

MICHAEL L. KAPLAN

Director, Atmospheric Sciences Program
Associate Research Professor
Division of Atmospheric Sciences
Desert Research Institute
2215 Raggio Parkway, Reno, Nevada 89512

Tel: (775) 674-7051
Fax: (775) 674-7007
Email: Mike.Kaplan@dri.edu

Education:

B.A.	Rutgers University	Meteorology	1967
M.S.	Rutgers University	Meteorology	1968
Ph.D.	State University of New York, Albany	Atmospheric Sciences	1972

Dissertations:

- M.S. - "A Four-Level Air Mass Analyses for Washington, D.C. Using the Equivalent Potential Temperature", Rutgers University, University Microfilms, Ann Arbor, Michigan, 1968.
- Ph.D. - "A Macroscale-Mesoscale Numerical Model and Lake-Effect Snowstorms", State University of New York at Albany, University Microfilms, Ann Arbor, Michigan, 1972.

Professional Experience:

2013 - 2015	Research Professor, Desert Research Institute, Division of Atmospheric Sciences, Reno, NV
2005 - 2013	Associate Research Professor, Desert Research Institute, Division of Atmospheric Sciences, Reno, NV
1999 - 2005	Research Associate Professor, North Carolina State University
1990 - 1999	Visiting Associate, North Carolina State University
1985 - 1990	President/Senior Research Scientist, MESO Inc.
1979 - 1985	Principal Research Scientist, Systems and Applied Sciences Corporation
1975 - 1979	Visiting Professor, George Washington University, Joint Institute for Acoustics and Flight Sciences, Department of Environmental Modeling
1971 - 1975	Captain/Active Duty Officer/Research Scientist US Air Force, Air Weather Service, Air Force Global Weather Central
1968 - 1971	Graduate Research Assistant, Department of Atmospheric Sciences, State University of New York, Albany

Professional Interests:

Forty-eight years of experience in synoptic and dynamical meteorology and mesoscale numerical weather prediction with emphasis in the following problem areas: aviation turbulence, fire meteorology, extreme rainfall, severe convective storms, mesoscale convective complex systems, terrain-induced circulations, nocturnal low-level jets, geostrophic adjustment processes, gravity waves, lake-effect snowstorms, cyclogenesis, sea-breeze convection, frontogenesis/frontolysis, density currents, flooding from landfalling tropical cyclones, North American monsoon dynamics, nuclear winter, Martian meteorology, wind/solar power/renewable energy, dust storms, mountain meteorology, weather modification, and multi-scale jet streak dynamics.

Fields of Specialization:

Synoptic Scale, Mesoscale and Microscale Numerical Modeling, Synoptic Meteorology, Dynamical Meteorology, Mesoscale Meteorology, Microscale Meteorology, Fire Meteorology, Aviation Meteorology, Mountain Meteorology, Renewable Energy Meteorology, Regional Climate.

Career PI/Co-PI U. S. Government Funded Research (~\$14,163,234) Total Contract Amount):

National Aeronautics and Space Administration (~\$3,635,000)

NASA-Langley Research Center

NASA-Goddard Research Center

NASA-Headquarters Mesoscale Research Program

NASA-Marshall Space Flight Center

NASA-Kennedy Space Flight Center

Nevada NASA Space Grant Consortium

United States Air Force (~\$850,000)

1986-89, 1994-97, 2004-2007

Air Force Office of Scientific Research

Air Force Research Laboratory

United States Army (~\$120,000)

2006-2007

STTC

United States Navy (~\$100,000)

2010-2011

SSP

National Oceanographic and Atmospheric Administration (~\$587,000)

1993-96, 2006-2007, 2008-2009

Office of Meteorology, COMET Partners Program

Defense Nuclear Agency (~\$450,000)

1983-86

Environmental Protection Agency (~\$375,000)

1983-86

National Science Foundation (~\$2,078,331)

1990-93, 2001-2003, 2004-2005, 2006-2008, 2008-2013, 2014-2017

Mesoscale Research Program; Nevada NSF EPSCoR, Climate Dynamics Program, Physical and Dynamical Meteorology Division

U. S. Department of Agriculture (~\$225,000)

2002-2006

Fire Research Division

Department of Energy/National Renewable Energy Laboratory (~\$1,085,000)
2009-2010

Desert Research Institute/IPA Grant (~\$30,000)
2008-2009, 2013-2014

Nevada Department of Education/Math and Science Partnership Grant (~\$450,000)
2015

Wyoming State Weather Modification Program
(~\$300,000)
2015-2016

Undergraduate and Graduate Teaching Experience:

North Carolina State University, Department of Marine, Earth and Atmospheric Sciences

MEAS#312 (Atmospheric Thermodynamics) Winter-Spring 2005;

MEAS#444 (Mesoscale Weather Analysis and Forecasting) Winter-Spring 2004 and 2005;

MEAS#316 (Introduction to Atmospheric Dynamics) Winter-Spring 2005

University of Nevada-Reno, Department of Physics, Atmospheric Sciences Graduate Program:

ATMS 413/613 (Introduction to Synoptic Meteorology) Autumn-Winter 2005, Autumn-Winter 2006, Autumn-Winter 2008, Autumn-Winter 2010; Autumn-Winter 2011, Autumn-Winter 2012, Autumn-Winter 2013;

ATMS 410/610 (Airflow and Weather Dynamics) Winter-Spring 2007, Winter-Spring 2008, Winter-Spring 2009, Winter-Spring 2010, Winter-Spring 2011, Winter-Spring 2012, Winter-Spring 2013, Winter-Spring 2014;

ATMS 417/617 (Dynamical/Synoptic Meteorology) Winter-Spring 2015;

ATMS 741 (Advanced Dynamics/Atmospheric Motions I) Winter-Spring 2011;

