Ricardo Morales Betancourt

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EDUCATION

2013 (expected)	Ph.D., Earth and Atmospheric Science Georgia Institute of Technology, Atlanta, Georgia Advisor: Dr. Athanasios Nenes
2006-2008	M.S., Physics Universidad de los Andes, Bogotá, Colombia Advisor: Dr. Alonso Botero
2001-2007	B.S., Chemical Engineering Universidad de los Andes, Bogotá, Colombia
2001-2006	B.S., Physics Universidad de los Andes, Bogotá, Colombia

RESEARCH EXPERIENCE

2008–present **Graduate Research Assistant**, School of Earth and Atmospheric Sciences, Georgia Institute of Technology, Atlanta, Georgia. Mentor: Dr. Athanasios Nenes
- Modeling of Aerosol-Cloud interactions in Global Climate Models.

Jan- Mar, 2012 **Pacific Northwest National Laboratory, Alternate Sponsored Fellowship**, PNNL, Richland, Washington. Mentor: Dr. Xiaohong Liu
- Implemented new microphysics in the atmospheric component (CAM5.1) of the CCSM earth system modeling.

Jun-Aug, 2011 **NASA, Graduate Student Summer Program in Earth Science**, Goddard Space Flight Center, Greenbelt, Maryland. Mentor: Dr. Lazaros Oreopoulus
- Implemented a new ice nucleation parameterization in the McRAS cloud scheme of the GEOS-5 global circulation model.

2006–2008 **Graduate Research Assistant**, Physics Department, Universidad de los Andes, Bogotá, Colombia. Mentor: Dr. Alonso Botero
-Thesis: The Weyl-Schur duality and the asymptotic behavior of tripartite entanglement.

TEACHING EXPERIENCE

2008–2010 **Teaching Assistant**, Georgia Institute of Technology, Atlanta, GA
- Introduction to Environmental Sciences, EAS1600 (Spring 09, Summer 10)
- Thermodynamics of Earth Systems, EAS3603 (Fall 09, Fall 10)

2002-2007 **Teaching Assistant**, Universidad de los Andes, Bogotá, Colombia

- Physics I, Physics II, and Physics III (FISI-1010, FISI-1020, FISI-1030)
- General Physics I and II (FISI-1014, FISI-1024)
- Statistical Physics (FISI-3040)
- Group theory on quantum mechanics (FISI-4005)
- Chemical Thermodynamics

PUBLICATIONS

Raatikainen,T., A. Nenes, J.H. Seinfeld, **R. Morales**, R.H. Moore, T.L. Lathem, S. Lance, L.T. Padro, J. J. Lin, K. Cerully, A. Bougiatioti, J. Cozic, C. Ruehl, P.Y. Chuang, B. Anderson, R.C. Flagan, H. Jonsson, N. Mihalopoulos, and J. N. Smith (2013) "Worldwide data sets constrain the water vapor uptake coefficient in cloud formation", *Proc. Nat. Acad.Sci.,* doi: 10.1073/pnas.1219591110.

Morales, R., D. Lee, L. Oreopoulos, Y. Sud, D. Barahona, and A. Nenes (2012) "Sensitivity of Cirrus and Mixed-Phase clouds to the ice nuclei spectra in McRAS-AC: Single Column Model simulations", *Atmos. Chem. Phys.*, **12**, doi:10.5194/acp-12-10679-2012.

Morales, R., A. Nenes, H. Jonsson, R. C. Flagan, and J. H. Seinfeld (2011) " Evaluation of an entraining droplet activation parameterization using in situ cloud data", *J. Geophys. Res*., **116**, D15205, doi:10.1029/2010JD015324

Morales R., and A. Nenes (2010) "Characteristic updrafts for computing distribution-averaged cloud droplet number, and stratocumulus cloud properties", *J. Geophys. Res.,* **115**, D18220, doi:10.1029/2009JD013233

SCIENTIFIC PRESENTATIONS

2012 AGU fall meeting, Leipzig, San Francisco, December 3-7 – **Oral presentation:** "Relative contributions of aerosol properties to cloud droplet number: Adjoint sensitivity intercomparison of activation parameterizations in a global circulation model."

16th International Conference on Clouds and Precipitation (ICCP), Leipzig, Germany. July 30 - August 4th – **Poster presentation:** "Correcting underprediction biases in autoconversion rates in warm boundary layer clouds by including sub-grid variability of cloud droplet number concentration."

2010 American Association for Aerosol Research (AAAR) 29th Annual Conference, Portland, Oregon. October 25 - 29 – **Poster presentation:** "Characteristic updrafts for computing distribution-averaged droplet number, effective radius, and autoconversion rates."

American Meteorological Society (AMS) 90th Annual meeting, Atlanta, Georgia. January 16 - 21 – **Poster presentation:** "Characteristic updrafts for computing distribution-averaged droplet number, effective radius, and autoconversion rates."

2009 American Association for Aerosol Research (AAAR) 28th Annual Conference, Minneapolis, Minnesota. October 26 - 30 – **Poster Presentation:** "Aerosol-cloud drop concentration and size distribution closure for entraining clouds."

2007 5th Summer School on Geometric and Topological Methods for Quantum Field Theory, Villa de Leyva, Colombia. July 2 - 19 – **Oral presentation**: "The Weyl-Schur duality and

the asymptotic behavior of tripartite entanglement."

INVITED PRESENTATION

2011 The Center for Aerosol Research. NASA Goddard Space Flight Center – Greenbelt, Maryland. April 5 – **Seminar presentation:** "Improving the representation of aerosol-cloud interactions in GCMs."

HONORS AND AWARDS

2013 Earth and Atmospheric Sciences Research Excellence Award: In recognition of an outstanding senior doctoral student in the School of Earth and Atmospheric Science on the basis of academic, research, and outreach achievements.

2000 "Mario Galan Gomez Scholarship" – Awarded by the Colombian National Oil Company, ECOPETROL, to the high school graduates with the highest score in the ICFES test

TRAVEL GRANTS

2013 NSF travel grant to the 19th ICNAA conference

2012 Ann Robinson Clough Conference Grant – Granted by the Office of International Education at Georgia Institute of Technology

MEMBERSHIPS

2009-present American Association for Aerosol Research (AAAR)

LANGUAGE SKILLS

Spanish (native)
English (fluent)