

Steven K. Krueger

Professor, Dept. of Atmospheric Sciences, University of Utah, Salt Lake City, Utah

February 2023

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

- Krueger, S.K., 1988: Numerical simulation of tropical cumulus clouds and their interaction with the subcloud layer. *J. Atmos. Sci.*, **45**, 2221–2250.
- Xu, K.-M., and S.K. Krueger, 1991: Evaluation of cloudiness parameterizations using a cumulus ensemble model. *Mon. Wea. Rev.*, **119**, 342–367.
- Wilson, J.W., G.B. Foote, N.A. Crook, J.C. Fankhauser, C.G. Wade, J.D. Tuttle, C.K. Mueller, and S.K. Krueger, 1992: The role of boundary-layer convergence zones and horizontal rolls in the initiation of thunderstorms: A case study. *Mon. Wea. Rev.*, **120**, 1785–1815.
- Xu, K.-M., A. Arakawa, and S.K. Krueger, 1992: The macroscopic behavior of cumulus ensembles simulated by a cumulus ensemble model. *J. Atmos. Sci.*, **49**, 2402–2420.
- McMurtry, P.A., T.C. Gansange, A.R. Kerstein, and S.K. Krueger, 1993: Linear eddy simulations of mixing in a homogeneous turbulent flow. *Phys. Fluids. A*, **5**, 1023–1034.
- Krueger, S.K., 1993: Linear eddy modeling of entrainment and mixing in stratus clouds. *J. Atmos. Sci.*, **50**, 3078–3090.
- Sassen, K., and S.K. Krueger, 1993: Toward an empirical definition of virga: Comments on “Is virga rain that evaporates before reaching the ground?” *Mon. Wea. Rev.*, **121**, 2426–2428.
- Randall, D.A., Q. Hu, K.-M. Xu, and S.K. Krueger, 1994: Radiative-convective disequilibrium. *Atmos. Res.*, **31**, 315–327.
- Krueger, S.K., and A. Bergeron, 1994: Modeling the trade cumulus boundary layer. *Atmos. Res.*, **33**, 169–192.
- Krueger, S. K., Q. Fu, K. N. Liou, and H.-N. S. Chin, 1995: Improvements of an ice-phase microphysics parameterization for use in numerical simulations of tropical convection. *J. Appl. Meteor.*, **34**, 281–287.
- Fu, Q., S. K. Krueger, and K.N. Liou, 1995: Interactions of radiation and convection in simulated tropical cloud clusters. *J. Atmos. Sci.*, **52**, 1310–1328.
- Krueger, S.K., G.T. McLean, and Q. Fu, 1995: Numerical simulation of the stratus-to-cumulus transition in the subtropical marine boundary layer. Part I: Boundary-layer structure. *J. Atmos. Sci.*, **52**, 2839–2850.
- Krueger, S.K., G.T. McLean, and Q. Fu, 1995: Numerical simulation of the stratus-to-cumulus transition in the subtropical marine boundary layer. Part II: Boundary-layer circulation. *J. Atmos. Sci.*, **52**, 2851–2868.
- Moeng, C.-H., W.R. Cotton, C. Bretherton, A. Chlond, M. Khairoutdinov, S. Krueger, W.S. Lewellen, M.K. McVean, J.R.M. Pasquier, H.A. Rand, A.P. Siebesma, R.I. Sykes, and B. Stevens, 1996: Simulation of a stratocumulus-topped PBL: Intercomparison of different numerical codes. *Bull. Amer. Meteor. Soc.*, **77**, 216–278.
- Bechtold, P., S. K. Krueger, W. S. Lewellen, E. van Meijgaard, C.-H. Moeng, D. A. Randall, A. van Ulden, and S. Wang, 1996: Modeling a stratocumulus-topped PBL: Intercomparison among different 1D codes and with LES. *Bull. Amer. Meteor. Soc.*, **77**, 2033–2042.
- Moncrieff, M. W., S. K. Krueger, D. Gregory, J.-L. Redelsperger, and W.-K. Tao, 1997: GEWEX Cloud System Study (GCSS) Working Group 4: Precipitating Convective Cloud Systems. *Bull. Amer. Met. Soc.*, **78**, 831–845.

