

HFIP Publications 2015

Journals and Periodicals

- Aberson, S. D., A. Aksoy, K. J. Sellwood, T. Vukicevic, and X. Zhang, 2015: Assimilation of high-resolution tropical cyclone observations with an ensemble Kalman filter using HEDAS: Evaluation of 2008–2011 HWRF forecasts. *Mon. Wea. Rev.*, **143**(2):511–523, doi:10.1175/MWR-D-14-00138.1
- Atlas, R., L. Bucci, B. Annane, R. Hoffman, and S. Murillo, 2015: Observing system simulation experiments to assess the potential impact of new observing systems on hurricane forecasting. *Marine Technology Society Journal*, **49**(6):140–148, doi:10.4031/MTSJ.49.6.3
- Atlas, R., R. N. Hoffman, Z. Ma, G. D. Emmitt, S. A. Wood, S. Greco, S. Tucker, L. Bucci, B. Annane, R. M. Hardesty, and S. Murillo, 2015: Observing system simulation experiments (OSSEs) to evaluate the potential impact of an optical autocovariance wind lidar (OAWL) on numerical weather prediction. *Journal of Atmospheric and Oceanic Technology*, **32**(9):1593–1613, doi:10.1175/JTECH-D-15-0038.1
- Atlas, R., V. Tallapragada, and S. Gopalakrishnan, 2015: Advances in tropical cyclone intensity forecasts. *Marine Technology Society Journal*, **49**(6):149–160, doi:10.4031/MTSJ.49.6.2
- Bernardet, L., V. Tallapragada, S. Bao, S. Trahan, Y. Kwon, Q. Liu, M. Tong, M. Biswas, T. Brown, D. Stark, L. Carson, R. Yablonsky, E. Uhlhorn, S. Gopalakrishnan, X. Zhang, T. Marchok, B. Kuo, and R. Gall, 2015: Community support and transition of research to operations for the Hurricane Weather Research and Forecasting model. *Bull. Amer. Meteor. Soc.*, **96**(6):953–960, doi:10.1175/BAMS-D-13-00093.1
- Chen, H., and S. G. Gopalakrishnan, 2015: A study on the asymmetric rapid intensification of Hurricane Earl (2010) using the HWRF system. *J. Atmos. Sci.*, **72**(2):531–550, doi:10.1175/JAS-D-14-0097.1
- Cione, J. J. The relative roles of the ocean and atmosphere as revealed by buoy air-sea observations in hurricanes, 2015: *Mon. Wea. Rev.*, **143**(3):904–913, doi:10.1175/MWR-D-13-00380.1
- Gao, K. and I. Ginis, 2016: On the equilibrium-state roll vortices and their effects in the hurricane boundary layer. *J. Atmos. Sci.*, **73**, 1205–1221.
- Haddad, Z. S., J. L. Steward, H.-C. Tseng, T. Vukicevic, S.-H. Chen, and S. Hristova-Veleva, 2015: A data assimilation technique to account for the nonlinear dependence of scattering microwave observations of precipitation. *J. Geophys. Res.-Atmos.*, **120**(11):5548–5563, doi:10.1002/2015JD023107
- Halliwell, G. R., S. Gopalakrishnan, F. Marks, and D. Willey, 2015: Idealized study of ocean impacts on tropical cyclone intensity forecasts. *Mon. Wea. Rev.*, **143**(4):1142–1165, doi:10.1175/MWR-D-14-00022.1
- Hazelton, A. T., R. Rogers, and R. E. Hart, 2015: Shear-relative asymmetries in tropical cyclone eyewall slope. *Mon. Wea. Rev.*, **143**(3):883–903, doi:10.1175/MWR-D-14-00122.1
- Jaimes, B., L. K. Shay, and E. W. Uhlhorn, 2015: Enthalpy and momentum fluxes during Hurricane Earl relative to underlying ocean features. *Mon. Wea. Rev.*, **143**(1):111–131, doi:10.1175/MWR-D-13-00277.1
- Kaplan, J., C. M. Rozoff, M. DeMaria, C. R. Sampson, J. P. Kossin, C. S. Velden, J. J. Cione, J. P. Dunion, J. A. Knaff, J. A. Zhang, J. F. Dostalek, J. D. Hawkins, T. F. Lee, and J. E. Solbrig, 2015: Evaluating environmental impacts on tropical cyclone rapid intensification predictability utilizing statistical models. *Wea. Forecasting*, **30**(5):1374–1396, doi:10.1175/WAF-D-15-0032.1
- Komaromi, W. A., and S. J. Majumdar, 2015: Ensemble-based error and predictability metrics associated with tropical cyclogenesis. Part II: Wave-relative framework. *Mon. Wea. Rev.*, **143**, 1665–1686.
<http://journals.ametsoc.org/doi/abs/10.1175/MWR-D-14-00286.1>

