

# Recent Publications (EMC authors in boldface)

2020

**Ma, Z.; Liu, B.; Mehra, A.; Abdolali, A.; van der Westhuysen, A.;** Moghimi, S.; Vinogradov, S.; **Zhang, Z.; Zhu, L.; Wu, K.; Shrestha, R.;** Kumar, A.; **Tallapragada, V.;** Kurkowski, N., 2020: Investigating the Impact of High-Resolution Land–Sea Masks on Hurricane Forecasts in HWRF. *Atmosphere* 2020, *11*(9), 888, <https://doi.org/10.3390/atmos11090888>

Potvin, C.K., P.S. Skinner, K.A. Hoogewind, M.C. Coniglio, J.A. Gibbs, A.J. Clark, M.L. Flora, A.E. Reinhart, **J.R. Carley**, and E.N. Smith, 2020: Assessing Systematic Impacts of PBL Schemes on Storm Evolution in the NOAA Warn-on-Forecast System. *Mon. Wea. Rev.*, **148**, 2567–2590, <https://doi.org/10.1175/MWR-D-19-0389.1>.

**Morris, M. T. J. R. Carley, E. Colón, A. Gibbs, M. S. F. V. De Pondeva, and S. Levine**, 2020: A Quality Assessment of the Real-Time Mesoscale Analysis (RTMA) for Aviation. *Wea. Forecasting*, **35**, 977–996, <https://doi.org/10.1175/WAF-D-19-0201.1>.

**Yang, R., R. J. Purser, J. R. Carley, M. Pondeva, Y. Zhu, and S. Levine**, 2020: Application of a Nonlinear Transformation Function to the Variational Analysis of Visibility and Ceiling Height. NCEP Office Note 502. 36 pp. <https://repository.library.noaa.gov/view/noaa/23885>

Potvin, C.K., **J.R. Carley**, A.J. Clark, L.J. Wicker, P.S. Skinner, A.E. Reinhart, B.T. Gallo, **J.S. Kain**, G.S. Romine, **E.A. Aligo**, K.A. Brewster, D.C. Dowell, L.M. Harris, I.L. Jirak, F. Kong, T.A. Supinie, K.W. Thomas, X. Wang, Y. Wang, and M. Xue, 2019: Systematic Comparison of Convection-Allowing Models during the 2017 NOAA HWT Spring Forecasting Experiment. *Wea. Forecasting*, **34**, 1395–1416, <https://doi.org/10.1175/WAF-D-19-0056.1>.

**Zhang, Z., M. Tong, J. A. Sippel, A. Mehra, B. Zhang, K. Wu, B. Liu, J. Dong, Z. Ma, H. Winterbottom, W. Wang, L. Zhu, Q. Liu, H.-S. Kim, B. Thomas, D. Sheinin, L. Bi, and V. Tallapragada**, 2020 : The Impact of Stochastic Physics-Based Hybrid GSI/EnKF Data Assimilation on Hurricane Forecasts Using EMC Operational Hurricane Modeling System, *Atmosphere*, **11**, 20 pp. <https://www.mdpi.com/2073-4433/11/8/801/pdf>

Bakhtyar, R., K. Maitaria, P. Velissariou, B. Trimble , H. Mashriqui, S. Moghimi, **A. Abdolali, A.J. Van der Westhuysen, Z. Ma**, T. Flowers (2020), A new 1D/2D Coupled Modeling Approach for a Riverine-Estuarine System under Storm Events: Application to Delaware River Basin, *Journal of Geophysical Research: Oceans*, <https://doi.org/10.1029/2019JC015822>

Moghimi, S.; **Van der Westhuysen, A.; Abdolali, A.;** Myers, E.; Vinogradov, S.; **Ma, Z.;** Liu, F.; **Mehra, A.;** Kurkowski, N. (2020), Development of an ESMF Based Flexible

Coupling Application of ADCIRC and WAVEWATCH III for High Fidelity Coastal Inundation Studies. *J. Mar. Sci. Eng.* 2020, 8, 308. <https://doi.org/10.3390/jmse8050308>

**Abdolali A.**, Roland, A., **Van Der Westhuysen, A.**, **Meixner, J.**, **Chawla, A.**, Hesser, T., Smith, J.M. and M. Dutour Sikiric (2020), Large-scale Hurricane Modeling Using Domain Decomposition Parallelization and Implicit Scheme Implemented in WAVEWATCH III Wave Model, *Coastal Engineering*, **157**, 103656, <https://doi.org/10.1016/j.coastaleng.2020.103656>

Chen, J., J. Z. Wang, **J. Du**, 2020: Forecast bias correction through model integration: A dynamical wholesale approach. *Quart. J. Roy. Meteor. Soc.*, 146, 1149-1168, <https://doi.org/10.1002/qj.3730>.