- Krueger, S. K., C.-W. Su, and P. A. McMurtry, 1997: Modeling entrainment and fine-scale mixing in cumulus clouds. *J. Atmos. Sci.*, **54**, 2697–2712.
- Liu, S., and S. K. Krueger, 1998: Numerical simulations of altocumulus using a cloud resolving model and a mixed layer model. *Atmos. Res.*, **47–48**, 461–474.
- Su, C.-W., S. K. Krueger, P. A. McMurtry, and P. H. Austin, 1998: Linear eddy modeling of droplet spectral evolution during entrainment and mixing in cumulus clouds. *Atmos. Res.*, **47–48**, 41–58.
- Bretherton, C. S., S. K. Krueger, M. C. Wyant, P. Bechtold, E. van Meijgaard, B. Stevens, and J. Teixeira, 1999: A GCS boundary layer model intercomparison study of the first ASTEX Lagrangian experiment. *Bound.-Layer Meteor.*, **93**, 341–380.
- Fu, Q., M. Cribb, H. Barker, S. K. Krueger, and A. Grossman, 2000: Cloud geometry effects on atmospheric solar absorption. *J. Atmos. Sci.*, **57**, 1156–1168.
- Lazarus, S. M., S.K. Krueger, and G. G. Mace, 2000: A cloud climatology of the Southern Great Plains ARM CART. *J. Climate*, **13**, 1762–1775.
- Ghan, S. J., D. Randall, K.-M. Xu, R. Cederwall, D. Cripe, J. Hack, S. Iacobellis, S. Klein, S. Krueger, U. Lohmann, J. Pedretti, A. Robock, L. Rotstayn, R. Somerville, G. Stenchikov, Y. Sud, G. Walker, S. Xie, J. Yio, and M. Zhang, 2000: A comparison of single column model simulations of summertime midlatitude continental convection. *J. Geophys. Res.*, **105**, (D2), 2091–2124.
- Xu, K.-M., R. T. Cederwall, L. J. Donner, W. W. Grabowski, F. Guichard, D. E. Johnson, M. Khairoutdinov, S. K. Krueger, J. C. Petch, D. A. Randall, C. J. Seman, W.-K. Tao, D. Wang, S. C. Xie, J. J. Yio, and M.-H. Zhang, 2002: An intercomparison of cloud-resolving models with the Atmospheric Radiation Measurement summer 1997 Intensive Observation Period data. *Q. J. Roy. Meteor. Soc.*, **128**, 593–624.
- Xie, S. C., K.-M. Xu, R. T. Cederwall, P. Bechtold, A. D. Del Genio, S. A. Klein, D. G. Cripe, S. J. Ghan, D. Gregory, S. F. Iacobellis, S. K. Krueger, U. Lohmann, J. C. Petch, D. A. Randall, L. D. Rotstayn, R. C. J. Somerville, Y. C. Sud, K. von Salzen, G. K. Walker, A. Wolf, J. J. Yio, G. J. Zhang, and M. Zhang, 2002: Intercomparison and evaluation of cumulus parametrizations under summertime midlatitude continental conditions. *Q. J. Roy. Meteor. Soc.*, **128**, 1095–1136.
- Luo, Y., S. K. Krueger, G. G. Mace, and K.-M. Xu, 2003: Cirrus cloud properties from a cloud-resolving model simulation compared to cloud radar observations. doi:10.1175/1520-0469(2003)060<0510:CCPFAC>2.0.CO;2
- Zulauf, M. A., and S. K. Krueger, 2003: Two-dimensional numerical simulations of Arctic leads: Plume penetration height. *J. Geophys. Res.*, **108 (C2)**, 8050–8062, doi:10.1029/2000JC000495.
- Zulauf, M. A., and S. K. Krueger, 2003: Two-dimensional cloud-resolving modeling of the atmospheric effects of Arctic leads based upon midwinter conditions at the Surface Heat Budget of the Arctic Ocean ice camp. *J. Geophys. Res.*, **108 (D10)**, 4312–4325, doi:10.1029/2002JD002643
- Randall, D., S. Krueger, C. Bretherton, J. Curry, P. Duynkerke, M. Moncrieff, B. Ryan, D. Starr, M. Miller, W. Rossow, G. Tselioudis, and B. Wielicki, 2003: Confronting Models With Data: The GEWEX Cloud Systems Study. *Bull. Amer. Met. Soc.*, **84**, 455–469.