- Ming, J., J. A. Zhang, and R. F. Rogers, 2015: Typhoon kinematic and thermodynamic boundary layer structure from dropsonde composites. *J. Geophys. Res.-Atmos.*, **120**(8):3158-3172, doi:10.1002/2014JD022640
- Mohanty, U. C., K. K. Osuri, V. Tallapragada, F. D. Marks, S. Pattanayak, M. Mohapatra, L. S. Rathore, S. G. Gopalakrishnan, and D. Niyogi, 2015: A great escape from the Bay of Bengal "Super Sapphire-Phailin" tropical cyclone: A case of improved weather forecast and societal response for disaster mitigation. *Earth Interactions*, **19**(17):1-11, doi:10.1175/EI-D-14-0032.1
- Montgomery, M. T., J. Persing, and R. K. Smith, 2015: Putting to rest WISHE-ful misconceptions for tropical cyclone intensification. *J. Adv. Model. Earth Syst.*, **7**, 92-109, doi:10.1002/2014MS000362
- Munsell, E. B., J. A. Sippel, S. A. Braun, Y. Weng, and F. Zhang, 2015: Dynamics and predictability of Hurricane Nadine (2012) evaluated through convection-permitting ensemble analysis and forecasts. *Mon. Wea. Rev.*, **143**, 4514-4532.
- Rabe T. J., T. Kukulka, I. Ginis, T. Hara, B. Reichl, E. D'Asaro, R. Harcourt, and P. Sullivan, 2015: Langmuir turbulence under Hurricane Gustav (2008), *J. Phys. Oceanogr.*, **45**, 657-677.
- Reasor, P. D., and M. T. Montgomery, 2015: Evaluation of a heuristic model for tropical cyclone resilience. *J. Atmos. Sci.*, **72**(5):1765-1782, doi:10.1175/JAS-D-14-0318.1
- Reichl, B. G., D. Wang, T. Hara, I. Ginis, and T. Kukulka, 2016: Langmuir turbulence parameterization in tropical cyclone conditions. *J. Phys. Oceanogr.*, **46**, 863-886.
- Rogers, R. F., P. D. Reasor, and J. A. Zhang, 2015: Multiscale structure and evolution of Earl (2010) during rapid intensification. *Mon. Wea. Rev.*, **143**(2):536-562, doi:10.1175/MWR-D-14-00175.1
- Rozoff, C. M., C. S. Velden, J. Kaplan, J. P. Kossin, and A. J. Wimmers, 2015: Improvements in the probabilistic prediction of tropical cyclone rapid intensification with passive microwave observations. *Wea. Forecasting*, **30**(4):1016-1038, doi:10.1175/WAF-D-14-00109.1
- Smith, R. K., and M. T. Montgomery, 2015: Toward clarity on understanding tropical cyclone intensification. *J. Atmos. Sci.* **72**, 3020-3031, doi:10.1175/JAS-D-15-0017.1
- Stern, D. P., J. L. Vigh, D. S. Nolan, and F. Zhang, 2015: Revisiting the relationship between eyewall contraction and intensification. *J. Atmos. Sci.*, **72**, 1283–1306. <http://journals.ametsoc.org/doi/full/10.1175/JAS-D-14-0261.1>
- Susca-Lopata, G., J. Zawislak, E. J. Zipser, and R. F. Rogers, 2015: The role of observed environmental conditions and precipitation evolution in the rapid intensification of Hurricane Earl (2010). *Mon. Wea. Rev.*, **143**(6):2207-2223, doi:10.1175/MWR-D-14-00283.1
- Tang, J., D. Byrne, J. A. Zhang, Y. Wang, X. Lei, D. Wu, P. Fang, and B. Zhao, 2015: Horizontal transition of turbulent cascade in the near-surface layer of tropical cyclones. *J. Atmos. Sci.*, **72**(12):4915-4925, doi:10.1175/JAS-D-14-0373.1
- Tao, D., and F. Zhang, 2015: Effects of vertical wind shear on the predictability of tropical cyclones: Practical versus intrinsic limit, *J. Adv. Model. Earth Syst.*, **7**, 1534–1553, doi:10.1002/2015MS000474.
- Torn, R. D., J. S. Whitaker, P. Pegion, T. M. Hamill, and G. J. Hakim, 2015: Diagnosis of the source of GFS medium range track errors in Hurricane Sandy (2012). *Mon. Wea. Rev.*, **143**, 132-152, doi:10.1175/MWR-D-14-00086.1

