

## BOHAR SINGH

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### EDUCATION

#### Ph.D. in Climate Dynamics

*Aug, 2011 – Oct, 2017*

Dept. of Atmospheric, Oceanic, and Earth Sciences (AOES)  
George Mason University, Fairfax, VA

#### Master of Technology in Climate Science

*August, 2009 – May, 2011*

Centre for Atmospheric and Oceanic Sciences (CAOS)  
Indian Institute of Science, Bangalore, India

#### Master of Science (Physics Hons. Sc.)

*August, 2006 – May, 2009*

Department of Physics  
Panjab University, Chandigarh

### AREAS OF INTEREST

- Intra seasonal variability (20-100 days) of tropical climate
- Northward propagation of summer intra seasonal oscillation and its mechanisms
- Machine learning, Data Mining, and its applications in Climate Science
- Seasonal and interannual variability of intraseasonal variability
- Climate services at sub-seasonal time scale

### RESEARCH EXPERIENCE

#### Associate Research Scientist

**Advisor:** Dr. Andrew W. Robertson

Nov 2019 – Present, IRI, Columbia University, New York

#### Postdoctoral Associate

**Advisor:** Prof. Eric D. Maloney

Nov 2017 – Oct 2019, CSU, Fort Collins

#### Ph.D.: Graduate Research Assistant

**Advisor:** Prof. James L. Kinter

Aug 2011 – Oct, 2017, GMU, Fairfax

#### M.Tech.: Research Associate

**Advisor:** Prof. Arindam Chakraborty

Aug 2009 – June, 2011, IISc, Bangalore

### SCHOLARSHIPS AND AWARDS

- NRC Research Associateship program (RAP): Oct 2017
- Dissertation Completion Grant Jan 2017 – May 2017
- Grantham Fellowship (Awarded by Divecha Centre for Climate Change, IISc.) Jan 2010 – Jul 2011
- Ministry of Human Resources and Development, India, Scholarship Aug 2009 – Aug 2011
- Winner of Campus Climate Change Championship Competition 2010 Jan 2010

### RELEVANT COURSEWORK

- **Climate Science Majors:** Introduction to the Physical Climate System, Introduction to Atmospheric Dynamics, Physical and Dynamical Oceanography, Atmosphere-Ocean Interactions, Land-Climate Interactions, Numerical Methods, Foundations of Computational Sciences, Numerical Methods for Climate Modelling, Geophysical Fluid Dynamics Predictability of Weather and Climate, Mathematical Methods in Climate Science, Statistical Methods in Climate Research, Advanced Statistical Methods in Climate Research
- **Physics Major:** Mathematical physics, Computational physics, Numerical Analysis, Optimization techniques

### COMPUTATIONAL SKILLS

- **Programming Languages:** FORTRAN, MATLAB, R, Python, NCL, NCO

- **Graphical Tools:** Grads, Ferret, matplotlib

## PUBLICATIONS

14. Han, E., Faye, A., Diop, M., **Singh, B.**, Ganyo, K.K. and Baethgen, W., 2022. Evaluating Agronomic Onset Definitions in Senegal through Crop Simulation Modeling. *Atmosphere*, 13(12), p.2122.
13. Sengupta, A., **Singh, B.**, DeFlorio, M.J., Raymond, C., Robertson, A.W., Zeng, X., Waliser, D.E. and Jones, J., 2022. Advances in Subseasonal to Seasonal Prediction Relevant to Water Management in the Western United States. *Bulletin of the American Meteorological Society*, 103(10), pp.E2168-E2175.
12. Grossi, A., Robertson, A., Muñoz, A., **Singh, B.** and Dinku, T., 2022. East and Southern Africa Regional Training On the Improved NextGen Seasonal Forecasting Approach (PyCPT 2).
11. Almazroui, M., Ehsan, M.A., Tippet, M.K., Ismail, M., Islam, M.N., Camargo, S.J., Abid, M.A., O'Brien, E., Kamil, S., Robertson, A.W. and **Singh, B.**, 2022. Skill of the Saudi-KAU CGCM in Forecasting ENSO and its Comparison with NMME and C3S Models. *Earth Systems and Environment*, 6(2), pp.327-341.
10. Grossi, A., Dinku, T., Faniriantsoa, R., Robertson, A. and **Singh, B.**, (2021). Regional Training for East and Southern Africa.
9. Fahad, A.A., **Singh, B.**, Kamal, M., Ahmed, T., Kibria, M. and Chowdhury, N.R., (2021). The role of local topography and sea surface temperature on summer monsoon precipitation over Bangladesh and northeast India. *International Journal of Climatology*.
8. Bui, H. X., Maloney, E. D., Riley Dellaripa, E. M., & **Singh, B.** (2020). Wind speed, surface flux, and intraseasonal convection coupling from CYGNSS data. *Geophysical Research Letters*, 47, e2020GL090376. <https://doi.org/10.1029/2020GL090376>
7. **Bohar Singh, J. L.** Kinter III, 2020: Tracking of Tropical Intraseasonal Convective Anomalies: 1. Seasonality of the Tropical Intraseasonal Oscillations, *J. Geophys. Res.*, DOI: 10.1029/2019JD030873
6. Maloney, E. D., A. Gettelman, Y. Ming, J. D. Neelin, D. Barrie, A. Mariotti, C.-C. Chen, Y.-H. Kuo, **Bohar Singh, H.** Annamalai, A. Berg, J. F. Booth, S. J. Camargo, A. Dai, A. Gonzalez, J. Hafner, X. Jiang, X. Jing, D. Kim, A. Kumar, Y. Moon, C. M. Naud, A. H. Sobel, K. Suzuki, F. Wang, J. Wang, A. A. Wing, X. Xu, and Ming Zhao, 2019: A framework for process-oriented evaluation of climate and weather forecasting models. *Bull. Amer. Meteor. Soc.*
5. **Bohar Singh, Ben Cash, J. L.** Kinter III, 2018: Indian Summer Monsoon Variability Forecasts in the North American Multimodel ensembles, *Climate Dynamics*, 1-14, DOI: 10.1007/s00382-018-4203-6
4. **Bohar Singh and J. L.** Kinter III, 2016: Tracking of Tropical Intraseasonal Convective Anomalies. In Proc. 6th Inter. Workshop on Climate Informatics (CI 2016), Banerjee et al. eds., NCAR Tech. Note, TN-529, 61-64 (<http://dx.doi.org/10.5065/D6K072N6>)
3. Rodrigo J. Bombardi, Edwin K Schneider, Lawrence Marx, Subhadeep Halder, **Bohar Singh, Ahmed B** Tawfik, Paul A Dirmeyer, James L Kinter III, 2014: Improvements in the representation of the Indian summer monsoon in the NCEP climate forecast system version 2. *Climate Dynamics*, 45, 2485-2498. DOI: 10.1007/s00382-015-2484-6
2. Dirmeyer, Paul A., Yan Jin, **Bohar Singh, Xiaoqin Yan**, 2013: Evolving Land –Atmosphere Interactions over North America from CMIP5 Simulations. *J. Climate*, 26, 7313–7327
1. Dirmeyer, Paul A., Yan Jin, **Bohar Singh, Xiaoqin Yan**, 2013: Trends in Land –Atmosphere Interactions from CMIP5 Simulations. *J. Hydrometeor*, 14, 829–849