- Xie, S., M. H. Zhang, M. Branson, R. T. Cederwall, A. D. Del Genio, Z. A. Eitzen, S. J. Ghan, S. F. Iacobellis, M. Khairoutdinov, S. A. Klein, S. K. Krueger, W. Lin, U. Lohmann, D. A. Randall, R. C. J. Somerville, Y. C. Sud, G. K. Walker, A. Wolf, X. Wu, K.-M. Xu, J. J. Yio, G. Zhang, and J. Zhang, 2005: Simulations of Midlatitude Frontal Clouds by SCMs and CRMs during the ARM March 2000 Cloud IOP. *J. Geophys. Res.*, **110**, D15S03, doi:10.1029/2004JD005119.
- Luo, Y., S. K. Krueger, and S. Moorthi, 2005: Cloud properties simulated by a single-column model. Part I: Comparison to cloud radar observations of cirrus clouds. *J. Atmos. Sci.*, **62**, 1428–1445.
- Luo, Y., S. K. Krueger, and K.-M. Xu, 2006: Cloud properties simulated by a single-column model. Part II: Evaluation of cumulus detrainment and ice-phase microphysics using a cloud resolving model. *J. Atmos. Sci.*, **63**, 2831–2847.
- Yang, F., H.-L. Pan, S. K. Krueger, S. Moorthi, and S. J. Lord, 2006: Evaluation of the NCEP Global Forecast System at the ARM SGP Site. *Mon. Wea. Rev.*, **134**, 3668–3690.
- Kerstein, A. R., and S. K. Krueger, 2006: Clustering of randomly advected low-inertia particles: A solvable model. *Phys. Rev. E*, **73**, 025302.
- Garrett, T. J., M. A. Zulauf, and S. K. Krueger, 2006: Effects of cirrus near the tropopause on anvil cirrus dynamics. *Geophys. Res. Lett.*, **33**, L17804, doi:10.1029/2006GL027071.
- Sun, R., M. A. Jenkins, S. K. Krueger, W. Mell, and J. J. Charney, 2006: An evaluation of fire-plume properties simulated with the Fire Dynamics Simulator (FDS) and the Clark coupled wildfire model. *Can. J. For. Res.*, **36**, 2894–2908.
- Stevens, B., A. Beljaars, S. Bordoni, C. Holloway, M. Koehler, S. Krueger, V. Savic-Jovicic and Y. Zhang, 2007: On the structure of the lower troposphere near 120W and 30N. *Mon. Wea. Rev.*, **135**, 985–1005.
- Rauber, R.M., B. Stevens, H.T. Ochs, C. Knight, B.A. Albrecht, A.M. Blyth, C.W. Fairall, J.B. Jensen, S.G. Lasher-Trapp, O.L. Mayol-Bracero, G. Vali, J.R. Anderson, B.A. Baker, A.R. Bandy, E. Burnet, J.L. Brenguier, W.A. Brewer, P.R.A. Brown, P. Chuang, W.R. Cotton, L. Di Girolamo, B. Geerts, H. Gerber, S. Göke, L. Gomes, B.G. Heikes, J.G. Hudson, P. Kollias, R.P. Lawson, S.K. Krueger, D.H. Lenschow, L. Nuijens, D.W. O’Sullivan, R.A. Rilling, D.C. Rogers, A.P. Siebesma, E. Snodgrass, J.L. Stith, D.C. Thornton, S. Tucker, C.H. Twohy, and P. Zuidema, 2007: Rain in shallow cumulus over the ocean. *Bull. Amer. Meteor. Soc.*, **88**, 1912–1928. <http://ams.allenpress.com/archive/1520-0477/88/12/pdf/i1520-0477-88-12-1912.pdf>
- Rauber, R.M., B. Stevens, H.T. Ochs, C. Knight, B.A. Albrecht, A.M. Blyth, C.W. Fairall, J.B. Jensen, S.G. Lasher-Trapp, O.L. Mayol-Bracero, G. Vali, J.R. Anderson, B.A. Baker, A.R. Bandy, E. Burnet, J.L. Brenguier, W.A. Brewer, P.R.A. Brown, P. Chuang, W.R. Cotton, L. Di Girolamo, B. Geerts, H. Gerber, S. Göke, L. Gomes, B.G. Heikes, J.G. Hudson, P. Kollias, R.P. Lawson, S.K. Krueger, D.H. Lenschow, L. Nuijens, D.W. O’Sullivan, R.A. Rilling, D.C. Rogers, A.P. Siebesma, E. Snodgrass, J.L. Stith, D.C. Thornton, S. Tucker, C.H. Twohy, and P. Zuidema, 2007: A supplement to rain in shallow cumulus over the ocean. *Bull. Amer. Meteor. Soc.*, **88**, S12–S18. <http://ams.allenpress.com/archive/1520-0477/88/12/pdf/i1520-0477-88-12-s12.pdf>