- Wang, J., K. Young, T. Hock, D. Lauritsen, D. Behringer, M. Black, P. G. Black, J. Franklin, J. Halverson, J. Molinari, L. Nguyen, T. Reale, J. Smith, B. Sun, Q. Wang, and J. A. Zhang, 2015: A long-term, high-quality, high vertical resolution GPS dropsonde dataset for hurricane and other studies. *Bull. Amer. Meteor. Soc.*, **96**(6):961-973, doi:10.1175/BAMS-D-13.00203.1
- Xu, Q., L. Wei, Y. Jin, Q. Zhao, and J. Cao, 2015: A dynamically constrained method for determining the vortex centers of tropical cyclones predicted by high-resolution models. *J. Atmos. Sci.*, **72**, 88–103.
- Yablonsky, R. M., I. Ginis, and B. Thomas, 2015: Ocean modeling with flexible initialization for improved coupled tropical cyclone-ocean prediction, *Environmental Modelling & Software*, **67**, 26-30.
- Yablonsky, R. M., I. Ginis, B. Thomas, V. Tallapragada, D. Sheinin, and L. Bernardet, 2015: Description and analysis of the ocean component of NOAA's operational hurricane weather research and forecasting (HWRF) model. *J. Atmos. Ocean. Technol.*, **32** (1), 144-163, doi: 10.1175/JTECH-D-14-00063.1.
- Yang, Y.-T., H.-C. Kuo, E. A. Hendricks, Y.-C. Liu, and M. S. Peng, 2015: Relationship between typhoons with concentric eyewalls and ENSO in the Western North Pacific Basin. *J. Climate*, **28**, 3612–3623. doi: <http://dx.doi.org/10.1175/JCLI-D-14-00541.1>
- Zhang, D.-L., L. Zhu, X. Zhang, and V. Tallapragada, 2015: Sensitivity of idealized hurricane intensity and structures under varying background flows and initial vortex intensities to different vertical resolutions in HWRF. *Mon. Wea. Rev.*, **143**(3):914-932, doi:10.1175/MWR-D-14-00102.1
- Zhang, F., and Y. Weng, 2015: Predicting hurricane intensity and associated hazards: A five-year real-time forecast experiment with assimilation of airborne Doppler Radar observations. *Bull. Amer. Meteor. Soc.*, **96**, 25-32.
- Zhang, J. A., and F. D. Marks, 2015: Effects of horizontal diffusion on tropical cyclone intensity change and structure in idealized three-dimensional numerical simulations. *Mon. Wea. Rev.*, **143**(10):3981-3995, doi:10.1175/MWR-D-14-00341.1
- Zhang, J. A., D. S. Nolan, R. F. Rogers, and V. Tallapragada, 2015: Evaluating the impact of improvements in the boundary layer parameterization on hurricane intensity and structure forecasts in HWRF. *Mon. Wea. Rev.*, **143**(8):3136-3155, doi:10.1175/MWR-D-14-00339.1
- Zhu, P., Z. Zhu, S. Gopalakrishnan, R. Black, F. D. Marks, V. Tallapragada, J. A. Zhang, X. Zhang, and C. Gao, 2015: Impact of sub-grid scale processes on eyewall replacement cycle of tropical cyclones in the HWRF system. *Geophys. Res. Letters*, **42**(22):10027-10036, doi:10.1002/2015GL066436
- Zhu, Z.-D., and P. Zhu, 2015: Sensitivity of eyewall replacement cycle to model physics, vortex structure, and background winds, *J. Geophys. Res. Atmos.*, **120**, 590-622, doi:10.1002/2014JD022056.
- Publications in Print
- Galarneau, T. J., Jr., and T. M. Hamill, 2015: Diagnosis of track forecast errors for Tropical Cyclone Rita (2005) using GEFS reforecasts, *Wea. Forecasting*, in press.
- Goldenberg, S. B., S. G. Gopalakrishnan, V. Tallapragada, T. Quirino, F. Marks, S. Trahan, X. Zhang, and R. Atlas, 2015: The 2012 triply-nested, high-resolution operational version of the hurricane weather research and forecasting System (HWRF): Track and intensity forecast verifications. *Wea. Forecasting*, **30**(3):710-729, doi:10.1175/WAF-D-14-00098.1, in press.
- Hendricks, E. A., Y. Jin, J. R. Moskaitis, J. D. Doyle, M. S. Peng, C.-C. Wu, and H.-C. Kuo, 2015: Numerical simulations of Typhoon Morakot (2009) using a multiply-nested tropical cyclone prediction model, *Wea. Forecasting*, in press.

