Curriculum Vitae

John F. Gamache

Office Address:
NOAA/AOML/HRD
4301 Rickenbacker Causeway
Miami FL 33145

Title: Meteorologist (ZP-IV-III)

Educational History:

1976: B.S. University of Maryland, College Park
1983: Ph. D. University of Washington, Seattle

Professional Employment:

1985-2021: Meteorologist (ZP-IV) at AOML/HRD, Miami Florida

1. Studies the wind and precipitation structure in tropical cyclones using the NOAA airborne Doppler radars
2. Develops software to perform these studies.
3. Develops automated software to produce operational, real-time quality controlled data and analyses for modeling and forecasting in the National Weather Service, software that can also be used to promote the rapid and complete analysis of airborne Doppler data collected in tropical cyclones
4. Modifies the above software so that it can be transitioned to operational entities such as the Aircraft Operations Center
5. Performs ground support for the onboard operation of the automated Doppler quality-control and analysis software aboard the NOAA WP-3D and G-IV aircraft

1983-1985: Research meteorologist at Center for the Environment and Man, Hartford, Connecticut

1. Studied the microphysical structure of tropical convection in Summer MONEX (Monsoon Experiment) using the microphysical probes aboard the NOAA WP-3D aircraft

Honors and awards:

July 2006: NOAA Administrator's Award for the development of the algorithms and related software to enable real-time analysis and transmission of wind fields and airborne Doppler radar data collected in hurricanes to improve the initialization of the new generation of hurricane forecast models. NOAA

August 2012: NOAA Administrator's Award for outstanding management of the G-IV Tail Doppler Radar project, enhancing NOAA's weather forecasting and research capability. NOAA

April 2014: Banner I. Miller Award for research described in "Performance of convection-permitting hurricane initialization and prediction during 2008-2010 with ensemble

Field Program Experience:

1985-2012 Performed as onboard radar scientist in HRD hurricane field program flights
2004-2005 Worked as the airborne Doppler radar scientist who ran developmental runs of the HRD automated quality control and analysis software, and transmitted the first real-time analysis to the National Weather Service during Hurricane Wilma (2005).
1987 Radar scientist aboard WP-3D aircraft during the Equatorial Mesoscale Experiment (EMEX)
1978 Radar scientist aboard WP-3D aircraft during Wintex MONEX (Monsoon Experiment)

Publications:

Zawislak, J., R.F. Rogers, S.D. Aberson, G.J. Alaka, G. Alvey, A. Aksoy, L. Bucci, J. Cione, N. Dorst, J. Dunion, M. Fischer, J. Gamache, S. Gopalakrishnan, A. Hazelton, H.M. Holbach, J. Kaplan, H. Leighton, F. Marks, S.T. Murillo, P. Reasor, K. Ryan, K. Sellwood, J.A. Sippel, and J.A. Zhang. *Accomplishments of NOAA'S airborne hurricane field program and a broader future approach to forecast improvement.* Bulletin of the American Meteorological Society, https://doi.org/10.1175/BAMS-D-20-0174.1 2021

Bowers, G.S., D.M. Smith, N.A. Kelley, G.F. Martinez-McKinney, S.A. Cummer, J.R. Dwyer, S. Heckman, R.H. Holzworth, F. Marks, P. Reasor, J. Gamache, J. Dunion, T. Richards, and H.K. Rassoul. *A terrestrial gamma-ray flash inside the eyewall of Hurricane Patricia.* Journal of Geophysical Research-Atmospheres, 123(10):4977-4987, doi:10.1029/2017JD027771 2018

Rogers, R.F., S.D. Aberson, A. Aksoy, B. Annane, M. Black, J.J. Cione, N. Dorst, J. Dunion, J.F. Gamache, S.B. Goldenberg, S.G. Gopalakrishnan, J. Kaplan, B.W. Klotz, S. Lorsolo, F.D. Marks, S.T. Murillo, M.D. Powell, P.D. Reasor, K.J. Sellwood, E.W. Uhlhorn, T. Vukicevic, J.A. Zhang, and X. Zhang. NOAA's Hurricane Intensity Forecasting Experiment (IFEX): A progress report. Bulletin of the American Meteorological Society, 94(6):859-882, doi:10.1175/BAMS-D-12-00089 2013

