Andrew N. Poppick

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Research Interests

Statistical applications to climate and weather, temporal nonstationarity, spectral analysis, spatial-temporal processes

Education

Ph.D., Statistics, University of Chicago, 2016
Advisor: Michael L. Stein
Dissertation: "Statistical Methods for Climatic Processes with Temporal Non-Stationarity"

B.A. (*with honors*), Statistics, University of Chicago, 2010

Professional Appointments

Carleton College, Northfield, MN
Assistant Professor of Statistics, September 2016 - present

Publications

Poppick, A. & McKinnon, K. A. (2020). Observation-Based Simulations of Humidity and Temperature Using Quantile Regression. *Journal of Climate*, **33**(24): 10691-10706.

Poppick A., Nardi, J.*, Feldman, N.*, Baker, A. H., & Hammerling, D. M. (2020). A Statistical Analysis of Compressed Climate Model Data. *Computers & Geosciences*, **145**: 104599.

McKinnon, K. A. & Poppick, A. (2020). Estimating changes in the observed relationship between humidity and temperature using noncrossing quantile smoothing splines. *Journal of Agricultural, Biological, and Environmental Statistics*, **25**(3): 292-314.

McKinnon, K. A., Poppick, A., Dunn-Sigouin, E., & Deser, C. (2017). An "Observational Large Ensemble" to compare observed and modeled temperature trend uncertainty due to internal variability. *Journal of Climate*, **30**(19): 7585-7598.

Poppick, A., Moyer, E. J., & Stein, M. L. (2017). Estimating trends in the global mean temperature record. *Advances in Statistical Climatology, Meteorology and Oceanography,* **3**(1): 33-53.

Klavans, J., Poppick A., Sun, S., & Moyer, E. J. (2016). The influence of model resolution on temperature variability. *Climate Dynamics,* **48**(8): 3035-3045.

Poppick, A., McInerney, D. J., Moyer, E. J., & Stein, M. L. (2016). Temperatures in transient climates: improved methods for simulations with evolving temporal covariances. *Annals of Applied Statistics,* **10**(1): 477-505.

Poppick A. & Stein M. L. (2014). Using covariates to model dependence in nonstationary, high-frequency meteorological processes. *Environmetrics*, **25**(5): 293–305.

Peer-Reviewed Conference Papers

Poppick A., Nardi, J.*, Feldman, N.*, Baker, A. H., & Hammerling, D. M. (2018). A Statistical Analysis of Compressed Climate Model Data. *The Fourth International Workshop on Data Reduction for Big Scientific Data (with SC18).*

Technical Reports

Nardi, J.*, Feldman, N.*, Poppick A., Baker, A., & Hammerling, D. M. (2018). Statistical Analysis of Compressed Climate Model Data. NCAR Technical Note NCAR/TN-547+STR, 60 pp, doi:10.5065/D6HQ3XQJ.

*indicates undergraduate coauthors

Teaching Experience

At Carleton College

- MATH 215: Introduction to Statistics (Autumn 2016, Spring 2017, Winter 2018, Spring 2018, Winter 2019, Spring 2019)
- MATH 245: Applied Regression Analysis (Winter 2017, Autumn 2017, Autumn 2018)
- MATH 265: Probability (Winter 2018)
- MATH 275: Introduction to Statistical Inference (Spring 2017, Spring 2019)
- MATH 280: Statistical Consulting (Autumn 2018, Winter 2019, Spring 2019)
  Clients have included: College Possible, Community Action Center of Northfield, Hennepin County, Mathematical Association of America, Metro Transit, Northfield Public Schools
- MATH 315: Time Series Analysis (Spring 2018)

At the University of Chicago

As Instructor:

- STAT 200: Elementary Statistics (Spring 2013)

As Course Assistant:

- STAT 200: Elementary Statistics (Autumn 2011)
- STAT 220: Statistical Methods and Applications (Autumn 2009)
- STAT 222: Linear Models and Experimental Design (Spring 2016)
- STAT 224: Applied Regression Analysis (Autumn 2012, Autumn 2013, Spring 2015)
- STAT 244: Statistical Theory and Methods I (Winter 2012)
- STAT 343: Applied Linear Statistical Methods (Autumn 2015)
- STAT 345: Design/Analysis of Experiments (Winter 2014, Winter 2015)

Undergraduate Research Projects Supervised

- Trevor Freeland, Pedro Girardi, and Joseph Nardi (Autumn 2018 - Winter 2019). "A statistical analysis of changes in extreme precipitation in the coastal Carolinas" (Senior Integrative Exercise)
- Noah Feldman and Joseph Nardi (Summer 2018). "A statistical analysis of compressed climate model data"
- Melissa Bain, Caitlin Eichten, Il Shan Ng, and Lianne Siegel (Winter - Spring 2017). "Estimating the uncertainty in temperature trends due to internal climate variability" (Senior Integrative Exercise)