ATMS 742 (Mesoscale Dynamics/Atmospheric Motions II) Autumn-Winter 2009; Autumn-Winter 2014;

ATMS 746 (Atmospheric Modeling) Autumn-Winter 2010;

ATMS 792 (Forensic Meteorology) Winter-Spring 2010;

ATMS 792 (Weather and Climate of the Intermountain West) Winter-Spring 2012;

ATMS 792 (Weather Forecasting in Complex Terrain) Autumn-Winter 2015;

Graduate Program Administrative Experience:

Deputy Director, Atmospheric Sciences Graduate Program, University of Nevada, Reno and Atmospheric Sciences Graduate Program Comprehensive Exam, Curriculum and Steering Committees 2005-2008

Director, Atmospheric Sciences Graduate Program Graduate Program, University of Nevada, Reno and Atmospheric Sciences Graduate Program Comprehensive Exam, Curriculum and Steering Committees 2009-

Graduate Students Comentored: 61

Computational Experience:

- Computers - Univac 1108,1110; Cyber 173,175,201,203,205; IBM 370; Cray 1,2,Y-MP,X-MP.
- Languages - Fortran IV, V; SL-1; Cyber Fortran 200; Fortran 77.

Awards:

- Outstanding Environmental Sciences Project, North Carolina Supercomputer Center, Microelectronics Consortium of North Carolina, 1994.
- The Editor's Award, Monthly Weather Review, American Meteorological Society, 1995.
- Certificate of Appreciation, National Weather Service, Raleigh Forecast Office, 1998.
- Group Achievement Award, NASA-Langley Research Center, Aircraft Vortex System Spacing Team, 1999.
- Turning Goals Into Reality Award, Associate Administrator, Office of Aerospace Technology, NASA, Aircraft Vortex Spacing System (AVOSS) Team 2001.
- Turning Goals Into Reality Award, Associate Administrator, Office of Aerospace Technology, NASA, TPAWS Team, 2003.

Professional Organizations:

- American Meteorological Society, 1989-Present.
- American Institute of Aeronautics and Astronautics, 2007-2008.
- Editorial Boards of Professional Journals
- Editor, Meteorology and Atmospheric Physics, 1990-Present
- Associate Editor, Monthly Weather Review, 1994-1997

Other Professional Activities

- Certified Consulting Meteorologist - American Meteorological Society, 1994-Present
- Session Chairperson - Ninth AMS Conference on Numerical Weather Prediction, Denver, Colorado, 1991.
- Special Editor - Simulations of Meso-Beta and Meso-Gamma Scale Circulations, Meteorology and Atmospheric Physics, Vol. 49, No. 1-4, 254 pp., 1992.
- Session Chairperson - Sixteenth AMS Conference on Weather Analysis and Forecasting, Phoenix, Arizona, 1998.

- AMS Journal Reviewer - Journal of Atmospheric Sciences, Journal of Applied Meteorology and Climatology, Monthly Weather Review, Journal of Hydrometeorology and Weather and Forecasting.
- Journal Reviewer – Journal of Geophysical Research, Meteorology and Atmospheric Physics

Refereed Publications:

- Jiusto, J. E., and M. L. Kaplan, 1972: Snowfall from Lake-Effect Storms, *Mon. Wea. Rev.*, 100, 62-66
- Kaplan, M. L., and D. A. Paine, 1972: A Macroscale-Mesoscale Numerical Model of Intense Baroclinic Development. *J. Appl. Meteor.*, 11, 1224-1235
- , and -----, 1973: A 32-km Moist Primitive Equation Model Providing for Scale Interaction. *J. Atmos. Sci.*, 30, 213-222.
- , and -----, 1974: The quasi-hydrostatic modes of gravitational adjustment and their implications for the operational numerical forecasting of severe local storms. *Colloquium on Subsynoptic Extratropical Weather Systems: Observation, Analysis, Modeling, and Prediction*, NCAR, Melvyn Shapiro, Coordinator, II, 498-510.
- , and -----, 1977: The Observed Divergence of the Horizontal Velocity Field and Pressure Gradient Force at the Mesoscale; Its Implications for the Parameterization of Three- Dimensional momentum Transport in Synoptic Scale Numerical Models. *Contrib. Atmos. Phys.*, 50, 321-330.
- , J. W. Zack, V. C. Wong, and J. J. Tuccillo, 1982: A Sixth-Order Mesoscale Atmospheric Simulation System Applicable to Research and Real-Time Forecasting Problems. *Symposium on Mesoscale Meteorology*, Norman, Oklahoma, CIMMS, Y. Sasaki, Ed., 38-84.
- , -----, -----, and -----, 1982: Initial Results from a Mesoscale Atmospheric Simulation System and Comparisons with an AVE-SESAME I Data Set. *Mon. Wea. Rev.*, 110, 1564-1590.
- Cram, J. M., and M. L. Kaplan, 1984: Variational Assimilation of VAS Data into a Mesoscale Numerical Model; Assimilation Method and Sensitivity Experiments. *Mon. Wea. Rev.*, 113, 467-484.
- Kocin, P. J., L. W. Uccellini, J. W. Zack, and M. L. Kaplan, 1985: A Mesoscale Numerical Simulation of Severe Weather Events Along the East Coast. *Bull. Amer. Meteor. Soc.*, 66, 1412-1424.
- Kaplan, M. L., J. W. Zack, V. C. Wong, J. J. Tuccillo, and G. D. Coats 1984: The Interactive Role of Subsynoptic Scale Jet Streak and Planetary Boundary layer Adjustments in Organizing an Isolated Convective Complex. *Mon. Wea. Rev.*, 112, 2212-2237.
- Zack, J. W., and M. L. Kaplan, 1987: Numerical Simulations of the Subsynoptic Features Associated With the AVE-SESAME I Case, Part I: The Preconvective Environment. *Mon. Wea. Rev.*, 115, 2367-2394.
- Cram, J. M., M. L. Kaplan, C. A. Mattocks, and J. W. Zack, 1991: The Analysis and Use of Profiler Winds to Derive Mesoscale Height and Temperature Fields; Simulation and Real Data Experiments. *Mon. Wea. Rev.*, 119, 1040-1056.
- Kaplan, M. L., and V. M. Karyampudi, 1992a: Meso-Beta Scale Numerical Simulations of Terrain Drag-Induced Along-Stream Circulations. Part I: Midtropospheric Frontogenesis. *Meteor. Atmos. Phys.*, 49, 133-156.
- , and -----, 1992b: Meso-Beta Scale Numerical Simulations of Terrain Drag-Induced Along-Stream Circulations. Part II: Concentration of Potential Vorticity Within Dryline Bulges. *Meteor. Atmos. Phys.*, 49, 157-185.