S. Lorsolo, J. Gamache, and A. Aksoy. Evaluation of the Hurricane Research Division Doppler Radar Analysis Software Using Synthetic Data. Journal of Atmospheric and Oceanic Technology, 30(6): 1055-1071. https://doi.org/10.1175/JTECH-D-12-00161.1 2013

Rogers, R., S. Lorsolo, P. Reasor, J. Gamache, and F. Marks, Jr. Multiscale Analysis of Tropical Cyclone Kinematic Structure from Airborne Doppler Radar Composites.

Monthly Weather Review, 140(1): 77-99. https://doi.org/10.1175/MWR-D-10-05075.1 2012

Zhang, F., Y. Weng, F. J.F. Gamache, and F.D. Marks, Jr. Performance of convection-permitting hurricane initialization and prediction during 2008–2010 with ensemble data assimilation of inner-core airborne Doppler radar observations. Geophysical Research Letters, 38 (15). https://doi.org/10.1029/2011GL048469 2011

Powell, M.D., S. Murillo, P. Dodge, E. Uhlhorn, J. Gamache, V. Cardone, A. Cox, S. Otero, N. Carrasco, B. Annane, R.l St.Fleur. Reconstruction of Hurricane Katrina's wind fields for storm surge and wave hindcasting. Ocean Engineering, 37(1): 26-36. https://doi.org/10.1016/j.oceaneng.2009.08.014 2010

Lorsolo, S., J.A. Zhang, F.D. Marks, Jr., and J.F. Gamache. Estimation and Mapping of Hurricane Turbulent Energy Using Airborne Doppler Measurements. Monthly Weather Review, 138(9): 3656-3670. https://doi.org/10.1175/2010MWR3183.1 2010

Reasor, P.D., M.D. Eastin, and J.F. Gamache. Rapidly intensifying hurricane Guillermo (1997). Part I: Low-wavenumber structure and evolution. Monthly Weather Review, 137(2): 603-631. https://doi.org/10.1175/2008MWR2487.1 2009

Gamache, J. F., , Dodge P. P. , , and Griffin N. F. , 2008: Automatic quality control and analysis of airborne Doppler data: Real-time applications, and automatically post-processed analyses for research. Preprints, *28th Conf. on Hurricanes and Tropical Meteorology,* Orlando, FL, Amer. Meteor. Soc., P2B.12. [Available online at http://ams.confex.com/ams/pdfpapers/137969.pdf.] 2008

Landsea, C.W., D. A. Glenn, W. Bredemeyer, M. Chenoweth, R. Ellis, J. Gamache, L Hufstetler, C. Mock, R. Perez, R. Prieto, J. Sanchez-Sesma, D. Thomas, and L. Woolcock. A Reanalysis of the 1911–20 Atlantic Hurricane Database. Journal of Climate, 21(10): 2138-2168. https://doi.org/10.1175/2007JCLI1119.1 2008

Eastin, M. D., , P. D. Reasor, , D. S. Nolan, , F. D. Marks Jr., , and J. F. Gamache. Evolution of low-wavenumber vorticity during rapid intensification: A dual-Doppler analysis. Preprints, *27th Conf. on Hurricanes and Tropical Meteorology,* Monterey, CA, Amer. Meteor. Soc., 4B.6. 2006

Eastin, M.D., P.D. Reasor, J.F. Gamache, F.D. Marks, Jr., and M.L. Black. Observed evolution of eyewall convection and low-wavenumber flow in Hurricane Guillermo

(1997). Preprints, 26th AMS Conference on Hurricanes and Tropical Meteorology. 2004