**R. J. Purser**, 2020: Description and some formal properties of beta filters; compact support quasi-Gaussian convolution operators with applications to the construction of spatial covariances. NOAA/NCEP Office Note 498. <https://repository.library.noaa.gov/view/noaa/23195>

**R. J. Purser**, 2020: A formulation of the hexad algorithm using the geometry of the Fano projective plane. NOAA/NCEP Office Note 499. <https://repository.library.noaa.gov/view/noaa/23059>

**R. J. Purser**, 2020: A formulation of the decad algorithm using the symmetries of the Galois field, GF(16). NOAA/NCEP Office Note 500. <https://repository.library.noaa.gov/view/noaa/23060>

**R. J. Purser**, 2020: Solving the Laplace equation in a right-angled bicorn and constructing smooth functions for conformal overset grids. NOAA/NCEP Office Note 501. <https://repository.library.noaa.gov/view/noaa/23441>

**T. Black**, 2020: A documentation of the NMMB's nesting capabilities and mechanisms. NOAA/NCEP Office Note 503. <https://repository.library.noaa.gov/view/noaa/23887>

Alaka Jr., G.J., **D. Sheinin**, **B. Thomas**, L. Gramer, **Z. Zhang**, **B. Liu**, **H.-S. Kim** and **A. Mehra**, 2020: A Hydrodynamical Atmosphere/Ocean Coupled Modeling System for Multiple Tropical Cyclones. *Atmosphere*, **11**, 22 pp. <https://www.mdpi.com/2073-4433/11/8/869/pdf>

**Dong, J.**, **B. Liu**, **Z. Zhang**, **W. Wang**, **A. Mehra**, A.T. Hazelton, **H.R. Winterbottom**, **L. Zhu**, **K. Wu**, **C. Zhang**, **V. Tallapragada**, X. Zhang, S. Gopalakrishnan, F. Marks, 2020: The Evaluation of Real-Time Hurricane Analysis and Forecast System (HAFS) Stand-Alone Regional (SAR) Model Performance for the 2019 Atlantic Hurricane Season. *Atmosphere* 2020, 11, 617. <https://doi.org/10.3390/atmos11060617>

He, X., T. Xu, **Y. Xia**, S. M. Bateni, Z. Guo, S. Liu, K. Mao, Y. Zhang, H. Feng, and J. Zhao, 2020: Bayesian Three-Cornered Hat (BTCH) Method: Improving the Terrestrial Evapotranspiration Estimation. *Remote Sens.*, **12**, 878. <https://doi.org/10.3390/rs12050878>

Hao, Z., W. Li, V. P. Singh, **Y. Xia**, X. Zhang, and F. Hao, 2020: Impact of dependence changes on the likelihood of hot extremes under drought conditions in the United States, *J. Hydrol.*, **581**, 124410, <https://doi.org/10.1016/j.jhydrol.2019.124410>.

Zhang, B., **Y. Xia**, B. Long, M. Hobbins, X. Zhao, C. Hain, Y. Li, and M. Anderson, 2020: Evaluation and comparison of multiple evapotranspiration data models over the contiguous United States: Implications for the next phase of NLDAS (NLDAS-Testbed) development, *Agri. Forest Meteorol.*, **280**, <https://doi.org/10.1016/j.agrformet.2019.107810>

## 2019

Duda, J. D., X. Wang, Y. Wang, and **J. R. Carley**, 2019: Comparing the Assimilation of Radar Reflectivity Using the Direct GSI-Based Ensemble-Variational (EnVar) and Indirect Cloud Analysis Methods in Convection-Allowing Forecasts over the Continental United States. *Mon. Wea. Rev.*, **147**, 1655–1678, <https://doi.org/10.1175/MWR-D-18-0171.1>.

**Lippi, D. E., J. R. Carley, and D. T. Kleist**, 2019: Improvements to the Assimilation of Doppler Radial Winds for Convection-Permitting Forecasts of a Heavy Rain Event. *Mon. Wea. Rev.*, **147**, 3609–3632, <https://doi.org/10.1175/MWR-D-18-0411.1>.