- Ming, J., and J. A. Zhang, 2015: Effects of surface flux parameterization on numerically simulated intensity and structure of Typhoon Morakot (2009). *Adv. Atmos. Sci.*, **33**(1):58-72, doi:10.1007/s00376-015-4202-z, accepted.
- Rios-Berrios, R., R. D. Torn, and C. Davis, 2016: An ensemble approach to investigate tropical cyclone intensification in sheared environments. Part II: Ophelia (2011). *J. Atmos. Sci.*, in press, doi: 10.1175/JAS-D-15-0052.1
- Rios-Berrios, R., R. D. Torn, and C. Davis, 2016: An ensemble approach to investigate tropical cyclone intensification in sheared environments. Part I: Katia (2011). *J. Atmos. Sci.*, in press, doi: 10.1175/JAS-D-15-0245.1
- Ryglicki, D. R., and D. Hodyss, 2015: A deeper analysis of center-finding techniques for tropical cyclones in mesoscale models. Part I: Low wavenumber analysis. *J. Appl. Meteor. Clim.*, doi: 10.1175/JAMC-D-15-0125.1, in press. <http://journals.ametsoc.org/doi/abs/10.1175/JAMC-D-15-0125.1>
- Publications in Review
- Aberson, S. D., 2015: An unusual, strong updraft within the eye of Hurricane Emily. *Mon. Wea. Rev.*, re-submitted 2016.
- Cione, J. J., E. A. Kalina, E. W. Uhlhorn, and A. Barry Damiano, 2015: Validation of Coyote unmanned aircraft system observations in Hurricane Edouard (2014). *J. Atmos. Ocean. Tech.*, submitted.
- Guimond, S. R., G. M. Heymsfield, P. D. Reasor, and A. C. Didlake Jr., 2016: The rapid intensification of Hurricane Karl (2010): New remote sensing observations of convective bursts from the Global Hawk Platform. *J. Atmos. Sci.*, submitted.
- Melhauser, C., and F. Zhang, 2016: Application of a simplified co-plane wind retrieval using dual-beam airborne Doppler Radar observations for tropical cyclone prediction. *Mon. Wea. Rev.*, submitted.
- Munsell, E. B., F. Zhang, J. A. Sippel, and S. A. Braun, 2016: Dynamics and predictability of the rapid intensification of Hurricane Edouard (2014). *J. Atmos. Sci.*, submitted.
- Reichl, B. G., I. Ginis, T. Hara, T. Kukulka, and D. Wang, 2016: Impact of sea-state dependent Langmuir turbulence on the ocean response to a tropical cyclone. *Mon. Wea. Rev.*, in review.
- Rogers, R.F., J.A. Zhang, J. Zawislak, H. Jiang, G.R. Alvey III, E.J. Zipser, and S. Stevenson, 2016: Observations of the structure and evolution of Hurricane Edouard (2014) during intensity change. Part II: Kinematic structure and the distribution of deep convection. *Mon. Wea. Rev.*, in review.
- Smith, R. K., and M. T. Montgomery, 2016: The efficiency of diabatic heating and tropical cyclone intensification. *Q. J. R. Meteorol. Soc.* 142, 000-000, doi:10.1002/qj.2804, in review.
- Soukup, G. A., and F. D. Marks, 2014: Evaluation of hurricane wind speed analyses using low order wavenumbers. *Mon. Wea. Rev.*, submitted.
- Stern, D., G. Bryan, and S. Aberson, 2015: Extreme low-level updrafts and wind speeds measured by dropsondes in tropical cyclones. *Mon. Wea. Rev.*, submitted.
- Weng, Y. and F. Zhang, 2016: Advances in convection-permitting tropical cyclone analysis and prediction through EnKF assimilation of reconnaissance aircraft observations. *Journal of Metrological Society of Japan*, accepted pending minor revisions (invited submission).

