Fisseha Berhane
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Education

Johns Hopkins University, Baltimore, MD
Ph.D. Candidate, Earth and Planetary Sciences, 2015
Thesis: Intraseasonal precipitation variability over tropical Africa
Advisor: Benjamin F. Zaitchik
M.A., Earth and Planetary Sciences May 2013

University of Connecticut
M.S., Natural Resources and the Environment, May 2011
Thesis: Model based assessment of potential impacts of climate change on the flow of the main headwaters of the Nile River: Equatorial Lakes Region and Blue Nile Basins
Advisor: Richard Anyah

Mekelle University, Ethiopia
B.Sc., Civil Engineering, June 2006

Research Positions

Graduate Research Assistant, Department of Earth and Planetary Science, Johns Hopkins University, Baltimore, Maryland. August 2011 – 2015

- Built semi-automated rainfall prediction models, with various machine learning techniques such as Tree-based ensemble models (**Random Forest** and **Boosting**), **Support vector Machines** and **Artificial Neural Network**, with **R,** HTML, JavaScript, and CSS.
- Employed various statistical analysis and data mining techniques using **Python** and **R** to understand interactions of atmospheric waves and their impacts on rainfall using large volume climate data.
- Analyzed large volume climate data, using **Python** and **R,** to investigate future climate conditions
- Completed many side-projects on big data using **Spark** (e.g., movie recommendation, web server log analysis, text mining and entity resolution and click-through prediction; available on my website)
- Worked on many other side-projects using R (available on my website)
- In addition to the data science courses I have done in grad school, I have taken more than 20 edx, coursera and Udacity data science courses with R, Spark, Python, Matlab, and Hadoop and MapReduce (certificates on my website)

Graduate Research Assistant, Department of Natural Resources and the Environment, University of Connecticut, Storrs, CT 2009 – May 2011

- Built and evaluated a model that predicts Nile River flow. Further, examined possible impacts of climate change on river flow using different climate scenarios.
- The main tools I used in this study: **R**, **Python** and GIS.

Awards

Research Assistantship, Department of Earth and Planetary Sciences, Johns Hopkins University, Baltimore, Maryland 2012-2015

Morton K. Blaustein Fellowship, Department of Earth and Planetary Sciences, Johns Hopkins University, Baltimore, Maryland 2011-2012

Research Assistantship, Department of Natural of Resources and the Environment, University of Connecticut, Storrs, CT 2009-2011

Teaching Experience

Teaching assistant (TA), Department of Earth and Planetary Science, The Johns Hopkins University, Baltimore, Maryland. Spring 2013

Assistant Lecturer, Department of Civil Engineering, Mekelle University, Ethiopia 2006-2009

Peer-Reviewed publications

Berhane F and BF Zaitchik: An MJO-mediated mechanism to explain ENSO and IOD impacts on East African short rains. in prep.

Berhane F, BF Zaitchik and HS Badr, 2015: The Madden-Julian Oscillation's influence on Spring Precipitation over Equatorial West Africa. J. Climate. doi: http://dx.doi.org/10.1175/JCLI-D-14-00510.1.

Berhane F and BF Zaitchik, 2014: Modulation of Daily Precipitation over East Africa by the Madden–Julian Oscillation. J. Climate, 27(15): 6016-6034. doi: http://dx.doi.org/10.1175/JCLI-D-13-00693.1.

Berhane F, BF Zaitchik and A Dezfuli, 2013: Sub-seasonal analysis of precipitation variability in the Blue Nile River basin. J. Climate, 27(1): 325-344. doi: http://dx.doi.org/10.1175/JCLI-D-13-00094.1.

