

## **HFIP 2011 Publications:**

### **Peer-reviewed Manuscripts (appeared and in press/accepted):**

- Aberson, S.D. The impact of dropwindsonde data from the THORPEX-Pacific Area Regional Campaign and the NOAA Hurricane Field Program on global tropical cyclone forecasts in the Global Forecasting System. *Monthly Weather Review* (to appear in the September issue..not yet online).
- Aberson, S.D., S.J. Majumdar, C.A. Reynolds, and B.J. Etherton. 2011: An observing system experiment for tropical cyclone targeting techniques using the Global Forecast System. *Monthly Weather Review*, 139(3):895-907 (doi:10.1175/2010MWR33979.1).
- Amarin, R.A., W.L. Jones, S.F. El-Nimri, J.W. Johnson, C.S. Ruf, T.L. Miller, and E. Uhlhorn, 2012: Hurricane wind speed measurements in rainy conditions using the airborne Hurricane Imaging Radiometer (HIRAD). *Geoscience and Remote Sensing, IEEE Transactions* **50**, 180-192 DOI: [10.1109/TGRS.2011.2161637](https://doi.org/10.1109/TGRS.2011.2161637)
- Bao, J.-W., C. W. Fairall, S. A. Michelson, L. Bianco, 2011: Parameterizations of sea-spray impact on the air-sea momentum and heat fluxes. *Mon. Wea. Rev.*, **139**, 3781-3797, DOI: 10.1175/MWR-D-11-00007.1.
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- Bozeman L.M., D. Niyogi, S. Gopalakrishnan, F. D. Marks Jr., X. Zhang, and V. Tallapragada, 2011: An HWRF-based Ensemble Assessment of the Land Surface Feedback on the Post-Landfall Intensification of Tropical Storm Fay (2008), *Natural Hazards – Special Issue on Tropical Cyclones*, <https://dx.doi.org/10.1007/s11069-011-9841-5>.
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- Thomas M. Hamill, Jeffrey S. Whitaker, Daryl T. Kleist, Michael Fiorino, Stanley G. Benjamin Predictions of 2010's Tropical Cyclones Using the GFS and Ensemble-Based Data

- Assimilation Methods *Monthly Weather Review* Volume 139, Issue 10 (October 2011) pp. 3243-3247 doi: <http://dx.doi.org/10.1175/MWR-D-11-00079.1>
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**Peer-reviewed Manuscripts (submitted):**

- Aksoy, A., S. Lorsolo, T. Vukicevic, K. J. Sellwood, S. D. Aberson, and F. Zhang. An HWRF Hurricane Ensemble Data Assimilation System (HEDAS) for high-resolution data: The impact of airborne Doppler radar observations in an OSSE, *Mon. Wea. Rev.*, in print.
- Aksoy, A., S. Lorsolo, T. Vukicevic, K. J. Sellwood, S. D. Aberson, and F. Zhang, 2011: NOAA/AOML/HRD's HWRF ensemble data assimilation system (HEDAS) for the assimilation of high-resolution hurricane inner-core data: Impact of airborne Doppler radar observations in an OSSE. *Monthly Weather Review*, accepted.
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- Bell, M. M., M. T. Montgomery, and K. A. Emanuel. Air-sea enthalpy and momentum exchange at major hurricane wind speeds observed during CBLAST *J. Atmos. Sci.*, in review.
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- Halliwell, Jr., G. R., A. Srinivasan, V. Kourafalou, D. Willey, H. Yang, and R. Atlas, Development of a fraternal twin OSSE system with application to evaluating targeted ocean observations for improving ocean model initialization for TC forecasts, to be submitted to *J. Atmos. Ocean. Technol.*
- Halliwell, Jr., G. R., S. Gopalakrishnan, D. Willey, T. Quirino, and F. Marks, Idealized study of the ocean impact on HWRF coupled tropical cyclone intensity forecasts, to be submitted to *Mon. Wea. Rev.*
- Hamill, T. M., 2011: Online appendix to Verification of TIGGE Multi-model and ECMWF Reforecast-Calibrated Probabilistic Precipitation Forecasts over the Conterminous US. *Mon. Wea. Rev.*, accepted.