- Karyampudi, V. M., M. L. Kaplan, S. E. Koch, and R. Zamora, 1995: The Influence of the Rocky Mountains in the 13-14 April 1986 Severe Weather Outbreak. Part I: Mesoscale Lee Cyclogenesis and Its Relationship to Severe Weather and Dust Storms. *Mon. Wea. Rev.*, 123, 1394 - 1422.
- , Koch, S. E., C. Chen, J. W. Rottman, and M. L. Kaplan, 1995: The Influence of the Rocky Mountains in the 13-14 April 1986 Severe Weather Outbreak. Part II: Evolution of a Prefrontal Bore and Its Role in Triggering a Squall Line. *Mon. Wea. Rev.*, 123, 1423 - 1446.
- Bauman, W. H. III, M. L. Kaplan, and S. Businger, 1997: Nowcasting Convective Activity for Space Shuttle Landings During Easterly Flow Regimes. *Wea. Forecasting*, 12, 78-107.
- Kaplan, M. L., S. E. Koch, Y.-L. Lin, R. P. Weglarz, and R. A. Rozumalski, 1997: Numerical Simulations of a Gravity Wave Event Over CCOPE. Part I: The Role of Geostrophic Adjustment in Mesoscale Jetlet Formation. *Mon. Wea. Rev.*, 125, 1185-1211.
- Hamilton, D. W., Y.-L. Lin, R. P. Weglarz, and M. L. Kaplan, 1998: Antecedent Jetlet Formation Prior to the Palm Sunday 1994 Tornado Outbreak in Alabama and Georgia. *Mon. Wea. Rev.*, 126, 2061-2089.
- Kaplan, M. L., Y.-L. Lin, D. W. Hamilton, and R. A. Rozumalski, 1998: A Numerical Simulation of an Unbalanced Jetlet and its Role in the Palm Sunday 1994 Tornado Outbreak in Alabama and Georgia. *Mon. Wea. Rev.*, 126, 2133-2165.
- Kaplan, M. L., Y.-L. Lin, J. J. Charney, K. D. Pfeiffer, D. B. Ensley, R. P. Weglarz, and D. S. DeCroix, 2000: A Terminal Area PBL Prediction System at Dallas-Fort Worth and its application in simulating diurnal PBL jets. *Bull. Amer. Meteor. Soc.*, 81, 2179-2204.
- Egentowich, J. M., M. L. Kaplan, Y.-L. Lin, and A. J. Riordan, 2000a: Mesoscale simulations of dynamical factors discriminating between a tornado outbreak and non-event over the Southeast US - Part I: 84-48 hour precursors. *Meteor. Atmos. Phys.*, 74, 129-158.
- Egentowich, J. M., M. L. Kaplan, Y.-L. Lin, and A. J. Riordan, 2000b: Mesoscale simulations of dynamical factors discriminating between a tornado outbreak and non-event over the Southeast US - Part II: 48-6 hour precursors. *Meteor. Atmos. Phys.*, 74, 159-188.
- Egentowich, J. M., M. L. Kaplan, Y.-L. Lin, and A. J. Riordan, 2000c: Mesoscale simulations of dynamical factors discriminating between a tornado outbreak and non-event over the Southeast US - Part III: 6 hour precursors. *Meteor. Atmos. Phys.*, 74, 189-214.
- Koch, S. E., F. Zhang, M. L. Kaplan, and Y.-L. Lin, 2001: Numerical simulation of a mesoscale gravity wave event observed during CCOPE. Part III: Mountain-plains solenoids and unbalanced flow in the generation of wave episode II. *Mon. Wea. Rev.*, 129, 909-933.
- Zhang, F., S. E. Koch, C. A. Davis, and M. L. Kaplan, 2001: Wavelet analysis and the governing dynamics of a large-amplitude mesoscale gravity wave event along the East Coast of the United States. *Q. J. R. Meteorol. Soc.*, 127, 1-37.
- Zhang, F., S. E. Koch, C. A. Davis, and M. L. Kaplan, 2000: A survey of unbalanced flow diagnostics and their application. *Advances in Atmospheric Sciences*, 17, 165-183.
- Zhang, F., S. E. Koch, and M. L. Kaplan, 2004: Numerical simulation of a large-amplitude gravity wave event along the East Coast of the United States. *Meteor. Atmos. Phys.*, 87, 123-142.
- Businger, S., M. E. Adams, S. E. Koch, and M. L. Kaplan, 2001: Extraction of geopotential height and temperature structure from profiler and rawinsonde winds. *Mon. Wea. Rev.*, 129, 1729-1739.