**Abdolali, A.**, Kadri, U. & J.T. Kirby, 2019, Effect of Water Compressibility, Sea-floor Elasticity, and Field Gravitational Potential on Tsunami Phase Speed, Scientific Reports, *Nature*, <https://www.nature.com/articles/s41598-019-52475-0>

Chen, S.-C., J. Benoit, J. Ritchie, Y. Zhang, **H.-M. H. Juang**, Y.-J. Chen, and T. Rolinski, 2019: FireBuster—A web application for high-resolution fire weather modeling. *USDA General Technical Report PSW-GTR264*, 22 pp. <https://www.fs.usda.gov/treearch/pubs/all/58247>

Nguyen, T. V., K. V. Mai, P. N. B. Nguyen, **H.-M. H. Juang**, D. V. Nguyen, 2019: Evaluation of summer monsoon climate predictions over the Indochina peninsula using regional spectral model. *Weather and Climate Extremes*, **23** (2019) 100195, 14 pp. <https://www.sciencedirect.com/science/article/pii/S2212094718301415>

**Du, J., B. Zhou, and J. Levit**, 2019: Measure of Forecast Challenge and Predictability Horizon Diagram Index for Ensemble Models. *Wea. Forecasting*, **34**, 603–615, <https://doi.org/10.1175/WAF-D-18-0114.1>.

Xia, Y., J. Chen, **J. Du**, et al., 2019: A Unified Scheme of Stochastic Physics and Bias Correction in an Ensemble Model to Reduce Both Random and Systematic Errors. *Wea. Forecasting*, **34**, 1675–1691, <https://doi.org/10.1175/WAF-D-19-0032.1>.

Domingues, R. Akira Kuwano-Yoshida, Patricia Chardon-Maldonado, Robert E Todd, George Robert Halliwell, **Hyun-Sook Kim**, I-I Lin, Katsufumi Sato, Tomoko Narazaki,

Lynn K. Shay, Travis Miles, Scott Glenn, Jun A. Zhang, Steven Robert Jayne, Luca R Centurioni, Matthieu Le Hénaff, Gregory Foltz, Francis Bringas, MM Ali, Steven DiMarco, Shigeki Hosoda, Takuya Fukuoka, Benjamin LaCour, **Avichal Mehra**, Elizabeth R. Sanabia, John R. Gyakum, **Jili Dong**, John Knaff, Gustavo Jorge Goni, 2019: Ocean Observations in Support of Studies and Forecasts of Tropical and Extratropical Cyclones, *Frontiers in Marine Science*.  
<https://doi.org/10.3389/fmars.2019.00446>

**Pyle, M.E.** and K.F. Brill, 2019: A Comparison of Two Methods for Bias Correcting Precipitation Skill Scores. *Wea. Forecasting*, **34**, 3-13. <https://doi.org/10.1175/WAF-D-18-0109.1>

An, N., R.T. Pinker, K. Wang, **E. Rogers**, and Z. Zuo, 2019: Evaluation of cloud base height in the North American Regional Reanalysis using ceilometer observations. *International Journal of Climatology*,  
<https://rmets.onlinelibrary.wiley.com/doi/full/10.1002/joc.6389>

Crow, W., F. Chen, R. Reichle, and **Y. Xia**, 2019: Diagnosing bias in modeled soil moisture/runoff coupling strength using the SMAP Level 4 soil moisture product. *Water Resources Research*, **55**, 7010– 7026. <https://doi.org/10.1029/2019WR025245>

Liao, W., D. Wang, G. Wang, and **Y. Xia**, 2019: Evaluation and Generation Process of the Quality-controlled Daily in Situ Soil Moisture in North American Soil Moisture Database. *J. Meteorological Research*, **33**, 501-519.

**Xia, Y.**, Z. Hao, C. Shi, Y. Li, J. Meng, T. Xu, Y. Wu, and B. Zhang, , 2019: Regional and Global Land Data Assimilation Systems: Innovations, Challenges, and Prospects. *J. Meteorological Research*, **33**, 159-189.

Xu, T, Z. Guo. **Y. Xia**, V.J. Ferriera, S. Liu, K. Wang, Y. Yao, X. Zhang, and C. Zhao, 2019: Evaluation of twelve evapotranspiration products from machine learning, remote sensing and land surface models over conterminous United States, *J. Hydrol.*, **578**, <https://doi.org/10.1016/j.jhydrol.2019.124105>.