Gamache, J. F., , J. S. Griffin Jr., , P. P. Dodge, , and N. F. Griffin. Automatic Doppler analysis of three-dimensional wind fields in hurricane eyewalls.Preprints, *26th Conf. on Hurricanes and Tropical Meteorology,* Miami, FL, Amer. Meteor. Soc., 5D.4. [Available online at http://ams.confex.com/ams/pdfpapers/75806.pdf]. 2004

Gedzelman, S., J. Lawrence, J. Gamache, M. Black, E. Hindman, R. Black, J. Dunion, H. Willoughby, and X Zhang. Probing Hurricanes with Stable Isotopes of Rain and Water Vapor. Monthly Weather Review, 131(6): 1112-1127. https://doi.org/10.1175/1520-0493(2003)131%3C1112:PHWSIO%3E2.0.CO;2 2003

Lawrence, J.R., Gedzelman, S.D., Gamache, J. *et al.* Stable Isotope Ratios: Hurricane Olivia. *Journal of Atmospheric Chemistry* 41, 67–82 (2002). https://doi.org/10.1023/A:1013808530364 2002

M. L. Black, J. F. Gamache, F. D. Marks Jr., C. E. Samsury, and H. E. Willoughby. Eastern Pacific Hurricanes Jimena of 1991 and Olivia of 1994: The Effect of Vertical Shear on Structure and Intensity. Monthly Weather Review, 130(9): 2291-2312. https://doi.org/10.1175/1520-0493(2002)130%3C2291:EPHJOA%3E2.0.CO;2 2002

Lee, W.-C., R. M. Wakimoto, and J. F. Gamache. Fine scale structure of a squall line observed by the NCAR ELDORA. Preprints, 21st Conf. on Severe Local Storms, San Antonio, TX, Amer. Meteor. Soc., 12 August-16 August, 2002, 29-31. 2002

Reasor, P.D., M.T. Montgomery, F.D. Marks, and J.F. Gamache. Low-wavenumber structure and evolution of the hurricane inner core observed by airborne dual-Doppler radar. Monthly Weather Review, 128(6):1653-1680, doi:10.1175/1520-0493(2000)1282.0.CO;2 2000

Gamache, J. F.. Evaluation of a fully three-dimensional variational Doppler analysis technique. Preprints, *28th Conf. on Radar Meteorology,* Austin, TX, Amer. Meteor. Soc., 422–423. 1997

Black, M.L., , J.F. Gamache, , H.E. Willoughby, , C.E. Samsury, , F.D. Marks, , and R.W. Burpee. Airborne radar observations of shear-induced asymmetries in the convective structure of Hurricane Olivia (1994). Preprints, *28th Conf. on Radar Meteorology,* Austin, TX, Amer. Meteor. Soc., 577–578. 1997

J.F. Gamache, F.D. Marks, Jr., and F. Roux. Comparison of Three Airborne Doppler Sampling Techniques with Airborne In Situ Wind Observations in Hurricane Gustav (1990). Journal of Atmospheric and Oceanic Technology, 12(1): 171-181. https://doi.org/10.1175/1520-0426(1995)012%3C0171:COTADS%3E2.0.CO;2 1995

J.F. Gamache, R.A. Houze, Jr., and F.D. Marks. Dual-Aircraft Investigation of the inner Core of Hurricane Norbert. Part III: Water Budget. Journal of the Atmospheric Sciences, 50(19): 3321-3243. https://doi.org/10.1175/1520-0469(1993)050%3C3221:DAIOTI%3E2.0.CO;2 1993

Marks, F D., Jr., R.A. Houze, Jr., and J.F. Gamache Dual-aircraft investigation of the inner core of Hurricane Norbert. Part I: kinematic structure. Journal of the Atmospheric Sciences. https://doi.org/10.1175/1520-0469(1992)049%3C0919:DAIOTI%3E2.0.CO;2 1992

Gamache, J.F., F. Roux, and F.D. Marks, Jr. Comparisons of three methods to deduce three-dimensional wind fields in a hurricane with airborne Doppler radar. Preprints, 25th International Conference on Radar Meteorology, Paris, France, American Meteorological Society, 462-465. 1991