- Lin, Y.-L., S. Chiao, T.-A. Wang, M. L. Kaplan, and R. P. Weglarz, 2001: Essential ingredients for orographic flooding and heavy rainfall. *Wea. Forecasting*, 16, 633-660.
- Businger, S., M. E. Adams, S. E. Koch, and M. L. Kaplan, 2003: Profiler thermodynamic retrieval error analysis, Reply to comments by Charles A. Doswell III. *Mon. Wea. Rev.*, 131, 1504-1506.
- Businger, S., T. M. Graziano, M. L. Kaplan, and R. A. Rozumalski, 2005: Cold-air cyclogenesis along the Gulf-stream front: Investigation of diabatic impacts on cyclone development, structure, and track. *Meteor. Atmos. Phys.*, 88, 65-90.
- Kaplan, M. L., A. W. Huffman, K. M. Lux, J. J. Charney, J. D. Cetola, A. J. Riordan, and Y.-L. Lin, 2005a: Characterizing the severe turbulence environments associated with commercial aviation accidents. Part 1: A 44 case study synoptic observational analyses. *Meteor. Atmos. Phys.*, 88, 129-152.
- Kaplan, M. L., A. W. Huffman, K. M. Lux, J. D. Cetola, J. J. Charney, A. J. Riordan, Y.-L. Lin, and K. T. Waight III, 2005b: Characterizing the severe turbulence environments associated with commercial aviation accidents. Part 2: Numerical simulation of meso-beta scale supergradient wind flow and streamwise ageostrophic frontogenesis. *Meteor. Atmos. Phys.*, 88, 153-175.
- Kaplan, M. L., J. J. Charney, K. T. Waight III, K. M. Lux, J. D. Cetola, A. W. Huffman, S. D. Slusser, A. J. Riordan, and Y.-L. Lin, 2006: Characterizing the severe turbulence environments associated with commercial aviation accidents. A Real-Time Turbulence Model (RTTM) designed for the operational prediction of moderate-severe aviation turbulence environments. *Meteor. Atmos. Phys.*, 94, 235-270.
- Boybeyi, Z., E. Novakovskaia, R. MacCracken, D. P. Bacon, and M. L. Kaplan, 2007: Targeted GOES satellite observations to improve hurricane track forecast: A case study of Hurricane Floyd. *Pure and Appl. Geophys.*, 164, 1-18.
- Kaplan, M.L., C. Huang, Y.-L. Lin, and J. J. Charney, 2008: The Development of Extremely Dry Surface Air Due to Vertical Exchanges Under the Exit Region of a Jet Streak. *Meteor. Atmos. Phys.* 102, 63-86.
- Huang, C., Y.-L. Lin, M. L. Kaplan and J. J. Charney, 2009: Synoptic-Scale and Mesoscale Environments Conducive to Forest Fires during the October 2003 Extreme Fire Event in Southern California. *J. Appl. Meteor. Clim.*, 48, 553-559.
- Underwood, S. J., M. L. Kaplan and K.C. King, 2009: The role of upstream midtropospheric circulations in Sierra Nevada leeside (spillover) precipitation – Part I – A synoptic climatological analysis of flood precursor conditions. *J. Hydrometeor.*, 10, 1309-1326.
- Kaplan, M. L., C. S. Adaniya, P. J. Marzette, K. C. King, S. J. Underwood and J. M. Lewis, 2009: The role of upstream midtropospheric circulations in Sierra Nevada leeside (spillover) precipitation – Part II – A secondary atmospheric river accompanying a mid-level jet. *J. Hydrometeor.*, 10, 1327-1354.
- O'Hara, B. F., M. L. Kaplan and S. J. Underwood, 2009: Synoptic climatological analyses of extreme snowfall in the Sierra Nevada Mountains. *Wea. Forecasting.*, 24, 1610-1624.
- Tan, B., and M. L. Kaplan, 2010: The role of midlatitude circulations in triggering extratropical convection during the 2004 North American Monsoon. Part I – RWB interaction with a subtropical jet stream. Submitted, *Meteor. Atmos. Phys.*
- Lewis, J. M., M. L. Kaplan, R. M. Rabin, R. Vellore, J. Hallett and S. Cohn, 2010: Dust storm over the Black Rock Desert, Observations. Conditionally Accepted, *J. Geophys. Res.*

