CURRICULUM VITAE

SARA A. MICHELSON

Cooperative Institute for Research in Environmental Sciences and
NOAA Earth Systems Research Laboratory
Physical Sciences Laboratory
325 Broadway
Boulder, CO 80305
(303) 497-6043
sara.a.michelson@noaa.gov

EDUCATION:
M.S., Meteorology, May, 1998
The Pennsylvania State University, University Park, PA
B.S., Meteorology, with Distinction, May 1995
The Pennsylvania State University, University Park, PA

PROFESSIONAL EMPLOYMENT:
Cooperative Institute for Research in Environmental Sciences, University of Colorado/NOAA ESRL, Boulder, CO
Professional Research Assistant (Associate Scientist III), 2004-Present

Cooperative Institute for Research in Environmental Sciences, University of Colorado/NOAA Environmental Technology Laboratory, Boulder, CO
Professional Research Assistant (Associate Scientist II), 2000-2004

Cooperative Institute for Research in Environmental Sciences, University of Colorado/NOAA Environmental Technology Laboratory, Boulder, CO
Professional Research Assistant (Associate Scientist I), 1998-2000

The Pennsylvania State University, Department of Meteorology, University Park, PA
Graduate Research Assistant, June 1996- May 1998
Teaching Assistant, August 1995 - May 1996

NOAA/National Weather Service, Camp Springs, MD
Meteorological Aide, June-August 1991-1995

RESEARCH EXPERIENCE:
Mesoscale and global numerical modeling, physics parameterization development and evaluation, microphysics parameterizations, stochastic physics parameterization, atmospheric boundary-layer modeling, land-surface modeling, surface-layer flux parameterization, air-sea coupled modeling, mesoscale forecast validation and evaluation, air-quality forecast/modeling, coastal precipitation prediction, tropical cyclone studies and mesoscale data assimilation.

Extensive experience with the UFS, MM5, WRF-ARW, WRF-NMM, HWRF, FIM and NIM modeling systems.

PEER-REVIEWD PUBLICATIONS:

Bao, J.-W, **S. A. Michelson**, and E. Grell, 2019: Microphysical Process Comparison of Three Microphysics Parameterization Schemes in the WRF Model for an Idealized Squall Line Case Study'. *Mon. Wea. Rev.* doi: https://doi.org/10.1175/MWR-D-18-0249.1

Bengtsson, L; J. Dias, M. Gehne, P. Bechtold, J. Whitaker, J.W. Bao, L. Magnusson, **S. Michelson**, P. Pegion, S. Tulich, GN. Kiladis, 2019: Convectively Coupled Equatorial Wave Simulations Using the ECMWF IFS and the NOAA GFS Cumulus Convection Schemes in the NOAA GFS Model *Mon. Wea. Rev.* **147** (11) , 4005-4025, doi: 10.1175/MWR-D-19-0195.1, issn: 0027-0644, NOV 2019

Bengtsson, L; J.W. Bao, P. Pegion. C. Penland, **S. Michelson**, J. Whitaker 2019: A Model Framework for Stochastic Representation of Uncertainties Associated with Physical Processes in NOAAs Next Generation Global Prediction System (NGGPS) *Mon. Wea. Rev*, **147**, 893-911, doi: 10.1175/MWR-D-18-0238.1, issn: 0027-0644, MAR 2019

Grell, E.D., J.W. Bao, D.E. Kingsmill, and **S.A. Michelson**, 2018: On the Importance of a Consistent Treatment of Prognostic Moisture Variables between Convective and Microphysical Parameterizations. *Mon. Wea. Rev.,* **146**, 1527–1548, https://doi.org/10.1175/MWR-D-17-0305.1

Bao, J.W., **S.A Michelson** and E. D. Grell, 2016: Pathways to the Production of Precipitating Hydrometeors and Tropical Cyclone Development *Mon. Wea. Rev*, **144** (6) , 2395-2420, doi: 10.1175/MWR-D-15-0363.1, issn: 0027-0644, ids: DP5HF, JUN 2016

Lynn, B. H., A. P. Khain, J.W. Bao**, S.A. Michelson**, T. Yuan, G. Kelman, D. Rosenfeld, J. Shpund and N. Benmoshe, 2016: The Sensitivity of Hurricane Irene to Aerosols and Ocean Coupling: Simulations with WRF Spectral Bin Microphysics *J. Atmos. Sci*, **73** (2) , 467-486, doi:10.1175/JAS-D-14-0150.1, issn: 0022-4928, ids: DH8DW, FEB 2016

Bao, J. W., S.G. Gopalakrishnan, **S. A. Michelson**, F. D. Marks and M. T. Montgomery, 2012: Impact of Physics Representations in the HWRFX on Simulated Hurricane Structure and Pressure-Wind Relationships. *Mon. Wea. Rev.*, **140** (10), 3278-3299, doi: 10.1175/MWR-D-11-00332.1, issn: 0027-0644, ids: 013PQ, OCT 2012