- Li, Y., E. J. Zipser, S. K. Krueger, and M. A. Zulauf, 2008: Cloud-resolving modeling of deep convection during KWAJEX. Part I: Comparison to TRMM satellite and ground-based radar observations. *Mon. Wea. Rev.*, **136**, 2699–2712.
- Sun, R., S. Krueger, M. A. Jenkins, M. A. Zulauf, and J. Charney, 2009: The importance of fire/atmosphere coupling and boundary-layer turbulence to wildfire spread. *International Journal of Wildland Fire*, **18**, 50–60. DOI: 10.1071/WF07072. <http://www.publish.csiro.au/nid/114/paper/WF07072.htm>
- Ackerman, A.S., M.C. VanZanten, B. Stevens, V. Savic-Jovicic, C.S. Bretherton, A. Chlond, J.C. Golaz, H. Jiang, M. Khairoutdinov, S.K. Krueger, D.C. Lewellen, A. Lock, C.H. Moeng, K. Nakamura, M.D. Petters, J.R. Snider, S. Weinbrecht, and M. Zulauf, 2009: Large-eddy simulations of a drizzling, stratocumulus-topped marine boundary layer. *Mon. Wea. Rev.*, **137**, 1083–1110.
- Li, Y., E. J. Zipser, and S. K. Krueger, 2009: Cloud-resolving modeling of deep convection during KWAJEX. Part II: Analysis and sensitivity study of microphysical processes associated with graupel production. Submitted to *Mon. Wea. Rev.*, Nov 2008.
- Garrett, T. J., M. M. Maestas, S. K. Krueger, and C. T. Schmidt, 2009: Acceleration by aerosol of a radiative-thermodynamic cloud feedback influencing Arctic surface warming. *Geophys. Res. Lett.*, **36**, L19804, doi:10.1029/2009GL040195.
- Khairoutdinov, M. F. , S. K. Krueger, C.-H. Moeng, P. A. Bogenschutz, and D. A. Randall, 2009: Large-eddy simulation of maritime deep tropical convection. *J. Adv. Model. Earth Syst.*, **1**, Art. #15, 13 pp., doi:10.3894/JAMES.2009.1.15.
- Moeng, C.-H., M. A. LeMone, M. F. Khairoutdinov, S. K. Krueger, P. A. Bogenschutz, and D. A. Randall, 2009: The tropical marine boundary layer under a deep convection system: a large-eddy simulation study. *J. Adv. Model. Earth Syst.*, **1**, Art. #16, 13 pp., doi:10.3894/JAMES.2009.1.16.
- Bogenschutz, P. A., S. K. Krueger, and M. Khairoutdinov, 2010: Assumed probability density functions for shallow and deep convection. *J. Adv. Model. Earth Syst.*, **2**, Art. #10, 24 pp. doi:10.3894/JAMES.2010.2.10
- Kochanski, A., M. A. Jenkins, S. K. Krueger, W. E. Mell, and R. J. McDermott, 2010: Capabilities of several models used for wildfire spread to simulate flow over Askervein Hill. *J. Adv. Model. Earth Syst.*, (submitted 11 August 2010).
- Kahn, B. H., J. Teixeira, E. J. Fetzer, A. Gettelman, S. M. Hristova-Veleva, X. Huang, A. K. Kochanski, M. Köhler, S. K. Krueger, R. Wood, and M. Zhao, 2011: Temperature and water vapor variance scaling in global models: Comparisons to satellite and aircraft data. *Journal of Climate*, **68**, 2156–2168.
- Sun, R., and S. K. Krueger, 2012: Mesoanalysis of the interactions of precipitating convection and the boundary layer. *J. Adv. Model. Earth Syst.*, **4**, M04004, doi:10.1029/2011MS000096.
- Lu, C., Y. Liu, S. Niu, S. K. Krueger, and T. Wagner, 2013: Exploring parameterization for turbulent entrainment-mixing processes in clouds. *J. Geophys. Res. Atmos.*, **118**, 185–194. doi:10.1029/2012JD018464
- Wagner, T. J. , D. D. Turner, L. K. Berg, and S. K. Krueger, 2013: Ground-based remote retrievals of cumulus entrainment rates. *J. Atmos. Ocean. Tech.*, **30**, 1460–1471. doi:10.1175/JTECH-D-12-00187.1