Zawislak, J. G., R. Alvey III, R. F. Rogers, J. A. Zhang, E. J. Zipser, and H. Jiang, 2016: Observations of the structure and evolution of Hurricane Edouard (2014) during intensity change. Part I: Relationship between the thermodynamic structure and precipitation. *Mon. Wea. Rev.*, submitted.

Zhang, J.A., R.F. Rogers, and V. Tallapragada, 2016: Impact of boundary layer vertical diffusion on HWRF forecasts of tropical cyclone rapid intensification. *Mon. Wea. Rev.*, in review.

To Be Submitted for Review and Publication

None.

Books, Chapters, Manuals, and Proceedings

Quirino, T.S., J. Delgado, and X. Zhang, 2015: Improving the scalability of a hurricane forecast system in mixed-parallel environments. *Proceedings, 16th IEEE International Conference on High Performance Computing and Communications, IEEE Computer Society*, 276-281.

Technical Reports:

Biswas, M. K., L. Carson, C. Holt, and L. Bernardet, 2015: Community HWRF users' guide V3.7a, 152 pp. [available online at http://www.dtcenter.org/HurrWRF/users/docs/users_guide/HWRF_v3.7a_UG.pdf]

Gall, R., F. Toepfer, F. Marks, E. N. Rappaport, A. Aksoy, S. Aberson, J. W. Bao, M. Bender, S. Benjamin, L. Bernardet, M. Biswas, B. Brown, J. Cangialosi, C. Davis, M. DeMaria, J. Doyle, R. Falvey, M. Fiorino, S. Forsythe-Newell, J. Franklin, T. Ghosh, I. Ginis, S. Goldenberg, S. Gopalakrishnan1, T. Hamill, R. Hodur, H. S. Kim, J. Knaff, T. Krishnamurti, P. Kucera, Y. Kwon, W. Lapenta, N. Lett, S. Lord, T. Marchok, D. Meléndez, M. Morin, J. Moskaitis, K. Musgrave, L. Nance, A. Reinecke, C. Reynolds, Brian Strahl, V. Tallapragada, H. Tolman, R. Torn, G. Vandenberghe, T. Vukicevic, X. Wang, Y. Weng, J. Whittaker, R. Yablonsky, D. A. Zelinsky, D-L Zhang, F. Zhang, J. Zhang, X. Zhang, 2015: 2014 NOAA Hurricane forecast improvement project (HFIP) research and development activities summary: Recent results and operational implementation. HFIP technical report HFIP2015-1, 49 pp. [Available at http://www.hfip.org/documents/HFIP_Publications_FY2014.pdf]

Morin, M., T. Marchok, and M. Bender, 2015: Evaluation of the 2015 GFDL hurricane ensemble forecast system. 17 November, 2015. [Available at http://www.hfip.org/events/annual_meeting_nov_2015/presentations/Tue_0905_Morin_2015GFDLEnsemble_EnsWS_2015.pdf]

Tallapragada, V., L. Bernardet, M. K. Biswas, I. Ginis, Y. Kwon, Q. Liu, T. Marchok, D. Sheinin, B. Thomas, M. Tong, S. Trahan, W. Wang, R. Yablonsky, and X. Zhang, 2016: Hurricane weather research and forecasting (HWRF) model: 2015 Scientific documentation. NCAR technical note NCAR/522+STR, 116 pp.