Zhang, B., **Y.Xia**, L.S. Hunting, G. Wei, G. Wang, and A. Aghakouchak, 2019: A framework for global multi-category and multi-scalar drought characterization accounting for snow processes, *Water Resour. Res.*, **55** (11), 9258-9278.  
<https://doi.org/10.1029/2019WR025529>

## 2018

**Mehra, A.; Tallapragada, V.; Zhang, Z.; Liu, B.; Zhu, L.; Wang, W.; Kim, H.S.**, 2018: Advancing the State of the Art in Operational Tropical Cyclone Forecasting at NCEP. *Tropical Cyclone Research and Review*, **7(1)**, 51–56.

Wang, J., J. Chen, **J. Du**, Y. Zhang, Y. Xia; G. Deng, 2018: Sensitivity of Ensemble Forecast Verification to Model Bias. *Mon. Wea. Rev.*, **146**, 781–796, <https://doi.org/10.1175/MWR-D-17-0223.1>

Buizza, R., **J. Du**, Z. Toth, and **D. Hou**, 2018: Major operational ensemble prediction systems (EPS) and the future of EPS. Handbook of Hydrometeorological Ensemble Forecasting (edited by Q. Duan et al.), Springer, Berlin, Heidelberg, pp 1-43, [https://doi.org/10.1007/978-3-642-40457-3\\_14-1](https://doi.org/10.1007/978-3-642-40457-3_14-1)

**Du, J.**, J. Berner, R. Buizza, M. Charron, P. Houtekamer, **D. Hou**, **I. Jankov**, M. Mu, X. Wang, **M. Wei**, and H. Yuan, 2018: Ensemble methods for meteorological predictions. Handbook of Hydrometeorological Ensemble Forecasting (edited by Q. Duan et al.), Springer, Berlin, Heidelberg, pp 1-52, [https://doi.org/10.1007/978-3-642-40457-3\\_13-1](https://doi.org/10.1007/978-3-642-40457-3_13-1)

**Aligo, E.**, **B. Ferrier**, and **J. Carley**, 2018: Modified NAM Microphysics for Forecasts of Deep Convective Storms. *Mon. Wea. Rev.*, **146**, 4115-4153. <https://doi.org/10.1175/MWR-D-17-0277.1>

**Wang, W.**, **J. A. Sippel**, **S. Abarca**, **L. Zhu**, **B. Liu**, **Z. Zhang**, **A. Mehra**, and **V. Tallapragada**, 2018: Improving NCEP HWRF Simulations of Surface Wind and Inflow Angle in the Eyewall Area. *Wea. Forecasting*, **33**, 887–898, <https://doi.org/10.1175/WAF-D-17-01115.1>

**Abdolali, A.**, Kadri, U., Parsons, W., and Kirby, J., 2018, On the propagation of acoustic–gravity waves under elastic–isostatic ice sheets. *Journal of Fluid Mechanics*, 837, 640-656. <https://doi.org/10.1017/jfm.2017.808>

**Chuang, H.-Y.**, **Y. Mao**, and **B. Zhou**, 2018: R2O Transition of NCAR’s Icing and Turbulence Algorithms into NCEP’s Operations” *Pure Appl. Geophys.*, 2018

**Xia, Y.**, D.M. Mocko, S. Wang, M. Pan, S. V. Kumar, C. D. Peters-Lidard, **H. Wei**, D. Wang, and **M.B. Ek**, 2018: Comprehensive Evaluation of the Variable Infiltration Capacity (VIC) Model in the North American Land Data Assimilation System, *J. Hydrometeor.*, **19**, 1853-1879. <https://doi.org/10.1175/JHM-D-18-0139.1>

Crow, W. T., Chen, F., Reichle, R. H., **Xia, Y.**, & Liu, Q., 2018: Exploiting soil moisture, precipitation, and streamflow observations to evaluate soil moisture/runoff coupling in land surface models. *Geophysical Research Letters*, **45**, 4869–4878. <https://doi.org/10.1029/2018GL077193>

Hao, Z., F. Hao, VP Singh, **Y. Xia**, C. Shi, and X. Zhang, 2018: A multivariate approach for statistical assessments of compound extremes. *J. Hydrol.*, **565**, 87-94. <https://doi.org/10.1016/j.jhydrol.2018.08.025>

Hao, Z., Singh, V. P., & **Xia, Y.**, 2018: Seasonal drought prediction: Advances, challenges, and future prospects. *Reviews of Geophysics*, **56**, 108–141. <https://doi.org/10.1002/2016RG000549>