- Bogenschutz, P. A., and S. K. Krueger, 2013: A simplified PDF parameterization of subgrid-scale clouds and turbulence for cloud-resolving models. *J. Adv. Model. Earth Syst.*, **5**, 195–211, doi:10.1002/jame.20018
- Kochanski, A.K., M.A. Jenkins, J. Mandel, J. Beezley, C.B. Clements, and S. Krueger, 2013: Evaluation of WRF-SFIRE performance with field observations from the FireFlux experiment, *Geosci. Model Dev.*, **6**, 1109–1126, doi:10.5194/gmd-6-1109-2013,2013
- Kochanski, A.K., M.A. Jenkins, S.K. Krueger, J. Mandel, and J.D. Beezley, 2013: Real-time simulation of 2007 Santa Ana fires. *Forest Ecology and Management*, **294**, 136–149. doi:10.1016/j.foreco.2012.12.014
- Kochanski, A., M. A. Jenkins, R. Sun, S. Krueger, S. Abedi, and J. Charney, 2013: The importance of low-level environmental vertical wind shear to wildfire propagation: Proof of concept. *J. Geophys. Res. Atmos.*, **118**, 8238–8252. doi:10.1002/jgrd.50436
- Giangrande, S. E., S. Collis, J. Straka, A. Protat, C. Williams, and S. Krueger, 2013: A summary of convective-core vertical velocity properties using ARM UHF wind profilers in Oklahoma. *J. Appl. Meteor. Climatol.*, **52**, 2278–2295. doi:10.1175/JAMC-D-12-0185.1
- Gerber, H., G. Frick, S. Malinowski, H. Jonsson, D. Khelif, and S. Krueger, 2013: Entrainment rates and microphysics in POST stratocumulus. *J. Geophys. Res. Atmos.*, **118**, 12,094–12,109, doi:10.1002/jgrd.50878
- Glenn, I., and S. Krueger, 2014: Downdrafts in the near cloud environment of deep convective updrafts. *J. Adv. Model. Earth Syst.*, **6**, 1–7, doi:10.1002/2013MS000261
- Tölle, M. H., and S. K. Krueger, 2014: Effects of entrainment and mixing on the droplet size distributions in warm cumulus clouds. *J. Adv. Model. Earth Syst.*, **6**, 281–299, doi:10.1002/2012MS000209
- Wood, R., M. Jensen, J. Wang, C. Bretherton, S. Burrows, A. Del Genio, A. Fridlind, S. Ghan, V. Ghate, P. Kollias, S. Krueger, R. McGraw, M. Miller, D. Painemal, L. Russell, S. Yuter, and P. Zuidema, 2016: Planning the next decade of coordinated research to better understand and simulate marine low clouds. *Bull. Amer. Meteor. Soc.*, **97**, 1699–1702, doi:10.1175/BAMS-D-16-0160.1
- Glenn, I. B., and S. K. Krueger, 2017: Connections matter: Updraft merging in organized tropical deep convection. *Geophys. Res. Lett.*, **44**, 7087–7094. doi:10.1002/2017GL074162
- Lesage, A. T., and S. K. Krueger, 2017: Fronts and convective cold pools in the Oklahoma Mesonet. Part I: 15-year climatology. *Mon. Wea. Rev.*, (submitted Aug 2016; under revision).
- Chandra, A. S., P. Zuidema, S. Krueger, A. Kochanski, S. P. de Szoeke, and J. Zhang, 2018: Moisture distributions in tropical cold pools from equatorial Indian Ocean observations and cloud-resolving simulations. *J. Geophys. Res. Atmos.*, doi:10.1029/2018JD028634
- Lu, C., Y. Liu, B. Zhu, S. S. Yum, S. K. Krueger, Y. Qiu, S. Niu, S. Luo, 2018: On which microphysical time scales to use in studies of entrainment-mixing mechanisms in clouds. *J. Geophys. Res. Atmos.*, **123**, 3740–3756. doi:10.1002/2017JD027985
- Krueger, S. K., and A. R. Kerstein, 2018: An economical model for simulating turbulence enhancement of droplet collisions and coalescence. *J. Adv. Model. Earth Syst.*, doi:10.1029/2017MS001240