Presentations

Aksoy, A., 2016: A first look at the impact of Coyote UAS observations from Hurricane Edouard (2014) on tropical cyclone data assimilation and prediction. *96th American Meteorological Society Annual Meeting*, 9-14 January 2016, New Orleans, LA. [Available online at <https://ams.confex.com/ams/96Annual/webprogram/Paper288963.html>].

Bernardet, L., M. Biswas, C. Holt, and S. Trahan, 2015: HWRF: Introduction to the hurricane WRF model. *16th WRF Users Workshop*, 15-19 June 2015, Boulder, CO.

Bernardet, L., V. Tallapragada, M. Biswas, C. Holt, S. Trahan, and L. Carson, 2015: Support for users and developers of the hurricane WRF model. *Interdepartmental Hurricane Conference*, 2-5 March 2015, Jacksonville, FL.

- Bernardet, L., K. Newman, C. Holt, M. Biswas, L. Carson, and J. Frimel, 2015: Community involvement with the HWRF model: the role of the developmental testbed center. *Tropical Cyclone Workshop*, 30 November 2015, Nanjing, Jiangsu, China.
- Bernardet, L., V. Tallapragada, C. Holt, S. Trahan, M. Biswas, L. Carson, H. Shao, and C. Zhou, 2015: Transition of research to the operational hurricane WRF model: the role of the developmental testbed center. *6th NOAA Testbeds and Proving Grounds Workshop*, 14-16 April 2015, Boulder, CO.
- Bernardet, L., G. Thompson, C. R. Holt, and M. K. Biswas, 2015: The impact of varying the radiation parameterization and adding a partial cloudiness scheme to hurricane WRF. *27th Conference on Weather Analysis and Forecasting / 23rd Conference on Numerical Weather Prediction*, 29 June - 3 July 2015, Chicago, IL.
- Biswas, M., J. H. Gotway, T. Jensen, B. Brown, L. Bernardet, and V. Tallapragada, 2015: Evaluation of quantitative precipitation forecasts by the hurricane weather research and forecast (HWRF) model. *16th WRF Users Workshop*, 15-19 June 2015, Boulder, CO.
- Biswas, M. K. J. Halley Gotway, T. Jensen, B. Brown, V. Tallapragada, and L. Bernardet, 2015: Evaluation of quantitative precipitation forecasts by the hurricane weather research and forecast (HWRF) model. *27th Conference on Weather Analysis and Forecasting / 23rd Conference on Numerical Weather Prediction*, 29 June - 3 July 2015, Chicago, IL.
- Blake, E., 2015: NHC's uses and needs for ensemble prediction systems. *Hurricane forecast improvement project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.
- Chen, H., 2015: The ensemble forecast of Hurricane Isaac (2012). *Hurricane forecast improvement project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.
- Cione, J., 2016: Coyote hurricane airborne observations and sensing (CHAOS). *96th American Meteorological Society Annual Meeting*, 9-14 January 2016, New Orleans, LA.
- Cione, J. J., K. Twining, D. Osbrink, E. Redweik, J. Etro, D. Downer, E. Kalina, L. Bernardet, and T. Brescia, 2015. NOAA's use of Coyote UAS in Hurricane Edouard to enhance basic understanding and improve model physics. *Interdepartmental Hurricane Conference*, March 2-5, Jacksonville, FL.
- Gopalakrishnan, S., 2016: A multi-scale modeling system for improved hurricane prediction. *96th American Meteorological Society Annual Meeting*, 9-14 January 2016, New Orleans, LA. [Available online at <https://ams.confex.com/ams/96Annual/webprogram/Paper288732.html>.
- Holt, C. R., and L. Bernardet, 2015: Best ways to take advantage of DTC services. *HFIP "Round 2" Awards Review Meeting*, 11-12 June 2015, Miami, FL.
- Holt, C., and L. Bernardet, 2015: Large scale verification of HWRF. *HRD Monthly Science Meeting*, 9 April 2015, Virginia Key, FL.
- Holt, C., L. Bernardet, V. Tallapragada, M. Biswas, S. Trahan, and L. Carson, 2015: Support for users and developers of the hurricane WRF model. *CIRES Science Rendezvous*, 1 May 2015, Boulder, CO.
- Holt, C. R., G. Thompson, L. Bernardet, and M. Biswas, 2015: Testing hurricane WRF with alternate radiation and partial cloudiness schemes. *17th Cyclone Workshop*, 25-30 October 2015, Pacific Grove, CA.
- Holt, C. R., G. Thompson, L. Bernardet, and M. Biswas, 2015: Testing hurricane WRF with alternate radiation and partial cloudiness schemes. *16th WRF Users Workshop*, 15-19 June 2015, Boulder, CO.

