

Matthew G. Fearon

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Education

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| Ph.D, Dec 2015 | Atmospheric Science | University of Nevada, Reno |
| M.S., 2000 | Atmospheric Science | University of Nevada, Reno |
| B.S., 1998 | Meteorology | University of Massachusetts, Lowell |

Dissertation Title: Mesoscale adjustments within the planetary boundary layer in tropical and extratropical environments

Professional Interests

Dr. Fearon's research interests center on the interaction of mid-latitude and tropical weather systems. **However, most recently, Matthew has examined the evolution of the atmospheric dynamics (at the synoptic and meso scales) that establish the precursor environment of the tropical storm, in particular, the avenue of low-level vorticity generation between coastal terrain rises and offshore vortex intensification.** Use of numerical simulations, as from the Weather Research and Forecasting model, against atmospheric remote sensing data (e.g., Lidar backscatter, Scatterometer-winds, TRMM-Rainfall, Cloud-brightness temperature) and other observational measurements, have been the primary tools for the former investigation. Alongside research, Matthew has a sincere interest in teaching and mentoring students on many aspects of climate and meteorology. Other topics of interest include, but are not limited to: Examination of historical aspects and progress in atmospheric science; Development of science application tools and decision support systems integrating meteorological theory; Programming, analysis, and visualization on environmental datasets.

Research Appointments

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| Sept 2011 – present | Research Meteorologist, Desert Research Institute, Reno, NV |
| Apr 2010 – Sept 2011 | Hourly Research Scientist, Desert Research Institute, Reno, NV |
| Mar 2007 – Oct 2010 | Research Scientist, Applied GeoSolutions, LLC, Durham, NH |
| Feb 2002 – July 2007 | Research Scientist, University of New Hampshire, Durham, NH |
| Nov 2000 – Jan 2002 | Research Associate, Yale University, New Haven, CT |
| Aug 1998 – Oct 2000 | Graduate Research Assistant, Desert Research Institute, Reno, NV |
| 1997-1998 | Undergraduate Intern, Weather Services Corporation, Lexington, MA |

Teaching/Mentoring Experience

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| Spring 2014 | Co-Instructor, Python Programming for science applications, UNR/DRI, Reno NV Course Description: The basic fundamentals of Python programming were presented by example. In-class coding and problem solving was performed by graduate students studying atmospheric and earth science disciplines. Example topics included, but were not limited to text-file manipulation; GIS strategies for point, raster, and vector formats; Manipulation of binary datasets; Iteration methods; and Web-data retrieval. |
| Nov 2010 – Dec 2015 | Graduate student co-advisor, DRI, Reno NV Provided one-on-one problem-solving guidance to graduate students related to data analysis and programming |

Peer-reviewed Publications

- Fearon, M.G.**, M.L. Kaplan, and J.F. Mejia. Hurricane Sandy (2012). Part II: The dynamics within the Caribbean environment preceding rapid development. In prep. *Journal of Geophysical Research – Atmospheres*.
- Fearon, M.G.**, M.L. Kaplan, and J.F. Mejia. Hurricane Sandy (2012). Part I: The tropical-extratropical environment preceding incipient development. In prep. *Journal of Geophysical Research – Atmospheres*.
- Fearon, M.G.**, T.J. Brown, and G.M. Curcio, 2015: Establishing a national standard for operational mixing height determination. *J. Operational Meteor.* 3 (15) 172-189.
- Lewis, J.M., **M.G. Fearon**, and H.E. Klieforth, 2012. Herbert Riehl: Intrepid and enigmatic scholar. *Bull. Amer. Meteor. Soc.*, 93 (7) 963-985.
- Torbick, N., W. Salas, X. Xiao, P. Ingraham, **M.G. Fearon**, C. Biradar, D. Zhao, Y. Liu, P. Li and Y. Zhao, 2011. Integrating SAR and optical imagery for regional mapping of paddy rice attributes in the Poyang Lake Watershed, China. *Can. J. Remote Sensing*, 37, 17-26.
- Ito, A., J.E. Penner, M.J. Prather, C.P.D. Campos, R.A. Houghton, T. Kato, A.K. Jain, X. Yang, G.C. Hurtt, S. Frolking, **M.G. Fearon**, L.P. Chini, A. Wang, and D.T. Price, 2008. Can we reconcile differences in estimates of carbon fluxes from land-use change and forestry for the 1990s? *Atmospheric Chemistry and Physics*, 8, 1-19.
- Hurtt, G.C., S. Frolking, **M.G. Fearon**, B. Moore III, E. Shevliakova, S. Malyshev, S. Pacala, R.A. Houghton, 2006. The underpinnings of land-use history: three centuries of global gridded land-use transitions, wood harvest activity, and resulting secondary lands. *Global Change Biology*, 12, 1-22.
- Smith, R.B., Q. Jiang, **M.G. Fearon**, P. Tabary, M. Dorninger, J.D. Doyle, and R. Benoit, 2003. Orographic precipitation and airmass transformation: An alpine example, *Quarterly Journal of the Royal Meteorological Society*, 129 (588): 433-454 Part B.

Reports/Books

- Coauthor.** Tropical Weather Summary—Pacific Island Network. Annual Weather/Climate Data Summary. National Park Service Report. In press for 2016.
- Lewis, J.M., T.H. Vonderhaar, W.P. Menzel, F. House, H. Moosmüller, J. Phillips, and **M.G. Fearon**. Verner Suomi: His view of climate and weather from space. AMS Book In Prep for 2016.

Recent Presentations

- Fearon, M. G.**, Brown, T. J., Curcio, G. M., 2015: Establishing a national standard for operational mixing height determination, AMS 11th Symposium on Fire and Forest Meteorology: Minneapolis, MN, May 5, 2015
- Fearon, M. G.**, Kaplan, M. L., 2014: Diagnosing the tropical-extratropical pre-superstorm environment over the Northern Hemisphere, 94th AMS Annual Meeting: Atlanta, GA, February 2, 2014
- Fearon, M. G.**, Lewis, J. M., Klieforth, H. E., 2012: The Partnership of Herbert Riehl and Joanne Simpson, 92nd AMS Annual Meeting: New Orleans, LA, January 22, 2012

Programming Skills

Unix, PC, and Mac OS; Python and OSGeo modules; R-proj stats/scripting; C; Fortran; NCAR Command Language (NCL); Strong working knowledge of the Weather Forecasting and Research (WRFv3.5) model – local and remote supercomputer setup/compilation, parameterization testing, and usage/analysis on tropical and mid-latitude case studies

Honors/Awards

2011 UMASS Lowell alumni profile in meteorology

2009-2010 SBIR-NSF Principal Investigator Award, \$100K, “Design and development of a Precipitation Imaging and Characterization System (PICS)”, Applied GeoSolutions, LLC

1998 UMASS Lowell departmental award for outstanding academic achievement in meteorology

Professional Societies

American Meteorological Society; American Geophysical Union; National Weather Association; Mount Washington Observatory