- Garrett, T. J., I. B. Glenn, and S. K. Krueger, 2018: Thermodynamic constraints on the size distributions of tropical clouds. *J. Geophys. Res. Atmos.*, **123**, 8832–8849. doi:10.1029/2018JD028803
- de Roode, S. R., T. Frederikse, A. P. Siebesma, A. S. Ackerman, J. Chylik, P. R. Field, J. Fricke, M. Gryschka, A. Hill, R. Honnert, S. K. Krueger, C. Lac, A. T. Lesage, and L. Tomassini, 2019: Turbulent transport in the gray zone: A large eddy model intercomparison study of the CONSTRAIN cold air outbreak case. *J. Adv. Model. Earth Syst.*, **11**, 597–623. doi:10.1029/2018MS001443
- Clements, C. B., A. K. Kochanski, D. Seto, B. Davis, C. Camacho, N. P. Lareau, J. Conzezac, J. Restaino, W. E. Heilman, S. K. Krueger, B. Butler, R. D. Ottmar, R. Vihnanek, J. Flynn, J.-B. Filippi, T. Barboni, T. Barboni, D. E. Hall, J. Mandel, M. A. Jenkins, J. O’Brien, B. Hornsby, and C. Teske, 2019: The FireFlux II experiment: A model-guided field experiment to improve understanding of fire-atmosphere interactions and fire spread. *International Journal of Wildland Fire*, **28**, 308–326. doi:10.1071/WF18089
- Pu, Z., C. Lin, X. Dong, S. Krueger, 2019: Sensitivity of numerical simulations of a mesoscale convective system to ice hydrometeors in bulk microphysical parameterization. *Pure and Applied Geophysics*, **176**, 2097–2120. doi:10.1007/s00024-018-1787-z
- Thomas, S., Ovchinnikov, M., Yang, F., van der Voort, D., Cantrell, W., Krueger, S. K., and Shaw, R. A., 2019: Scaling of an atmospheric model to simulate turbulence and cloud microphysics in the Pi Chamber. *J. Adv. Model. Earth Syst.*, **11**, 1981–1994. doi:10.1029/2019MS001670
- Chandrakar, K. K., W. Cantrell, S. Krueger, R. A. Shaw, and S. Wunsch, 2020: Supersaturation fluctuations in moist turbulent Rayleigh-Bénard convection: A two-scalar transport problem. *Journal of Fluid Mechanics*, **884**, A19. doi:10.1017/jfm.2019.895
- Li, X., S. K. Krueger, C. Strong, G. G. Mace, and S. Benson, 2020: Midwinter Arctic leads form and dissipate low clouds. *Nat. Commun.*, **11**, 206. doi:10.1038/s41467-019-14074-5
- Krueger, S. K., 2019: Technical Note: Equilibrium droplet size distributions in a turbulent cloud chamber with uniform supersaturation, *Atmos. Chem. Phys. Discuss.*, doi:10.5194/acp-2019-932
- Krueger, S. K., 2020: Technical Note: Equilibrium droplet size distributions in a turbulent cloud chamber with uniform supersaturation. *Atmos. Chem. Phys.*, **20**, 7895–7909, <https://doi.org/10.5194/acp-20-7895-2020>
- Shaw, Raymond A, Will Cantrell, Sisi Chen, Patrick Chuang, Neil Donahue, Graham Feingold, Pavlos Kollias, Alexei Korolev, Sonia Kreidenweis, Steven Krueger, Juan Pedro Mellado, Dennis Niedermeier, Lulin Xue, 2020: Cloud-Aerosol-Turbulence Interactions: Science Priorities and Concepts for a Large-Scale Laboratory Facility. *Bulletin of the American Meteorological Society*, **101**, E1026–E1035.
- Mallia, DV, AK Kochanski, SP Urbanski, J Mandel, A Farguell, SK Kruege, 2020: Incorporating a Canopy Parameterization within a Coupled Fire-Atmosphere Model to Improve a Smoke Simulation for a Prescribed Burn. *Atmosphere*, **11**, 832.
- Li, X., S. K. Krueger, C. Strong, G. G. Mace, 2020: Relationship between wintertime leads and low clouds in the pan-Arctic. *Journal of Geophysical Research: Atmospheres*, **125**, e2020JD032595. doi:10.1029/2020JD032595