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- Hamill, T. M., J. S. Whitaker, D.T. Kliest, M. Fiorino, and S. J. Benjamin, 2011: Predictions of 2010's tropical cyclones using the GFS and ensemble-based data assimilation methods. Submitted, *Mon. Wea. Rev.*, 139, 3243-3247
- Hamill, T. M., M. J. Brennan, B. Brown, M. DeMaria, E. N. Rappaport, and Z. Toth, 2012: [Future ensemble based hurricane products](#). *Bull. Amer. Meteor. Soc.*, in press (Feb 2012 issue). Also: online [Appendix A](#) and [Appendix B](#).
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- Shay, L. K., 2011: Resolving Loop Current and eddy variability from NOAA research aircraft measurements: Implications for tropical cyclone-ocean interactions, International Workshop on Tropical Cyclone-Ocean Interaction in the Northwest Pacific, Korea Ocean Research Development Institute and Korean Typhoon Center, 11-13 May, Jeju Island, South Korea, *(Invited)*
- Shay, L. K., 2011: Ocean measurements of physical processes during hurricanes, NSF Science and Technology Center Planning Meeting on Penn State University CAUSE3 Program, 19 -20 Aug, RSMAS, Miami, FL.



- Shay, L. K., and E. W. Uhlhorn, 2011: Progress and Plans for Oceanic Observations in Support of HFIP, Hurricane Forecast Improvement Project (HFIP) Workshop on Observations, NOAA, 11-12 May, Miami, FL (*Invited*)
- Shay, L. K., P. C. Meyers, and J. K. Brewster, 2011: Systematically Merged Atlantic Regional Temperature and Salinity Climatology (SMARTS) for improved satellite-derived oceanic heat content estimates. -Genesis and Rapid Intensification Program (GRIP) Workshop, NASA Hurricane Science Team, 6-8 June, January, Los Angeles CA
- Shay, L. K., 2011: Surface current measurements across the Florida Straits using Wellen Radar Technology, International Workshop on Remote Ocean Sensing Using HF Radar, NATO Undersea Research Center, 11-13 Oct, La Spezia, Italy (*Invited*)
- Shay, L. K., 2011: Aircraft surveys of Loop Current variability observed during Deep Water Horizon Oil Spill. Joint Subcommittee Ocean Science and Technology (NSF, NOAA, BOEMRE, US Coast Guard), 25-27 Oct, St. Petersburg, FL (*Invited*)
- Slocum, C. and M. Fiorino, 2011: Improved Analysis of the Tropical Cyclone Outer Wind Structure using IR Satellite Wind Retrievals in a Global Numerical Weather Prediction Model. 20th Conference on Numerical Weather Prediction, 23-27 January 2011, Seattle, Washington.
- Tallapragada, V., 2011: Hurricane model development and evaluation. Frank Marks's 60th Birthday Symposium, 07 November, 2011.
- Tolman, H. L., 2011. The art and pitfalls of coupled modeling of the air-sea interface. Tropical Cyclone - Ocean Interaction (TCOI) workshop, Jeju National University, Jeju, South Korea.
- Toth, Z, W. Smith, and P. T. McCaslin, 2012: Probabilistic Tropical Storm Position Forecasts. 92<sup>nd</sup> AMS Annual Meeting 21<sup>st</sup> Conference on Probability and Statistics, 22-26 January 2012, New Orleans, LA.
- Uhlhorn, E. W., T. L. Miller, D. S. Nolan, and R. E. Hood, 2011: Assessment of hurricane observational under-sampling and its impact on estimated intensity. 15th Symposium on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans and Land Surface, 26 January, 2011.
- van Lier-Walqui, M., 2011: Markov-chain Monte Carlo assimilation of radar reflectivity to improve microphysical parameterization. 15<sup>th</sup> Symposium on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans and Land Surface, 26 January, 2011.
- van Lier-Walqui, M., 2011: Using radar reflectivity to quantify microphysical parameterization uncertainty. HRD Seminar, 15 September, 2011.
- Voronovich, A. G. and V. U. Zavorotny: Depolarization of microwave backscattering from a rough sea surface: Modeling with small-slope approximation, Poster presentation at *International Geoscience and Remote Sensing Symposium (IGARSS'11)*, Vancouver, Canada, 24-29 July, 2011.
- Vukicevic, R., 2011: On the use of variational techniques in the estimation of nonlinear processes. AGU Conference on non-Gaussian and nonlinear aspects of data assimilation and predictability in the
- Vukicevic, T., 2011: Background forecast errors and dynamic adjustment in data assimilation at storm scale. HRD Seminar, 11 January, 2011.
- Vukicevic, T., 2011: Diagnostic analysis of short-term hurricane vortex evolution in high-resolution ensemble Kalman Filter data assimilation. 15th Symposium on Integrated