- Kaplan, M. L., R. Vellore and J. M. Lewis, 2010: Dust storm over the Black Rock Desert, Part II: Mesoscale subgeostrophic jet streak circulations organizing the deep convective boundary layer. Submitted, *J. Geophys. Res.*
- P. J. Marzette, M. L. Kaplan, and J. M. Lewis, 2010: The role of upstream midtropospheric circulations in Sierra Nevada leeside (spillover) precipitation – Part III – A leeside diabatically-induced mesowave. Submitted, *J. Hydrometeorol.*
- Kaplan, M. L., Vellore, R. K., Marzette, P. J., Lewis, J. M., 2012: Upstream midtropospheric circulations enabling leeside (spillover) precipitation over the Sierra Nevada ? Leeside adjustments to upslope diabatic heating, *J. Hydrometeorology*, 13, 1372-1394.
- Kaplan, M. L., Vellore, R. K., Marzette, P. J., Lewis, J. M., 2012: The Role of Windward-Side Diabatic Heating in Sierra Nevada Spillover Precipitation, *J. Hydrometeorology*, 13 (4), 1172-1194.
- Hansen, C., Kaplan, M. L., Mensing, S. A., Underwood, S. J., Lewis, J. M., King, K. C., Haugland, J. E., 2013: They just don't make storms like this one anymore: Analyzing the anomalous record snowfall event of 1959, *J. Operational Meteorol.*, 1 (5), 52-65.
- Kaplan, M. L., Vellore, R. K., Lewis, J. M., Underwood, S., Pauley, P. M., Martin, J. E., Krishnan, R., 2013: Re-examination of the I-5 dust storm., *J. Geophys. Res. Atmos.*, 118, 627-642.
- Kaplan, M. L., Vellore, R. M., Lewis, J. M., Pauley, P. M., Martin, J. E., Underwood, S., Krishnan, R., Rabin, R., 2013: Subtropical-polar jet interactions in Southern Plains dust storms, *J. Geophys. Res.-Atmos.*, 118, 1-22.
- Nauslar, N. J., Kaplan, M. L., Wallmann, J., Brown, T. J., 2013: A forecast procedure for dry thunderstorms, *J. Operational Meteorol.*, 1 (17), 200-214.
- Kaplan, M. L., Vellore, R., Lewis, J. M., Underwood, J., Pauley, P., Martin, J., Rabin, R., Krishnan, R., 2014: Dust storm organization in large Rossby number flows, *ProScience*, 1, 26-31.
- Backes, T. M., Kaplan, M. L., Schumer, R., Mejia, J. F., 2015: A Climatology of the Vertical Structure of Water Vapor Transport to the Sierra Nevada in Cool Season Atmospheric River Precipitation Events, *J. Hydrometeorol.*, 16 (3), 1029-1047.
- Fearon, M. G., Kaplan, M. L., 2015: Hurricane Sandy (2012). Part II: The dynamics within the local environment preceding cyclone rapid development, In preparation
- Fearon, M. G., Kaplan, M. L., 2015: Hurricane Sandy (2012). Part I: The tropical-extratropical environment preceding cyclogenesis, In preparation
- Fiedler, S., Kaplan, M. L., Knippertz, P., 2015: The importance of Harmattan surges for the emission of North African dust aerosol, *Geophys. Res. Lett.*, Accepted
- Hatchett, B. J., Boyle, D. P., Garner, C. B., Kaplan, M. L., Bassett, S. D., 2015: Evidence for the sensitivity a terminal lake to storm track position, *J. Clim.*, Submitted
- Vellore, R. K., Kaplan, M. L., Krishnan, R., Lewis, J. M., Sabade, S., Deshpande, N., Singh, B. B., Madhura, R. K., Rama Rao, M., 2015: Monsoon-extratropical circulation interactions in Himalayan extreme rainfall, *Clim. Dyn.*, 1-30.

Technical Memoranda:

- Kocin, P. J., L. W. Uccellini, J. W. Zack, and M. L. Kaplan, 1984: Recent Examples of Mesoscale Numerical Forecasts of Severe Weather Events Along the East Coast. NASA Technical Memorandum 86172, November 1984, NASA Goddard Space Flight Center, Greenbelt, MD, 20771, 57 pp.

- Kaplan, M. L., R. A. Rozumalski, R. P. Weglarz, Y.-L. Lin, S. Businger, and R. F. Gonski, 1995: Numerical Simulation Studies of the Mesoscale Environment Conducive to the Raleigh Tornado. NOAA Technical Memorandum NWS ER-90,101 pp
- Schowalter, D. G., D. S. DeCroix, Y.-L. Lin, S. Pal. Arya, and M. L. Kaplan, 1996: The Sensitivity of Large-Eddy Simulation to Local and Nonlocal Drag Coefficients at the Lower Boundary. NASA Contractor Report 198310, April 1996, NASA Langley Research Center, Hampton, Virginia, 23681, 36 pp
- , -----, -----, -----, and -----, Planetary Boundary Layer Simulation Using TASS, NASA Contractor Report 198325, April 1996, NASA Langley Research Center, Hampton, Virginia, 23681, 34 pp.
- Kaplan, M. L., A. W. Huffman, K. M. Lux, J. J. Charney, A. J. Riordan, and Y.-L. Lin, 2002a: Characterizing the Severe Turbulence Environments Associated with Commercial Aviation Accidents. Part I: 44 Case study Synoptic Observational Analysis. NASA/CR-2002-211918, 57 pp.
- Kaplan, M. L., A. W. Huffman, K. M. Lux, J. D. Cetola, J. J. Charney, A. J. Riordan, Y.-L. Lin, and K. T. Waight III, 2002b: Characterizing the Severe Turbulence Environments Associated with Commercial Aviation Accidents. Part II: Numerical Simulation of Meso-Beta Scale Supergradient Wind Flow and Streamwise Ageostrophic Frontogenesis. NASA/CR-2003-212138, 45 pp.
- Kaplan, M. L., K. M. Lux, A. W. Huffman, J. J. Charney, J. D. Cetola, A. J. Riordan, Y.-L. Lin, and K. T. Waight III, 2004a: Characterizing the Severe Turbulence Environments Associated with Commercial Aviation Accidents. Part III: Numerical Simulation of Meso-Gamma Scale Unbalanced Supergradient Wind Flow and the Transformation of Streamwise Ageostrophic Vorticity into Horizontal Vortex Tubes. NASA Technical Contractor Report# , In preparation.
- Kaplan, M. L., J. J. Charney, K. T. Waight III, K. M. Lux, J. D. Cetola, A. W. Huffman, S. D. Slusser, A. J. Riordan, and Y.-L. Lin, 2004b: Characterizing the Severe Turbulence Environments Associated with Commercial Aviation Accidents. A Real-Time Turbulence Model (RTTM) Designed for the Operational Prediction of Moderate-Severe Aviation Turbulence Environments. NASA/CR-2004-213025.

Conference Preprints:

- Kaplan, M. L., D. A. Paine, and N. J. Tetrick, 1973: The results of a mesoscale numerical prediction of the squall-line organizing the Palm Sunday tornadoes. Preprints, 8th Conf. on Severe Local Storms, Denver, CO, Amer. Meteor. Soc., 320-327.
- , R. M. Cowher, R. J. Gronek, and D. A. Paine, 1974: The proposed A. F. G. W. C. operational mesoscale primitive equation forecast model. Preprints, Fifth Conference on Weather Analysis and Forecasting, St. Louis, MO, Amer. Meteor. Soc., 113-116.
- Paine, D. A, and M. L. Kaplan, 1974: A mesoscale forecast of the rainfall associated with hurricane Agnes. Preprints, Fifth Conf. on Weather Analysis and Forecasting, St. Louis, MO, Amer. Meteor. Soc., 107-112.
- Kaplan, M. L., and D. A. Paine, 1975: The numerical simulation of the mesoscale features associated with the tornado outbreak of 3 April 1974. Preprints, 6th Conf. on Aerospace and Aeronautical Meteorology, El Paso, Texas, Amer. Meteor. Soc., 173-180.