- Mallia, Derek V, Adam K Kochanski, Kerry E Kelly, Ross Whitaker, Wei Xing, Logan E Mitchell, Alex Jacques, Angel Farguell, Jan Mandel, Pierre-Emmanuel Gaillardon, Tom Becnel, Steven K Krueger, 2020: Evaluating Wildfire Smoke Transport Within a Coupled Fire-Atmosphere Model Using a High-Density Observation Network for an Episodic Smoke Event Along Utah’s Wasatch Front. *Journal of Geophysical Research: Atmospheres*, **125**, e2020JD032712.
- Moody, M. J., J. A. Gibbs, S. Krueger, D. Mallia, E. R. Pardyjak, A. Kochanski, B. N. Bailey, and J. R. Stoll, 2022: QES-Fire: A dynamically-coupled fast-response wildfire model. *International Journal of Wildland Fire*, **31**,, 306–325. doi:10.1071/WF21057
- Xue, L., Bera, S., Chen, S., Choudhary, H., Dixit, S., Grabowski, W. W., Jayakumar, S., Krueger, S., Kulkarni, G., Lasher-Trapp, S., Mallinson, H., Prabhakaran, T., & Shima, S., 2022: Progress and Challenges in Modeling Dynamics-Microphysics Interactions: From the Pi Chamber to Monsoon Convection. *Bulletin of the American Meteorological Society*, **103**, E1413–E1420.
- Li, Xia, Gerald G. Mace, Courtenay Strong, and S. K. Krueger, 2023: Wintertime low-level clouds over sea ice cool the Arctic climate system. Submitted to *Geophysical Research Letters*.
- Krueger, S.K., S. Chen, P. Dziekan, T. MacMillan, D. Richter, S. Schmalfluss, S. Shima, F. Yang, J. C. Anderson, W. H. Cantrell, and R. A. Shaw, 2023: Intercomparison of Model Simulations of Cloudy Rayleigh-Bénard Convection in a Laboratory Chamber. To be submitted to *Journal of Advances in Modeling Earth Systems*

Book Chapters

- Krueger, S.K., and K.-M. Xu, 1991: Evaluation of diagnostic cloudiness schemes using a numerical cumulus ensemble model. *Physical Processes in Atmospheric Models*, D.R. Sikka and S.S. Singh, ed., Wiley Eastern Ltd., New Delhi, 231–249.
- Krueger, S. K., 2000: Cloud system modeling. *General Circulation Model Development*, D. A. Randall, ed., Academic Press, San Diego, 605–640.
- Krueger, S. K., 2002: Current issues in cumulus parameterization. *Proceedings of a Seminar Held at ECMWF on Key Issues in the Parametrization of Subgrid Physical Processes, 3-7 September 2001*, Reading, United Kingdom, ECMWF, 25–51.
- Krueger, S. K., A. M. Fridlind, and H. Morrison, 2016: Cloud resolving modeling: The ARM and GCSS story. *The Atmospheric Radiation Measurement Program: The First 20 Years*, D. D. Turner and R. G. Ellingson, eds., American Meteorological Society, Boston, 57, 25.1–25.16, doi: 10.1175/AMSMONOGRAPHS-D-15-0047.1

Students Supervised at the University of Utah

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 ⁺
Student	Shuairan Liu
Degree and year	Ph.D. 1998
Dissertation title	Numerical Modeling of Altocumulus Cloud Layers ⁺
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 ⁺
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 ⁺
Student	Yali Luo
Degree and year	Ph.D. 2003
Dissertation title	Evaluation of Cloud Properties in Atmospheric Models Using Cloud-Scale Observations

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

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

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. 2022
Dissertation title	Arctic Low-Level Clouds: Sea Ice Lead Impacts and Radiative Effects in Winter

*** Co-advised with Mary Ann Jenkins