Kyle MacRitchie, PhD
Atmospheric & Data Scientist

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I learn quickly, think critically, work carefully, read often, and never stop questioning how the world works. I've been coding since I was 13, when computers were beige boxes with 56.6K modems and PHP 3 was in vogue.

I believe that real innovation happens when we push the boundaries of meteorology and data science instead of working within the boxes that others have drawn. You can count on me to push myself to the edges of science and constantly challenge myself as I solve your most difficult problems.

Recent Experience

Meteorologist
2016 – Present

Climate Prediction Center (2018 – present) / Innovim (2016 – 2018)
- Model calibration using statistical techniques for weeks 3+4
- Statistical forecasting w/ neural networks for weeks 3+4
- MJO predictions, U.S. hazards, tropical hazards & week 3-4 forecasting
- Python + ArcPy scripting to support ArcMap use in our operational products

Consultant
2013 – 2016

Riskpulse (formerly EarthRisk Technologies)
- Worked to improve predictions using intraseasonal and interannual atmospheric and oceanic variability
- Spearheaded a number of projects to assess model skill and bias under different atmospheric regimes. Created website with this info for clients
- Worked with team to refine ideas and incorporate into other projects as appropriate

Data Support Scientist
2015 – 2016

NASA Goddard (GES-DISC) / ADNET Systems, Inc
- Managed transition of metadata for >1,000 products to new database
- Created multiple Python programs to interface with EarthData's RESTful API for myself and others to use

Lecturer
2013 – 2015

College at Oneonta
- Full-time lecturer, temporary position in which I created and taught Introduction to Meteorology, Tropical Meteorology, Physical Meteorology (Thermodynamics), Environmental Issues, and Senior Seminar

Skills

Software	Office; Linux, macOS, and Windows; I'm most at home with a terminal running bash, ArcMap
Web & Related	RESTful APIs, Google Maps API, HTML, CSS, PHP, JavaScript, XML, virtual machines
Data Tools	MATLAB, Python (incl. Anaconda, NumPy, Keras, Pandas, etc), NCL, GEMPAK, ArcPy
Statistics/ML	artificial neural networks, regression, PC/EOF analysis, CCA, cluster analysis, significance testing, time-series analysis, Fourier transforms, etc.
Datasets	netCDF, HDF, GRIB, binary, GrADS, csv, txt, etc.
Model Data	ECMWF, JMA, GFS, CFS (forecasts, hindcasts and reanalyses), TRMM, GPM + many more

Education

Ph.D in Atmospheric Science
Advisor: Paul Roundy

University at Albany/SUNY in Albany, NY (2014)
- Large-scale tropical variability, tropical/midlatitude interactions, statistical analysis and forecasting

B.S. in Atmospheric Science and Mathematics

University at Albany/SUNY in Albany, NY (2009)

Website – www.KyleMacRitchie.com
- I created the website and I run the cloud server: Linux, Apache, and Plesk
- Developed unique hovmöller diagrams and latitude-longitude maps to display equatorial waves
- Site has hundreds of regular users from the academic, government, energy, agriculture, and enthusiast sectors
- Site incorporates data from NOAA's CFS reanalysis and forecast datasets
- Most maps are updated daily in near real-time

Professional Development
- Peer Reviewer – ongoing
- NCAR ASP Summer Colloquium: Weather-Climate Intersection (Boulder, CO 2012)
  - Selected to participate in a 3-week summer colloquium where leading scientists discussed challenges associated with understanding the weather-climate intersection

Peer-Reviewed Publications and Presentations
- MacRitchie, K., and P.E. Roundy. 2016: The two-way relationship between the Madden Julian oscillation and anticyclonic wave breaking. Quart. J. Royal Meteor. Society. Accepted; in press.

- Roundy P.E., N. Sakaeda, L. Gloeckler, K. MacRitchie. 2015: Weather climate interactions and extreme events in the climate system. Amer. Geophys. Union Books. Accepted.

- MacRitchie, K., and P. E. Roundy, 2012: Potential vorticity accumulation following atmospheric Kelvin waves in the active convective region of the MJO. J. Atmos. Sci., 69, 908-914.

- Roundy, P. E., K. MacRitchie, J. Asuma, T. Melino, 2010: Modulation of the global atmospheric circulation by combined activity in the Madden–Julian oscillation and the El Niño–Southern oscillation during boreal winter. J. Climate, 23, 4045–4059.

- I have given > 10 presentations at conferences including talks at the AMS and AGU annual meetings.