- Observing and Assimilation Systems for the Atmosphere, Oceans and Land Surface, 25 January, 2011.
- Whitaker, J.S., M. Fiorino, T.M. Hamill, S.G. Benjamin and P. Pegion, 2010: High-resolution global ensemble hurricane forecasts using an experimental ensemble Kalman filter based analysis and prediction system.  
([http://ams.confex.com/ams/29Hurricanes/techprogram/paper\\_168864.htm](http://ams.confex.com/ams/29Hurricanes/techprogram/paper_168864.htm))
- Williams, C. L., B. G. Brown, P. A. Kucera, L. Nance, M. Harrold, K. Newman, K. Arp, M. Page, T. Jensen, T. Slovacek, 2011: Tropical Cyclone Modeling Team (TCMT): Objective testing and evaluation of HFIP experimental models. Joint CSU/NOAA/NCAR Hurricane Workshop, 1 April, 2011, Boulder, Colorado.
- Williams, C. L., L. Nance, B. G. Brown, K. Crosby, M. Harrold, T. L. Jensen, and P. A. Kucera, 2011: Evaluation of retrospective forecasts from 2010 HFIP Stream 1.5 candidates. 24th Conference on Weather and Forecasting/20th Conference on Numerical Weather Prediction, 23-27 January, 2011, Seattle, Washington.
- Xie, Y., N. Prive, S. E. Koch, M. Masutani, J. S. Woollen, R. Atlas, and L. P. Riishojgaard, 2011: A preliminary assessment of UAS data impact on tropical cyclone track forecasts based on a global OSSE system. 15th Symposium on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans and Land Surface, 26 January, 2011.
- Yablonsky, R. M., 2011: HWRF ocean: The Princeton Ocean Model (POM-TC). WRF for hurricanes tutorial, Boulder, CO, 28 April 2011.
- Yablonsky, R. M., and I. Ginis, 2011: HWRF/GFDL ocean diagnostics: Some highlights of recent analysis. HFIP annual review meeting, Miami, FL, 8 November 2011.
- Yablonsky, R. M., I. Ginis, B. Thomas, J. J. Cione, G. R. Halliwell, E. W. Uhlhorn, H. S. Kim, C. Lozano, E. P. Chassignet, and H. R. Winterbottom, 2010: Validating the ocean model component of coupled hurricane-ocean models. Poster. Workshop on air-sea interactions under tropical cyclones (hurricanes), West Greenwich, RI, 10-12 April 2010.
- Zavorotny, V., D. Akos, H. Muntzing: GPS reflectometric measurements of ocean surface roughness from high-altitude aircraft, Oral presentation at *National Radio Science Meeting*, Boulder, Colorado, January, 5-8, 2011.
- Zhang, F., 2011: Assimilation of inner-core observations in numerical models. Frank Marks's 60th Birthday Symposium, 07 November, 2011.
- Zhang, J., 2011: Probing the hurricane boundary layer using NOAA's research aircraft. Invited talk at NCAR, June 2, 2011, Boulder, CO.
- Zhang, X. and S. Goldenberg, 2011: L Hurricane Weather Research and Forecasting System (HWRF) Version 3.2 model developments and verification, NOAA Hurricane Conference, 30 November, 2011.
- Zhang, X., 2011: HWRF nesting and nest moving. WRF for Hurricanes Tutorial Workshop, Boulder, 26 April, 2011.
- Zhang, X., S. Gopalakrishnan, and V. Tallapragada, 2011: Toward Improving Hurricane Intensity Forecast: the Operational Regional Model Perspective, FIU seminar. August 17, 2011.
- Zipser, E. J., R. F. Rogers, and M. T. Montgomery, 2011: Communicating the excitement of the hurricane research field programs of 2010 to the public, Part 1: Perspective of the participating scientists. Symposium on More Effectively Communicating the Science of Tropical Climate and Tropical Cyclones. 26 January, 2011.

Zou, X., 2011: Hurricane observations and their assimilation. HRD Seminar, 04 February, 2011.

Zou, X., 2011: Observation-based hurricane initialization. HRD Seminar, 03 February, 2011.

**HFIP Related Presentations at the 65<sup>th</sup> Interdepartmental Hurricane Conference, Miami, FL, 28 Feb –03 Mar, 2011.**

Bao, J.-W., S. Michelson and S. Gopalakrishnan, 2011: Controlling factors of the radius of maximum winds in HWRF.

Bernardet, L., S. Bao, C. Harrop, D. Stark, T. Brown, and L. Carson, 2011. Technology Transfer in Tropical Cyclone Numerical Modeling – The Role of the Developmental Testbed Center (DTC). Manuscript available from <http://www.ofcm.gov/ihc11/65th-IHC-booklet.pdf>.

Chen, S., J. Doyle, R. Hodur, H. Jin, J. Cummings, and J. Schmidt, 2011. An Overview of COAMPS-TC Forecasts and Targeting for ITOP.