Presentations

Improved observation-based simulations of temperature and humidity accounting for projected variability changes from a climate model, August 2020. Joint Statistical Meetings, virtual conference

Improved observation-based simulations of temperature and humidity accounting for projected variability changes from a climate model, March 2020. University of Massachusetts – Amherst Statistics and Probability Seminar, Amherst, MA (*postponed due to COVID-19*)

Improved observation-based simulations of temperature and humidity accounting for projected variability changes from a climate model, November 2019. University of Minnesota School of Statistics Seminar, Minneapolis, MN

Statistical analysis of compressed climate model data, August 2018. CISL Visitor Program Brown Bag Seminar, National Center for Atmospheric Research, Boulder, CO. (with Joseph Nardi and Noah Feldman as primary presenters)

An 'Observational Large Ensemble' to compare observed and modeled temperature trend uncertainty due to internal variability, July 2017. American Meteorological Society Conference on Probability and Statistics, Baltimore, MD

An 'Observational Large Ensemble' to compare observed and modeled temperature trend uncertainty due to internal variability, March 2017. Ocean and Climate Physics Seminar, Lamont-Doherty Earth Observatory, Palisades, NY

Temperatures in transient climates: improved methods for simulations with evolving temporal covariances, August 2016. ENVR Student Paper Winner Topic Contributed Session, Joint Statistical Meetings, Chicago, IL

Using spectral methods to quantify changes in temperature variability across frequencies*, December 2014. American Geophysical Union Fall Meeting, San Francisco, CA (*presenting author: Andrew Poppick, first author: Shanshan Sun)

Bivariate, nonstationary, high frequency surface meteorological processes given known covariates, May 2013. Argonne National Laboratory, IL

Poster Presentations

An 'Observational Large Ensemble' to compare observed and modeled temperature trend uncertainty due to internal variability, December 2017. American Geophysical Union Fall Meeting, New Orleans, LA

Trends and associated uncertainties in the global mean temperature record, December 2016. American Geophysical Union Fall Meeting, San Francisco, CA

Temperatures in transient climates: improved methods for simulations with evolving temporal covariances, January 2016. Conference on Probability and Statistics in the Atmospheric Sciences, American Meteorological Society Annual Meeting, New Orleans, LA

Observation-based simulations of future temperatures with changes in variability predicted by a climate model, August 2015. Invited poster presentation, STATMOS Statistics in the Atmospheric Sciences, Joint Statistical Meetings, Seattle, WA

Simulating future transient climates by combining observational data with climate model information using time-varying spectral methods, December 2014. American Geophysical Union Fall Meeting, San Francisco, CA

Time-varying spectral methods for modeling projected future changes in temperature variability and producing data-driven simulations of future transient climates, September 2014. STATMOS Annual Meeting, Chicago, IL

Using covariates to model dependence in nonstationary, high frequency meteorological processes, August 2014. Invited poster session, STATMOS/NCAR Statistics in the Atmospheric Sciences, Joint Statistical Meetings, Boston, MA

External Grants & Funding

Computational and Information Systems Laboratory Visitor Program (CVP) travel grant, National Center for Atmospheric Research, August 2018 ($2,500)

Awards & Honors

ENVR Student Paper Competition, 2016

Awarded for the manuscript "Temperatures in transient climates: improved methods for simulations with evolving temporal covariances", presented at JSM 2016

David Wallace Award for Applied Statistics, 2015

Awarded annually by the University of Chicago Department of Statistics to two students working on applications in scientific domains

Professional Service at Carleton

Academic Standing Committee (2017 - 2019)

Colloquium and events organizer, Department of Mathematics and Statistics (2017 - 2019)

Statistics lab assistant training, Department of Mathematics and Statistics (2018 - 2019)

Social activities coordinator, Department of Mathematics and Statistics (2016 - 2017)

Professional Service Outside Carleton

Probability and Statistics Committee, American Meteorological Society (2015 - present)

Referee for submissions to: *Acta Geophysica; The American Statistician; Annals of Applied Statistics; Biometrika*; *Climatic Change*; *Journal of Agricultural, Biological, and Environmental Statistics*; *Journal of Climate; NSF Climate and Large-scale Dynamics Program*

Program Committee member for The 9th International Workshop on Climate Informatics (Paris, France, October 2019)

Other Professional Experience

Statistical Analyst at The Cambridge Group, Chicago, IL June 2010 - June 2011