Xu, T., Guo, Z., Liu, S., He, X., Meng, Y., Xu, Z., **Xia Y.**, J. Xiao, Y. Zhang, Y. Ma, and L. Song, 2018: Evaluating different machine learning methods for upscaling evapotranspiration from flux towers to the regional scale. *Journal of Geophysical Research: Atmospheres*, **123**, 8674–8690. <https://doi.org/10.1029/2018JD028447>

Sun, A.Y, **Y. Xia**, T.G. Caldwell, and Z. Hao, 2018: Patterns of precipitation and soil moisture extremes in Texas, US: A complex network analysis, *Adv. Water Resour.*, **112**, 203-213. <https://doi.org/10.1016/j.advwatres.2017.12.019>

## 2017

**Du, J., and B. Zhou**, 2017: Ensemble fog prediction, in the book "Marine fog: challenges and advancements in observations, modeling, and forecasting" (eds. by D. Koracin and C. E. Dorman). Springer, 477–509, doi: [https://link.springer.com/chapter/10.1007/978-3-319-45229-6\\_10](https://link.springer.com/chapter/10.1007/978-3-319-45229-6_10)

Goni, G., R.E. Todd, S.R. Jayne, G. Halliwell, S. Glenn, **J. Dong**, R. Curry, R. Domingues, F. Bringas, L. Centurioni, S. F. DiMarco, T. Miles, J. Morell, L. Pomales, **H.-S. Kim**, P.E. Robbins, G. G. Gawarkiewicz, J. Wilkin, J. Heiderich, B. Baltes, J.J. Cione, G. Seroka, K. Knee, and E.R. Sanabia, 2017: Autonomous and Lagrangian Ocean Observations for Atlantic Tropical Cyclone Studies and Forecasts. *Oceanography*, June 2017, 84-95. <https://doi.org/10.5670/oceanog.2017.227>

Halliwell, G.R., M. Mehari, L.K. Shay, V.H. Kourafalou, H. Kang, **H.-S. Kim, J. Dong**, and R. Atlas, 2017: OSSE quantitative assessment of rapid-response prestorm ocean surveys to improve coupled tropical cyclone prediction. *J. Geophys. Res. Oceans*, **122**, <https://doi.org/10.1002/2017JC012760>

**Dong, J.**, R. Domingues, G. Goni, G. Halliwell, **H.-S. Kim**, S. Lee, M. Mehari, F. Bringas, J. Morell, and L. Pomales, 2017: Impact of assimilating underwater glider data on Hurricane Gonzalo (2014) forecast. *Wea. Forecasting*, **32**, 1143-1159. <https://doi.org/10.1175/WAF-D-16-0182.1>

**Abdolali, A.**, & Kirby, J. T., 2017, Role of compressibility on tsunami propagation. *Journal of Geophysical Research: Oceans*, **122**. <https://doi.org/10.1002/2017JC013054>

**Wu, W.-S., D. F. Parrish, E. Rogers, and Y. Lin**, 2017: Regional Ensemble–Variational Data Assimilation Using Global Ensemble Forecasts. *Wea. Forecasting*, **32**, 83-96. <https://doi.org/10.1175/WAF-D-16-0045.1>

Ma, N., Niu, G.Y., **Xia, Y.**, Cai, X., Zhang, Y., Ma, Y., & Fang, Y., 2017: A systematic evaluation of Noah-MP in simulating land-atmosphere energy, water, and carbon exchanges over the continental United States. *Journal of Geophysical Research: Atmospheres*, **122**, 12,245–12,268. <https://doi.org/10.1002/2017JD027597>

Kumar, S. V., Wang, S., Mocko, D. M., Peters-Lidard, C. D., & **Xia, Y.**, 2017: Similarity assessment of land surface model outputs in the North American Land Data Assimilation System. *Water Resources Research*, **53**, 8941–8965. <https://doi.org/10.1002/2017WR020635>

Hao, Z., X. Yuan, **Y. Xia**, F. Hao, and V. Singh, 2017: An overview of drought monitoring and prediction systems at regional and global scales. *Bull. Amer. Meteorol. Soc.*, **98 (9)**, 1879-1896. <https://doi.org/10.1175/BAMS-D-15-00149.1>

**Xia, Y.**, D.M. Mocko, M. Huang, B. Li, M. Rodell, K.E. Mitchell, X. Cai, and **M.B. Ek**, 2017: Comparison and Assessment of Three Advanced Land Surface Models in Simulating Terrestrial Water Storage Components over the United States. *J. Hydrometeor.*, **18**, 625-649. <https://doi.org/10.1175/JHM-D-16-0112.1>