Holt, C., G. Thompson, L. Bernardet, M. Biswas, and C. Hartsough, 2015: Testing hurricane WRF with alternate radiation and partial cloudiness schemes. *Interdepartmental Hurricane Conference*, 2-5 March 2015, Jacksonville, FL.

Junt, F., 2015: Using stochastic ensembles to better understand hurricane predictability. *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.

Kalina, E. A., S. Y. Matrosov, F. D. Marks, J. J. Cione, D. E. Kingsmill, M. M. Bell, R. A. Black, J. C. Hubbert, W.-C. Lee, J. Vivekanandan, P. P. Dodge, and R. F. Rogers, 2016: The fall speeds and ice water paths of small and large ice species in Hurricane Arthur (2014). *32nd Conference on Hurricanes and Tropical Meteorology*, 20 April 2016, San Juan, PR.

Lu, X., and X. Wang, 2016: Improving high-resolution tropical cyclone prediction using a GSI-Based, cycled, dual resolution hybrid ensemble-variational data assimilation system for HWRF: System description and experimental results. *32nd Conference on Hurricanes and Tropical Meteorology*, 21 April 2016, San Juan, PR. [Available online at <https://ams.confex.com/ams/32Hurr/webprogram/Paper291452.html>; <https://ams.confex.com/ams/32Hurr/webprogram/Session40399.html>].

Marks, F., 2016: The hurricane forecast improvement project: Progress in hurricane prediction since Hurricane Katrina, *96th American Meteorological Society Annual Meeting*, 9-14 January 2016, New Orleans, LA. [Available online at <https://ams.confex.com/ams/96thAnnual/webprogram/Paper287350.html>].

Meléndez, D., N. Dorst, H. Friedman, T.N. Krishnamurti, W. Gray, I. Matos, R. Méndez, R. Mojica, A. Monzón, J. Toohey-Morales, and E.J. Zipser, On the scientific accomplishments of Dr. José Angel Colón Pérez, the first hurricane researcher from Puerto Rico, *32nd Conference on Hurricanes and Tropical Meteorology*, 17-22 April 2016, San Juan, PR.

Meléndez, D., F. Toepfer, N. Lett, R. Gall, C. Hedge, V. Tallapragada, F. Marks, S. Gopalakrishnan, and M. DeMaria, The hurricane forecast improvement project awards – An integral step toward research-to-operations at the National Weather Service, *32nd Conference on Hurricanes and Tropical Meteorology*, 17-22 April 2016, San Juan, PR.

Melhauser, C., 2015: A multiple-model ensemble examination of the probabilistic prediction of Hurricanes Sandy (2012), Edouard (2014), and Joaquin (2015). *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.

Morin, M., 2015: Evaluation of 2015 GFDL hurricane ensemble. *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.

Moskaitis, J., 2015: Performance of the 2015 real-time COAMPS-TC ensemble and combined COAMPS-TC/HWRF/GFDL multi-model ensemble. *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.

Musgrove, K., 2015: Development and performance of a statistical-dynamical ensemble technique for tropical cyclone intensity guidance. *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.

Newman, K. M. and L. Nance, 2015: DTC Core Activities. *HFIP Annual Review Meeting*, 17-19 November 2015, Miami, FL.

Otkin, J. A., W. Lewis, A. Lenzen, B. McNoldy, and S. Majumdar, 2016: Evaluation of microphysics and cumulus parameterization schemes in the HWRF model using satellite observations. *32nd Conference on Hurricanes and Tropical Meteorology*, 17-22 April 2016, San Juan, PR.