Data Science related courses I have done in undergrad, grad school and online

In Graduate School
Time Series Analysis
Statistical Computing
Data Analytics for Engineering, Policy Analysis and Management
Inversion Modeling & Data Assimilation
Spatial Statistics and Modelling
Environmental Quantitative Methods
Python Scripting for GIS

In Undergraduate
Probability and Statistics
Computer Programming (C++)
Applied Mathematics I
Applied Mathematics II
Numerical Methods

Online (Coursera, edx, Udacity)
Machine Learning
BerkeleyX: CS100.1x Intro to Big Data with Apache Spark
MITx - 6.00.1x Intro to Computer Science and Programming Using Python
Practical Machine Learning
BerkeleyX: CS190.1x Scalable Machine Learning
Developing Data products
Intro to Data Science
DAT201x: Querying with Transact-SQL
R Programming
Reproducible Research
The Data Scientist's Toolbox
Getting and Cleaning Data
Regression Models
MITx: 15.071x The Analytics Edge
W3C-HTML5
Statistical Inference
Exploratory Data Analysis
Intro to Hadoop and MapReduce
Mining Massive Datasets

Other Skills

- **Operating Systems**: Windows , Unix and Linux
- **Software:** Python, R, Apache Spark, Hadoop, SQL, Matlab, C++, Octave, GRADS, Ferret, NCL, WRF, ArcGIS, SWAT, ERDAS IMAGINE, ENVI, RegCM, Fortran, HTML5, JavaScript, CSS, Git

Selected Presentations

Berhane F and BF Zaitchik, 2015: The influence of the MJO on Spring Equatorial West African convection. 95th AMS Annual Meeting 2015, Sixth Conference on Weather, Climate, and the New Energy Economy, Phoenix, AZ.

Berhane F and BF Zaitchik, 2014: Intraseasonal variability of the impacts of the Madden-Julian Oscillation on East African long and short rains. 94th AMS Annual Meeting 2014, Second Symposium on Prediction of the Madden-Julian Oscillation: Impacts on Weather and Climate Extremes, Atlanta, GA.

Berhane F and BF Zaitchik, 2014: Intraseasonal variability of the impacts of the Madden-Julian Oscillation in the Gulf of Guinea. 94th AMS Annual Meeting 2014, Fifth Conference on Weather, Climate, and the New Energy Economy, Atlanta, GA.

Berhane F, BF Zaitchik and A Dezfuli, 2013: Evolution of intraseasonal precipitation variability in the Blue Nile River basin. 93rd AMS Annual Meeting 2013, 25th Conference on Climate Variability and Change, Austin, Texas, USA.

Berhane F, 2013: Modulation of daily rainfall over Africa by the Madden-Julian oscillation. 5th annual Atmosphere-Ocean Science Days seminar, Department of Earth and Planetary Sciences, Johns Hopkins University, Baltimore, Maryland

Berhane F, 2013: Intraseasonal variability of the modulation of daily rainfall over Africa by the Madden-Julian oscillation. Atmosphere-Ocean Seminar. Department of Earth and Planetary Sciences, Johns Hopkins University, Baltimore, Maryland

Berhane F, 2013: Modulation of daily rainfall over Africa by the Madden-Julian oscillation. Journal Club, Department of Earth and Planetary Sciences, Johns Hopkins University, Baltimore, Maryland

Berhane F, 2012: Intraseasonal variability of precipitation in the Blue Nile River Basin. Climate Dynamics of Tropical Africa: Present Understanding and Future Directions, Department of Earth and Planetary Sciences, Johns Hopkins University, Baltimore, Maryland, USA.

Berhane F, 2012: Rainfall anomalies in the Blue Nile basin and their teleconnections with the Indian Summer Monsoon. Journal Club, Department of Earth and Planetary Sciences, Johns Hopkins University, Baltimore, Maryland

Berhane F, 2012: Evolution of drivers and mechanisms of precipitation variability in the Blue Nile River Basin. Eastern Nile Technical Regional Office- Nile Basin Initiative. Addis Ababa, August 2012.

Berhane F, 2012: Model based assessment of potential impacts of climate change on the flow of the Blue Nile Basin. Eastern Nile Technical Regional Office- Nile Basin Initiative. Addis Ababa, August 2012.

Berhane F, Anyah R.O., 2010: Hydrological Response to Climate Change over the Blue Nile Basin Distributed hydrological modeling based on surrogate climate change scenarios. American Geophysical Union Fall Meeting 20140, San Francisco, California, USA.

Professional Memberships

Member of American Meteorological Society
Member of American Geophysical Union