WI, December 2004-January 2005

CSTRIPE: Coastal Stratocumulus Imposed Perturbation Experiment, Marina, CA, August 2003

ADAM: Asian Dust Above Monterey, Marina, CA, April 2003

### **Invited Talks**

**Small, J.D.** and P.Y., Chuang, 2007: Understanding warm clouds: Answering old questions with new observations and insights, *GISS/Columbia University Friday Seminar Series*.

**Small, J.D.** and P.Y., Chuang, 2008: Chasing the Warm Rain Mystery: Investigating buoyancy, entrainment and microphysical processes in shallow cumulus, *Lawrence Livermore National Laboratory*, seminar.

### **Other Publications and Presentations**

**Small, J.D.** and P.Y., Chuang, G., Feingold, 2008: Does aerosol concentration affect whether mixing occurs inhomogeneously or homogeneously in warm cumulus? *Eos Trans. AGU*, Fall Meet. Suppl., Abstract A53J-03, 2008.

**Small, J.D.** and P.Y., Chuang, G., Feingold, H, Jiang, 2007: Are there aerosol indirect effects on buoyancy and entrainment in shallow cumulus clouds? *Eos Trans. AGU*, Fall Meet. Suppl., Abstract A34A-06, 2007.

**Small, J.D.**, 2007: Environmental change science literacy through writing: Successes in an undergraduate writing and composition course, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract ED23A-0965

Rossiter, D., **J.D. Small**, and P.Y. Chuang, 2007: Drizzle Rates in Marine Stratocumulus, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract A13B-1169.

**Small, J.D.** and P.Y. Chuang, 2007: New observations of precipitation initiation in warm cumulus clouds, *Berkeley Atmos. Sci. Center Symp.*, October 5, Berkeley, CA, Abstract 52.

**Small, J.D.**, 2007: Writing about change: Teaching the science of global environmental change through writing, *Bay Area Institute*, August 14, San Francisco, CA.

**Small, J.D.** and P.Y. Chuang. 2006: Initiation of Precipitation in Trade Wind Cumulus Clouds, *Eos Trans.*, AGU, Fall Meet. Suppl., Abstract A13C-0939.

**Small, J.D.** and P.Y. Chuang, 2006: Collision-Coalescence Nuclei and entrainment mixing during RICO, *12<sup>th</sup> AMS Conf. On Cloud Physics*, Madison, WI. Abstract 9.3.

Baker, B., Q. Mo, P. Chuang, **J.Small**, J.L. Brenguier and F. Burned, 2006: Droplet clustering via droplet spacing measurements from RICO, *12<sup>th</sup> AMS Conf. On Cloud Physics*, Madison, WI. Abstract 9.4.

**Small, J.D.** and P.Y. Chuang, 2005: Collision-Coalescence Nuclei Measurements During the Rain in Cumulus over the Ocean Experiment, *Eos Trans.*, AGU, Fall Meet. Suppl., Abstract A13A-0885.

**Small, J.D.**, S.D. Anderson-Bereznicki, B. Medeiros, L. Nuijens, C.K. Henry, D.M. O'Donnell Jr., and F. Morales, 2005: RICO Graduate Student Research Flight: The Island Tail Objective *AGU*, Fall Meet. Suppl. Abstract ED33A-1235.

### **Teaching and Educational Outreach**

Instructor, Earth & Planetary Sciences Dept., UC Santa Cruz

EART 006: Concepts of Environmentalism, 2009

EART 006: Concepts of Environmentalism, 2008

EART 80C: Introduction to Weather and Climate, 2008

Teaching Assistant, Earth & Planetary Sciences Dept., UC Santa Cruz

EART 203/196A: Introduction to Teaching, 2007, 2006

EART 006: Concepts of Environmentalism, 2005

EART 80C: Introduction to Weather and Climate, 2004

Instructor, Writing Dept., UC Santa Cruz

WRIT 1/2 – Rhetoric and Composition, 2007

Sally Ride Science Festivals – Exposing middle school girls to careers in math and science  
Presenter, 2005-2008

Expanding Your Horizons – Exposing high school girls to careers in math and science  
Presenter, 2003-2006

### **Honors, Fellowships and Awards**

Best Student Oral Presentation, 2006: AMS 12<sup>th</sup> Conference on Cloud physics

Outstanding Earth Science TA (EART 006), 2005: University of California Santa Cruz

Center for Informal Learning and Schools Graduate Science Fellow, 2005-07: University of California Santa Cruz

Outstanding Earth Science TA (EART 80C), 2004: University of California Santa Cruz

American Meteorological Society/NASA's Earth Science Enterprise Graduate Fellowship,  
2002-03: University of California Santa Cruz