Doyle, J.D., R. Hodur, S. Chen, J. Cummings, E. Hendricks, T. Holt, H. Jin, Y. Jin, C.-S. Liou, J. Moskaitis, M. Peng, K. Sashegyi, J. Schmidt, and S. Wang, 2011: An Overview of COAMPS-TC Development and Real-Time Tests.

Dunion, J., 2011: Dry air in the tropical cyclone environment.

Fiorino, M., 2011: Forecasting Tropical Cyclone Genesis/Development Using an Ensemble of High-Resolution Deterministic Global Models –Results from the HFIP 2010 Summer Demo. (<http://www.ofcm.gov/ihc11/Presentations/Session06/s06-06tcgenIHC65.mike.fiorino.pdf>)

Franklin, J., 2011: The use of aircraft data at NHC. HRD seminar, 19 July, 2011. from Hurricane Ike compared with WaveWatch III.

Ginis I., B. Thomas, R. Yablonsky, T. Hara, J-W Bao, C. Fairall, and L. Bianco, 2011: Progress towards developing a coupled atmosphere-wave-ocean framework for research and operational hurricane models.

Halliwell, G. R., L. K. Shay, D. Willey, J. Brewster, B. Jaimes, and G. Goni, 2011: Improving ocean model performance in coupled forecast models through oceanic initialization.

Isaac Ginis (URI), B. Thomas, R. Yablonsky, T. Hara, J. Bao, C. Fairall, and L. Bianco: Progress Towards Developing a Coupled Atmosphere-Wave-Ocean Framework for Research and Operational Hurricane Models.

Jian-Wen Bao (NOAA/ESRL), S. A. Michelson, and S.G.Gopalakrishnan: Controlling Factors of the Radius of Maximum Winds in HWRF. 65<sup>th</sup> Interdepartmental Hurricane Center, February 28 – March 3, 2011, Miami, FL.

Kim, H-S, Iredell, Y. Kwon, L. Liu, Q. Liu, C. Lozano, J. O’Connor, J. Sims, V. Tallapragada, B. Tuleya, and Z. Zhan. 2011: Validation of Coupled Hurricane Atmosphere–Ocean Model (HyHWRF).

Knaff, J.A., M. DeMaria, J. Kaplan, C. M. Rozoff, J. Kossin, and C.S. Velden, 2011: Improvements to statistical intensity forecasts.

Kucera, P.A., B. G. Brown, L. Nance, C. L. Williams, K. Crosby, and M. Harrold, 2011: Evaluating Experimental Models for Tropical Cyclone Forecasting in Support of the Hurricane Forecast Improvement Project (HFIP). Poster

- Marchok, T., and M. Bender, 2011: GFDL Hurricane Model Ensemble: Performance during the 2010 Atlantic Season.  
<http://www.ofcm.gov/ihc11/Presentations/Session06/s06-04Marchok.pptx>
- Nance, L., C. Williams, M. Harrold, K. Newman, P. Kucera, and B. Brown, 2011: Objective Evaluation of 2010 HFIP Stream 1.5 Candidates.
- PopStefanija, I. and E. J. Walsh, 2011: Developments in 2010 in In-Flight Real-Time Reporting of the Directional Ocean Wave Spectra using Wide Swath Radar Altimeter (WSRA) from the NOAA WP- 3D Hurricane Reconnaissance Aircraft
- PopStefanija, I. and E. Walsh, 2011: Wide Swath Radar Altimeter (WSRA) Wave Spectra from Hurricane Ike compared with WaveWatch III
- PopStefanija, I. and E. Walsh, 2011: Storm Surge Measurement Potential of the Wide Swath Radar Altimeter..
- Shay, L. K., B. Jaimes, J. Brewster, P. Meyers, C. McCaskill, S. Paul, E. Uhlhorn, F. Marks and G. R. Halliwell, 2011: Real time oceanic measurements of the Loop Current and Warm Core Eddy during the Deepwater Horizon Oil Spill: Implication for hurricane intensity.
- Shay, L.K., G. Halliwell, B. Jaimes, J. Brewster, W. Teague 2011: Joint Hurricane Testbed Project: Evaluation and improvement of ocean model parameterizations for NCEP operations.
- Time Reporting of the Directional Ocean Wave Spectra using Wide Swath Radar Altimeter (WSRA) from the NOAA WP- 3D Hurricane Reconnaissance Aircraft
- Yablonsky, R. M., I. Ginis, S. Lee, and B. Thomas, 2011: Developing an Atlantic Ocean initialization based on the Navy Coupled Ocean Data Assimilation (NCODA) product for the operational GFDL and GFDN hurricane models. Poster.
- Zhang, J. R. Rogers, D. S. Nolan, and F. D. Marks, 2011: On the characteristics of the hurricane boundary layer, for model evaluation purpose.