

# Steven K. Krueger

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Prof. Steven K. Krueger received a B.A. in Physics from Pomona College in Claremont, California, in 1975. He received M.S. and Ph.D. degrees in 1977 and 1985, respectively, from the Dept. of Atmospheric Sciences, UCLA, under Prof. Akio Arakawa. From 1985 until 1988 he held a research position in the Dept. of Atmospheric Sciences, UCLA. From 1988 to 1995 he was an Assistant Professor, from 1995 to 2003, an Associate Professor, and since 2003, a Professor, in the Dept. of Meteorology at the University of Utah. He served as Acting Chair of the Dept. of Meteorology, University of Utah, from January 1998 to March 1999.

Research interests include numerically simulating cloud systems, with particular emphases on the interactions between large-scale, mesoscale, and cloud-scale processes, as well as between turbulence, mixing, and microphysics in clouds. Research interests also include numerical simulation of atmospheric boundary layers, with foci on cloud-topped boundary layers and on wildfire spread and behavior. Prof. Krueger's research group has developed and uses several different numerical models, including cloud-resolving models, large-eddy simulation models, and one-dimensional turbulence models. These models include the UU LES (University of Utah Large-Eddy Simulation model), the UU-UCLA CRM (University of Utah-UCLA Cloud Resolving Model), the EMPM (Explicit Mixing Parcel Model), Clus-Coll (Droplet Clustering and Collision model), SAM (System for Atmospheric Modeling), and WRF-SFIRE (Weather Research and Forecasting model, with coupled wildfire spread physics).

Prof. Krueger was Chair of GCSS (GEWEX [Global Energy and Water Cycle Experiment] Cloud System Study) from 2001 through 2003. He organized the GCSS-ARM Workshop on the Representation of Cloud Systems in Large-Scale Models which was held 20-24 May 2002 at Kananaskis, Alberta, Canada. He served as chair of GCSS WG 4 (Precipitating Convective Cloud Systems). He was the UCAR Members' Representative from 1998 to 2012. He served as an Associate Editor for *Journal of Advances in Modeling Earth Systems* (JAMES) from Jan 2012 to Jan 2016. He was Director for Knowledge Transfer for the Center for Multiscale Modeling of Atmospheric Processes (a NSF Science and Technology Center at Colorado State University) from July 2011 to June 2016.

Prof. Krueger has served on many M.S. and Ph.D. supervisory committees.

## Refereed Papers

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## Book Chapters

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- Krueger, S. K., A. M. Fridlind, and H. Morrison, 2016: Cloud resolving modeling: The ARM and GCS story. *The Atmospheric Radiation Measurement Program: The First 20 Years*, D. D. Turner and R. G. Ellingson, eds., American Meteorological Society, Boston, 25.1–25.16, doi: 10.1175/AMSMONOGRAPHS-D-15-0047.1



## Students Supervised at the University of Utah

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Student	John F. Close*
Degree and year	M.S. 1991
Student	Alain Bergeron
Degree and year	M.S. 1993
Thesis title	Modeling the Trade-Wind Boundary Layer
Student	George T. McLean
Degree and year	M.S. 1994
Thesis title	Boundary Layer Circulation Changes during the Stratus to Cumulus Transition
Student	Chwen-Wei Su**
Degree and year	Ph.D. 1997
Dissertation title	Linear Eddy Modeling of Entrainment and Mixing in Cumulus Clouds <sup>+</sup>
Student	Shuairan Liu
Degree and year	Ph.D. 1998
Dissertation title	Numerical Modeling of Altocumulus Cloud Layers <sup>+</sup>
Student	Jason E. Burks
Degree and year	M.S. 1998
Thesis title	Radiative Fluxes and Heating Rates during TOGA COARE over the Intensive Flux Array <sup>+</sup>
Student	Michael A. Zulauf
Degree and year	Ph.D. 2001
Dissertation title	Modeling the Effects of Boundary Layer Circulations Generated by Cumulus Convection and Leads on Large-Scale Surface Fluxes <sup>+</sup>
Student	Yali Luo
Degree and year	Ph.D. 2003
Dissertation title	Evaluation of Cloud Properties in Atmospheric Models Using Cloud-Scale Observations

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\* Informally advised. K. N. Liou was the formal advisor.

\*\* Co-advised with Pat McMurtry, Dept. of Mechanical Engineering.

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Student	Merja Helena Schlueter
Degree and year	M.S. 2006
Thesis title	The Effects of Entrainment and Mixing on Droplet Size Distributions in Shallow Cumulus Clouds
Student	Ruiyu Sun***
Degree and year	Ph.D. 2006
Dissertation title	Numerical Modeling of the Effects of Fire-Induced Convection and Fire-Atmosphere Interactions on Wildfire Spread and Fire Plume Dynamics
Student	Peter A. Bogenschutz
Degree and year	Ph.D. 2011
Dissertation title	Improving the Representation of Turbulence and Clouds in Cloud Resolving Models and General Circulation Models
Student	Samantha A. Hill
Degree and year	M.S. 2013
Thesis title	The Entrainment Interface Layer of Stratocumulus Topped Boundary Layers during the Physics of Stratocumulus Top Field Campaign
Student	Andrew T. Lesage
Degree and year	M.S. 2013
Thesis title	Frontal Passages and Cold Pools using Oklahoma Mesonet Observations
Degree and year	Ph.D. 2018
Dissertation title	Impacts of Varying Model Physics on Simulated Structures in Cloud Systems
Student	Ian B. Glenn
Degree and year	M.S. 2014
Thesis title	Characteristics of Clouds and the Near Cloud Environment in a Simulation of Tropical Convection
Degree and year	Ph.D. 2018
Dissertation title	Connections Matter: Updraft Merging in Organized Tropical Deep Convection
Student	Xia Li
Degree and year	Ph.D. 2021 (anticipated)
Dissertation title	(TBD)

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\*\*\* Co-advised with Mary Ann Jenkins