- Kaplan, M. L., and A. L. Gooden, 1977: A multi-scale numerical model of tornado-producing local storms on CDC's Star 100 computer. Proceedings, First International Conf. on Mathematical Modeling, St. Louis, MO, ASCE, IMAC, SCS, IV, 2269-2282.
- , 1977: A real-time meso and microscale severe storm forecast system. Proceedings, Third National Aeronautics and Space Administration Weather and Climate Program Science Review, Greenbelt, MD, NASA Goddard Space Flight Center, NASA Conference Publication 2029, 29-34.
- Paine, D. A., and M. L. Kaplan, 1977: A multiscale numerical study into the cascade of kinetic energy leading to severe local storms. Preprints, 10th Conf. on Severe Local Storms, Omaha, NE, Amer. Meteor. Soc., 299-306.
- Kaplan, M. L., and D. A. Paine, 1977: A multi-scale synoptic- dynamical model of tornado genesis. Preprints, 10th Conf. on Severe Local Storms, Omaha, NE, Amer. Meteor. Soc., 307-314.
- Zack, J. W., M. L. Kaplan, and A. Gooden, 1979: A numerical simulation of the role of subsynoptic and mesoscale isallobaric and inertial adjustments in organizing a severe local storm outbreak. Preprints, 11th Conf. on Severe Local Storms, Kansas City, MO, Amer. Meteor. Soc., 158-165.
- , -----, -----, and -----, 1981: A mesoscale sixth-order numerical modeling system. Preprints, 5th Conf. on Numerical Weather Prediction, Monterey, CA, Amer. Meteor. Soc., 143-149.
- , -----, -----, and -----, 1982: A mesoscale eighth-order numerical modeling system and the "Red River" tornado outbreak of 1979. Part I: Model structure. Preprints, 12th Conf. on Severe Local Storms, San Antonio, TX, Amer. Meteor. Soc., 546-553.
- , -----, -----, and -----, 1982: A mesoscale eighth-order numerical modeling system and the "Red River" tornado outbreak of 1979. Part II: Analysis and simulation of the tornado outbreak. Preprints, 12th Conf. on Severe Local Storms, San Antonio, TX, Amer. Meteor. Soc., 554-555.
- , -----, -----, and -----, 1982: The interactive role of subsynoptic jet streak and planetary boundary layer adjustments in organizing an apparently isolated convective complex. Preprints, 9th conf. on Weather analysis and Forecasting, Seattle, WA, Amer. Meteor. Soc., 407-414.
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- Kaplan, M. L., and M. G. Fearon, 2015: Superstorm Sandy: An Example of Future Hybrid Tropical/Extratropical Storm Systems. Institute Project Assignment Final Report, 28 pp.

Graduate Student Dissertations Mentored or CoMentored:

- Zack, J. W., 1977: The dynamics of the macroscale to mesoscale kinetic energy transfer mechanism. M.S. Thesis, Department of Atmospheric Sciences, Cornell University, Ithaca, NY, 148 pp.
- , 1981: A numerical-dynamical investigation of the role of subsynoptic inertial and isallobaric adjustments in organizing severe local storm ensembles. Ph.D. Thesis, Department of Atmospheric Sciences, Cornell University, Ithaca, NY, 300 pp.
- Graziano, T. M., 1995: Analysis and numerical modeling of convectively-driven ageostrophic circulations and their role in the rapid cold-air cyclogenesis during ERICA IOP8. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 201 pp.
- Deal, R. L. III, 1996: A numerical investigation into the dynamics of the Palm Sunday 1994 supercell thunderstorms. M.S. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 47 pp.
- Kulie, M. S., 1996: The structure and evolution of a numerically-simulated high-precipitation supercell thunderstorm. M.S. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina state University, Raleigh, North Carolina, 119 pp.
- Wang, T.-A., 1996: Mechanisms of wave ducting and severe downslope windstorms in a structured shear flow. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 218 pp.
- Hamilton, D. W., 1996: Response of idealized atmospheric flows to meso-beta scale diabatic forcing with applications to the 1994 Palm Sunday tornado outbreak. M.S. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 124 pp.

- Bauman, W. H. III, 1996: Nowcasting convective activity for space shuttle landings during easterly flow regimes. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 140 pp.
- Adams, M. E., 1996: Terrain-induced midtropospheric frontogenesis and jet streak development during STORM-FEST IOP-17, 8 and 9 March 1992. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 214 pp.
- Rozumalski, R. A., 1997: The role of jet streak regeneration forced by a deepening continental planetary boundary layer in the explosive cyclogenesis of 28 March 1984. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 360 pp.
- Kramer, D. P., 1997: Real-time mesoscale model evaluation during Appalachian cold air damming. M.S. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 139 pp.
- Felton, B. D., 1997: Effects of vertical wind shear and a low-level jet on the evolution of the mountain-plains solenoidal circulation. M.S. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 111 pp.
- Shaltanis, D. A., 1998: Mass field retrieval using profiler data with application to low-level jet analysis. M.S. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 157 pp.
- Shen, B.-W., 1998: Inertial critical layers and their impacts on nongeostrophic baroclinic instability. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 255 pp.
- Egentowich, J. M., 1999: Mesoscale simulations of dynamical factors discriminating between a tornado outbreak and non-event over the southeast U.S.. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 274 pp.
- Zhang, F., 2000: The role of unbalanced dynamics and topography in the generation of mesoscale gravity waves. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 310 pp.
- DeCroix, D. S., Large eddy simulations of convective and evening transition planetary boundary layers. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 277 pp.
- Pfeiffer, K. D., 2001: The mesoscale evolution of explosive cyclogenesis. A Numerical Study of the March 1993 Storm of the Century. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 204.
- Huffman, A. W., 2001: Analysis of the Synoptic and Mesoscale Environment for Selected Cases of Severe Aircraft Turbulence. M.S. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 121 pp.
- Hill, C. M. IV, 2001: The evolution of the subtropical jet stream and its influence on severe weather in the United States. M.S. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 166 pp.
- Lux, K. M., 2002: Meso-gamma scale numerical simulations of convectively-induced aircraft turbulence: The effects of shear on enstrophy. M. S. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 100 pp.