- Otkin, J. A., W. Lewis, A. Lenzen, B. McNoldy, and S. Majumdar, 2015: Using synthetic satellite brightness temperatures to evaluate the ability of the HWRF model to accurately simulate clouds and moisture. *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.
- Pu, Z., and S. Zhang, 2016: Improving HWRF vortex initialization through assimilation of hurricane inner-core observations with the GSI hybrid data assimilation system. *20th Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (IOAS-AOLS)/96th Amer. Meteor. Soc. annual meeting*, 9-14 January 2016. New Orleans, LA.
- Pu, Z. and S. Zhang, 2015: Improving vortex initialization in hurricane weather research and forecasting (HWRF) multiple-level nested domains with GSI hybrid data assimilation. *Hurricane Forecast Improvement Project (HFIP) Proposal Review Meeting*, 11-12 June 2015, Miami, FL
- Pu, Z., S. Zhang, M. Tong and V. Tallapragada, 2015: Influence of background error covariances on assimilating hurricane inner-core observations with HWRF and GSI hybrid data assimilation system. *27th Conference on Weather and Forecasting/23rd Conference on Numerical Weather Prediction*, 28 June - 03 July 2015, Chicago, IL, Amer. Meteor. Soc.
- Reynolds, C., 2015: Impact of model uncertainty on hurricane ensembles. *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.
- Rogers, R. F., J. A. Zhang, J. Zawislak, G. R. Alvey, E. J. Zipser, and H. Jiang, 2016: Observations of the structure and evolution of Hurricane Edouard (2014) during intensity change. Part II: Kinematic structure and the distribution of deep convection. *32nd Conference on Hurricanes and Tropical Meteorology*, 17 April 2016, San Juan, PR.
- Romine, G., 2015: Storm-scale ensemble design: Model error representation with WRF-ARW for severe storm prediction. *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.
- Rozoff, C., 2015: Probabilistic prediction of tropical cyclone intensity change using an analog ensemble. *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.
- Schumacher, A., 2015: A hybrid statistical-dynamical approach to tropical cyclone wind speed probabilities. *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.
- Shao, H., M. Hu, K. Newman, C. Zhou, D. Stark, H. Zhang, L. Bernardet, and Z. Liu, 2015: Data assimilation activities at the Developmental Testbed Center. *13rd JCSDA Technical Review Meeting and Science Workshop on Satellite Data Assimilation*, 13-15 May, College Park, MD.
- Shao, H., M. Hu, D. Stark, K. Newman, and C. Zhou, 2015: Providing operational GSI and EnKF to the research community. *16th WRF Users Workshop*, 15-19 June 2015, Boulder, CO.
- Torn, R., 2015: Application of HWRF ensemble forecasts for prediction and observation targeting. *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.
- Trahan, S., T. Brown, T.-L. Hsiao, B. Thomas, C. Holt, L. Bernardet, V. Tallapragada, H. Tolman, B. Keyger, W., and M. Lapenta, 2015. Modernizing the operational workflow and automation of the NCEP hurricane weather research and forecast (HWRF) modeling system using Python and Rocoto, *5th Symp. on Advances in Modeling and Analysis Using Python*, 4-8 January 2015, Phoenix, AZ.
- Zhang, Z., 2015: HWRF ensemble prediction system and its verification for 2015 Real time parallel experiment. *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.

- Zhang, S., Z. Pu, and C. Velden, 2016: The Impacts of assimilating enhanced atmospheric motion vectors (AMVs) on HWRF analyses and forecasts of hurricanes. *20th Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (IOAS-AOLS)/96th Amer. Meteor. Soc. Annual Meeting*. 09-14 January 2016. New Orleans, LA.
- Zhou C., H. Shao and L. Bernardet, 2015: Regional applications of the GSI-Hybrid data assimilation for high-resolution tropical storm forecasts: Tackling the intensity spin-down issue in 2014 HWRF. *16th WRF users Workshop*, 15-19 June 2015, Boulder, CO.
- Zhou, C., H. Shao, L. R. Bernardet, M. Tong, and V. Tallapragada, 2015: Regional applications of the GSI-Hybrid data assimilation for high-resolution tropical storm forecasts. *95th AMS annual meeting*, 4-8 January 2015, Phoenix, AZ.
- Zhou, K., 2015: The ensemble forecasting of tropical cyclone track in GEFS. *Hurricane Forecast Improvement Project (HFIP) Annual Review Meeting*, 17-19 November 2015, Miami, FL.