Barnes, G.M., J.F. Gamache, M.A. LeMone, and G.J. Stossmeister.A Convective Cell in a Hurricane Rainband. Monthly Weather Review, 119(3): 776-794. https://doi.org/10.1175/1520-0493(1991)119%3C0776:ACCIAH%3E2.0.CO;2 1991

J.F. Gamache. Microphysical Observations in Summer MONEX Convective and Stratiform Clouds. Monthly Weather Review, 118(6): 1238-1249. https://doi.org/10.1175/1520-0493(1990)118%3C1238:MOISMC%3E2.0.CO;2 1990.

J.F. Gamache and R.A Houze, Jr. Further Analysis of the Composite Wind and Thermodynamic Structure of the 12 September GATE Squall Line. Monthly Weather Review, 113(8): 1241-1260. https://doi.org/10.1175/1520-0493(1985)113%3C1241:FAOTCW%3E2.0.CO;2 1985

Gamache, J.F. A composite analysis of a tropical squall-line system. Ph. D. dissertation, University of Washington, 318pp. 1983

J.F. Gamache and R.A. Houze, Jr. Water Budget of a Mesoscale Convective System in the Tropics. Journal of the Atmospheric Sciences, 40(7): 1835-1850.

https://doi.org/10.1175/1520-0469(1983)040%3C1835:WBOAMC%3E2.0.CO;2
1983

Gamache, J.F., and R.A. Houze, Jr. Mesoscale air motions associated with a tropical squall line. Monthly Weather Review, 110 (2): 118-135.
https://doi.org/10.1175/1520-0493(1982)110%3C0118:MAMAWA%3E2.0.CO;2
1982

Gamache, J.F., and R.A. Houze, Jr. The water budget of a tropical squall-line system. Preprints, 20th Conference on Radar Meteorlology. American Meteorological Society, Boston MA., 1981, pp. 346-352.

R.A. Houze, Jr., C.-P. Cheng, C.A. Leary, and J.F. Gamache. Diagnosis of Cloud Mass and Heat Fluxes from Radar and Synoptic Data. Journal of the Atmospheric Sciences, 37(4): 754-773.
https://doi.org/10.1175/1520-0469(1980)037%3C0754:DOCMAH%3E2.0.CO;2
1980

Pending publications:

Fischer, Michael S., Paul D. Reasor, Robert F. Rogers, and John F. Gamache. An analysis of tropical cyclone vortex and convective characteristics in relation to storm intensity using a novel airborne Doppler radar database. Submitted to Monthly Weather Review, In Review.

1. Publications
    a. Peer reviewed journal articles (complete, accurate citation including pages)
    b. Non peer reviewed journal articles (including pages)
    c. Others (e.g. in-house, contract reports, workshops)
    d. Abstracts
2. Development accomplishments
    a. Advances in technology (e.g., equipment, systems, materials, processes, techniques and procedures) (most significant, year)
    b. Patents received
    c. Inventions
    d. Programs planned, formulated, defined, monitored, managed and evaluated
    e. Projects planned, formulated, defined, monitored, managed and evaluated
    f. Others
3. Transitions of research to applications
4. Selected Presentations (most significant, place, year, indicate invited presentations)
    a. Talks presented at professional meetings
    b. Posters presented at professional meetings
    c. Other seminars/presentations (e.g., universities, Councils, etc.)
5. Professional Affiliations / Activities / Service (indicate invited activities)
    a. Professional societies/organizations (include offices held)
    b. Editorial and technical reviews
    c. Membership on panels
    d. Advisory services (e.g., reports or presentations to government or non-government
    e. agencies in the form of resource management or other scientific advice)
    f. Workshops organized, chaired; sessions organized, chaired at professional meetings
    g. Teaching and mentoring (courses taught; students advised)
6. Agency Service
    a. Committees
    b. Other
7. Other relevant information
8. References (up to five individuals who are familiar with professional qualifications, include name, position, mailing address, email address, and phone)