Bianco, L, J. W. Bao, C. W. Fairall and **S. A. Michelson**, 2011: Impact of Sea-Spray on the Atmospheric Surface Layer. *Bound.-Layer Meteor.*, **140** (3), 361-381,

doi: 10.1007/s10546-011-9617-1, issn: Jun-14, ids: 807TW, SEP 2011

Bao, J. W., C. W. Fairall, **S. A. Michelson** and L. Bianco, 2011: Parameterizations of Sea-Spray Impact on the Air-Sea Momentum and Heat Fluxes. *Mon. Weather Rev.*, **13**9 (12) , 3781-3797, doi: 10.1175/MWR-D-11-00007.1, issn: 0027-0644, ids: 855ZD, DEC 2011

Michelson, Sara A., I.V. Djalalova, J.-W. Bao 2010: Evaluation of the Summertime Low-Level Winds Simulated by MM5 in the Central Valley of California. *J. Appl. Meteor. Clim.*, **49** (11), 2230-2245, doi: 10.1175/2010JAMC2295.1.

Michelson, Sara A,, J.-W. Bao, 2008: Sensitivity of Low-Level Winds Simulated by the WRF Model in California's Central Valley to Uncertainties in the Large-Scale Forcing and Soil Initialization. *J. Appl. Meteor. Clim.*, **47** (12) , 3131-3149, doi: 10.1175/2008JAMC1782.1.

Michelson, Sara A. and N.L. Seaman, 2000: Assimilation of NEXRAD-VAD Winds in Meteorological Simulations over the Northeast U.S. *J. Appl Meteor.*, **39**, 384-398.

Jin, L, N. J. Brown, R.A. Harley, J.-W. Bao, **S.A. Michelson,** and J. M. Wilczak, 2010:Seasonal Versus Episodic Performance Evaluation for an Eulerian Photochemical Air Quality Model. *J. Geophys. Res.-Atmos.*, **115**, Art No. D09302, doi: 10.1029/2009JD012680.

Bao, J.-W., **S. A. Michelson, P.O.G.** Persson, I. Djalalova, and J. M. Wilczak, 2008: Observed and WRF-Simulated Low-Level Winds in a High-Ozone Episode During the Central California Ozone Study. *J. Appl. Meteor. Clim.*, **47** (9) , 2372-2394, doi: 10.1175/2008JAMC1822.1.

Bao, J.-W., **S.A**. M**ichelson,** P.J. Neiman, F. M. Ralph, and J. M. Wilczak, 2006: Interpretation of Enhanced Integrated Water Vapor Bands Associated with Extratropical Cyclones: Their Formation and Connection to Tropical Moisture. *Mon. Wea. Rev.*, **134**, 1063-1080.

Bao, J.-W.; **S. A. Michelson,** S.A. McKeen, and G. Grell, 2005: Meteorological Evaluation of a Weather-Chemistry Forecasting Model Using Observations from the TEXAS AQS 2000 Field Experiment. *J. Geophys. Res.-Atmos.*, **110** (D21), Art No. D21105, doi: 10.1029/2004JD005024.

Bao, J.-W**.**, **S. A. Michelson**, and J. M. Wilczak, 2002: Sensitivity of Numerical Simulations to Parameterizations of Roughness for Surface Heat Fluxes at High Winds Over the Sea. *Mon. Wea. Rev*., **130**, 1926-1932.

Seaman, Nelson L. and **S.A. Michelson**, 2000: Mesoscale Meteorological Structure of a High-Ozone Episode During the 1995 NARSTO-Northeast Study. *J. Appl Meteor.*, **39**, 367-383.

BOOK CHAPTERS:

Bao, J.-W., **S. Michelson** and E. Grell. . 2021: Uncertainties in the Parameterization of Cloud Microphysics: An Illustration of the Problem. *Uncertainties in Numerical Weather Prediction.* Ed. H. Olafsson and J.-W. Bao, Elsevier, Cambridge, pp 265-294.

Bao, J.-W., **S. A. Michelson**, J. M. Wilczak and C. W. Fairall, 2002: Storm Simulations Using a Regional Coupled Atmosphere-Ocean Modeling System. *Advances in Fluid Mechanics (Atmosphere-Ocean Interactions)*, Ed. W. Perrie, WPI Press, Boston, p. 115-153.

TECHNICAL MEMORANDUMS:

Michelson, Sara A. and Bao, J-W , 2001: Sensitivity of Numerical Simulations of Mesoscale Features Associated with a Land-Falling Cyclone to Model Physics. *NOAA Technical Memorandum*, OAR ETL-302, 38 pp.

Bao, J-W., **S.A. Michelson**, J.M. Wilczak, F.M. Ralph, P.O.G. Persson, and R.J. Zamora, 2000: A case study of the impact of offshore P-3 observations on the prediction of coastal wind and precipitation. *NOAA Technical Memorandum* OAR ETL-298, 20 pp.

Bao, J.-W., **S. A. Michelson**, L. Kantha, and J. M. Brown, 2008: Implementation of a two-equation vertical turbulent mixing scheme in a mesoscale atmospheric model. *NOAA Technical Memorandum* OAR PSD-313, 33 pp.

HONORS AND AWARDS:

CIRES Bronze Award Team, 2009

Chi Epsilon Pi National Meteorological Honor Society, 1995

The American Meteorological Society's Howard H. Hanks, Jr. Scholarship in Meteorology, 1994