- Cetola, J. D., 2003: The role of terrain and convection on microfront formation leading to severe low-level turbulence. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 323 pp.
- Thurman, J. A., 2003: Synoptic and mesoscale environments conducive to heavy rainfall production in tropical and extratropical systems: Numerical studies of a landfalling hurricane and south-side alpine events. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 191 pp.
- Schiao, S., 2003: The organization and dynamics of orographic rainfall: a mesoscale modeling perspective. Ph.D. Thesis, Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 211 pp.
- Slussers, S. D. W., 2003: An evaluation of the influence of several convective parameterization schemes on a Real-Time Turbulence Model (RTTM) in weakly-forced environments. M.S. Thesis, North Carolina State University, Raleigh, North Carolina, 161 pp.
- Kiefer, M. T., 2005: The impact of superimposed low-level jets during the 2003 Presidents' Day winter storm. M. S. Thesis, North Carolina State University, Raleigh, North Carolina, 204 pp.
- Croke, M. S., 2005: Examining planetary, synoptic, and mesoscale features that enhance precipitation associated with land-falling tropical cyclones in North Carolina, M. S. Thesis, North Carolina State University, Raleigh, North Carolina, 203 pp.
- Suffern, P. 2006: Numerical simulations of vertically propagating gravity waves in the stratosphere above a hydrostatic large amplitude surface gravity wave on December 12th 2002. M. S. Thesis, North Carolina State University, Raleigh, North Carolina, 245 pp.
- Ringley, C. 2006: Numerical modeling studies of multiple aviation turbulence problems in the stratosphere and troposphere. M. S. Thesis, North Carolina State University, Raleigh, North Carolina, 311 pp.
- Huang, C. 2007: Synoptic and mesoscale environments conducive to forest fires during the Santa Ana fire event of October 2003. M. S. Thesis, North Carolina State University, Raleigh, North Carolina, 110 pp.
- Brown, Z. 2007: Mesoscale dynamical processes responsible for the extreme rainfall after the landfall of Tropical Storm Gaston. M. S. Thesis, North Carolina State University, Raleigh, North Carolina, 128 pp.
- O'Hara, B. 2007: A synoptic climatology of heavy snowfall in the Sierra Nevada. M. S. Thesis, University of Nevada, Reno, Reno, Nevada, 125 pp.
- Walker, D. 2007: Climatology of major avalanche events at two sites in the Sierra Nevada Range. M. S. Thesis, University of Nevada, Reno, Reno, Nevada 66 pp.
- Adaniya, C. 2007: The formation of a secondary atmospheric river that contributed to the Reno floods of 1997 and 2005. M.S. Thesis, Atmospheric Sciences Graduate Program, University of Nevada Reno, 311 pp.
- Marzette, P. 2008: A study of heavy spillover precipitation that contributed to the Reno floods of 1997 and 2005. M. S. Thesis, Atmospheric Sciences Graduate Program, University of Nevada Reno, Reno, Nevada, 332 pp.
- Vollmer, D. 2008: The interaction of jet/front systems and mountain waves: Implications for lower stratospheric aviation turbulence. Ph. D. Thesis, Department of Marine, Earth and Atmospheric Sciences, North Carolina State University, Raleigh, North Carolina, 194 pp.

- Billings, B. 2008: A study of the onset of westerly surface flow in the Owens Valley. Ph. D. Thesis, Atmospheric Sciences Graduate Program, University of Nevada Reno, Reno, Nevada, 161 pp.
- McAlpine, J.D., 2009: Lagrangian Stochastic Dispersion Modeling in the Atmospheric Surface Layer with an Embedded Strong Flow Perturbation. M.S. Thesis, Atmospheric Sciences Graduate Program, University of Nevada Reno, Reno, Nevada, 194 pp.
- King, K.C., 2010: Evaluation of the Operational Multi-scale Environment model with grid Adaptivity (OMEGA) for use in wind energy application in the Great Basin of Nevada. M.S. Thesis, Atmospheric Sciences Graduate Program, University of Nevada Reno, Reno, Nevada, 137 pp.
- Nauslar, N., 2010: A forecast procedure for dry thunderstorms. M.S. Thesis, Atmospheric Sciences Graduate Program, University of Nevada Reno, Reno, Nevada, 108 pp.
- Joros, A. 2011: Extratropical control of monsoonal surges in the northern Great Basin. M.S. Thesis, Atmospheric Sciences Graduate Program, University of Nevada Reno, Reno, Nevada, 122 pp.
- McEvoy, D. 2012: An evaluation of multi-scalar drought indices in Nevada and Eastern California. M.S. Thesis, Atmospheric Sciences Graduate Program, University of Nevada Reno, Reno, Nevada, 38 pp.
- Hatchett, B., 2012: Integrating urban heat island influences into statistically downscaled climate projections for the Truckee Meadows, Nevada. M.S. Thesis, Atmospheric Sciences Graduate Program, University of Nevada Reno, 170 pp.
- Tan, B., 2012: The role of the subtropical jet stream in a North American monsoonal surge. M.S. Thesis, Atmospheric Sciences Graduate Program, University of Nevada Reno, 161 pp.
- McAlpine, J. D., 2012: Development of a mobile dust source parameterization using an inverse Lagrangian stochastic modeling technique. Ph.D. Dissertation, Atmospheric Sciences Graduate Program, University of Nevada Reno, 264 pp.
- Uher, E. J., 2013: Topographic influence and atmospheric dynamics in the Indian Wells Valley. M.S. Thesis, Atmospheric Sciences Graduate Program, University of Nevada Reno, 112 pp.
- Backes, T., 2013: Combined role of low and mid-level jets and atmospheric rivers on winter precipitation in the Eastern Sierra Nevada. M.S. Thesis, Hydrological Sciences Graduate Program, University of Nevada Reno, 35 pp.
- David, R. 2015: Cloud Dynamics and Microphysics during CAMPS: A Comparison between Airborne and Mountaintop Cloud Microphysics. M.S. Thesis, Atmospheric Sciences Graduate Program, University of Nevada Reno, 116 pp.
- Theiss, S. 2015: The Impact of Meteorology on Ozone Levels in the Lake Tahoe Basin. Ph.D. Dissertation, Atmospheric Sciences Graduate Program, University of Nevada, Reno, 145 pp.
- Teixera, K. (M.S. anticipated) 2015:
- Hansen, C., (PhD. anticipated) 2015:
- Nauslar, N. (PhD. Anticipated) 2015:
- Fearon, M. (PhD. Anticipated) 2015:
- King, K. C., (PhD. anticipated) 2016:

Taylor, Stephany (PhD. anticipated-N.C.A.&T. University) 2016:

Hatchett, B. (PhD. anticipated) 2016:

Pokaharel, A. (PhD. Anticipated) 2016:

Oakley, N. (PhD. Anticipated) 2016:

Alsubhi, Y. (M.S. Anticipated) 2016:

Shourd, K. (M.S. Anticipated) 2016:

Additional Nonconference Presentations:

- NATO Advanced Study Institute, Reading, England, Colloquium on Mesoscale Numerical Modeling, July 1971.
- NOAA National Severe Storms Laboratory, Norman, Oklahoma, April, 1974.
- University of Wisconsin, Department of Meteorology, Madison, Wisconsin, February, 1974.
- National Center for Atmospheric Research, Colloquium on Subsynoptic Extratropical Weather Systems: Observations, Analysis, Modeling, and Prediction, Boulder, Colorado, July, 1974.
- Cooperative Institute for Mesoscale Meteorology, Symposium on Mesoscale Modeling, University of Oklahoma-National Oceanographic and Atmospheric Administration, Norman, Oklahoma, June, 1982.
- NOAA National Severe Storms Laboratory, Norman, Oklahoma, February, 1993.
- North Carolina State University, Department of Marine, Earth, and Atmospheric Sciences, Raleigh, North Carolina, January 1994.
- Raleigh, North Carolina NWS Forecast Office, Raleigh, North Carolina, May 1995.
- Training Meeting of Virginia and North Carolina Forecasters, Raleigh, North Carolina, November 1995.
- COMET Forecaster Training Meeting, Boulder, Colorado, April, 1996.
- 2nd USWRP Consortium, Boulder, Colorado, March, 2000.
- NWS Forecast Office Regional Severe Weather Workshop, Wakefield, Virginia, March 2002.
- Colloquium, Physics Department, University of Nevada Reno, Reno, Nevada, September 2009.
- Colloquium, Geography Department, University of Nevada Reno, Reno, Nevada, April 2010.
- American Meteorological Society Student Chapter, University of Nevada Reno, Reno, Nevada, May 2010
- South Dakota School of Mines and Technology, Department of Atmospheric Sciences, December 2011
- American Meteorological Society Student Chapter, University of Nevada Reno, Reno, Nevada, September 2012
- Colloquium, Physics Department, University of Nevada Reno, Reno, Nevada, October 2013.

- National Weather Center, National Severe Storms Laboratory, Norman, Oklahoma, April 2014.

Consulting Experience:

- York County, Virginia Public Schools, Snowfall/Frozen Precipitation Forecasts 1994-2009.
- Hunton and Williams, Attorneys at Law, Norfolk, Virginia, Forensic Consulting, 1998.
- Allied Signal, Inc., Columbia, Maryland, Scientific Consulting, 1999.
- George Curtis Overman, Jr., P.C., Newport News, Virginia, Forensic Consulting, 2000.
- Moody, Strople, Kloeppe & Basilone, Inc. Attorneys at Law, Portsmouth, Virginia, Forensic Consulting, 2001.
- Hunton and Williams, Attorneys at Law, Norfolk, Virginia, Forensic Consulting, 2002.
- Northrup Grumman Newport News Shipbuilding and Drydock Corporation, Inc., Newport News, Virginia, Forensic Consulting, 2002.
- Kaufman and Canoles, Inc., Attorneys at Law, Chesapeake, Virginia, Forensic Consulting, 2003.
- Beddow, Marley and Trexler, Attorneys at Law, Chesterfield, Virginia, Forensic Consulting, 2004.
- Community Service: Student Mentor, Newport News Public Schools, 1996.
- Science Fair Judge, Newport News Public Schools, 1996-2001.
- Donahue and Davies, Attorneys at Law, Folsom, California, Forensic Consulting, 2013.
- Weather Analytics Inc., Bethesda, Maryland 2013-2015
- Cyberdata Inc., Herndon, Virginia 2015-
- King Abduliziz City of Science and Technology, Saudi Arabia 2015-