## CONFERENCE PRESENTATIONS

- **Singh, B.**, Ehsan, M.A. and Robertson, A.W., 2021, December. Skill Assessment of state-of-the-art seasonal forecasting models in simulating summer monsoon rainfall over Bangladesh. In *AGU Fall Meeting 2021*. AGU.
- Trzaska, S., **Singh, B.** and Robertson, A.W., 2021, December. Characteristics of African Easterly Waves in the SubX forecasting systems. In *AGU Fall Meeting 2021*. AGU.
- **Singh, B.**, Robertson, A.W., Tippet, M. and Acharya, N., 2021, December. Probabilistic multi-model sub-seasonal climate forecasts of precipitation and temperature using skill-based model weighting. In *AGU Fall Meeting 2021*. AGU.
- Ehsan, M.A.A. and **Singh, B.**, 2021, December. Variability and potential predictability of summer monsoon rainfall over Bangladesh. In *AGU Fall Meeting 2021*. AGU.

- E Maloney, H Bui, E Riley Dellaripa, **Bohar Singh**, Wind Speed, Surface Flux, and Convection Coupling from CYGNSS Data, EGU General Assembly Conference Abstracts, EGU21-12855
- **Bohar Singh**, ED Maloney, Wind Speed and Surface Fluxes from CYGNSS and Their Role in MJO Dynamics, 100th American Meteorological Society Annual Meeting
- Andrew W. Robertson, **Bohar Singh**, Andre Kamga Foamouhoue, Seydou B Traore, Toward Development of Multi-model Subseasonal Probabilistic Forecasts of Precipitation for West Africa: AGU Fall Meeting, Online, CA, 1-17 December 2020
- **Bohar Singh**, Andrew Robertson, Sylwia Trzaska, Ousmane Ndiaye and Oumar Konté, Boreal summer sub-seasonal predictability of rainfall and monsoon onset over Senegal: AGU Fall Meeting, Online, CA, 1-17 December 2020
- **Bohar Singh**, Andrew Robertson, Michael Tippett and Nachiketa Acharya, Probabilistic multi-model sub-seasonal climate forecasts using skill-based model weighting : Climate Diagnostics & Prediction Workshop, 20–22 October 2020
- **Bohar Singh**, Eric D Maloney, Wind Speed and Surface Fluxes from CYGNSS and Their Role in MJO Dynamics: 100th American Meteorological Society Annual Meeting: Boston, 12-16 January
- Emily Fletcher, Michael Natoli, **Bohar Singh**, Eric Maloney: Changes in North American Monsoon precipitation in a warmer climate: 99th American Meteorological Society Annual Meeting, Phoenix, 6-10 January
- **Bohar Singh** and Eric D. Maloney: MJO Pacific Teleconnection: Interaction between MJO and QBO, AGU Fall Meeting, Washington DC, 10-14 December 2018
- **Bohar Singh** and James L. Kinter: Similarities and Differences in BSISO over the Indian Ocean and the West Pacific Ocean, 33rd Conference on Hurricanes and Tropical Meteorology Ponte Vedra FL, 16-20 Apr. 2018
- **Bohar Singh** and James L. Kinter: Seasonality of the Tropical Intraseasonal Oscillations: Sensitivity to Mean Background State, AGU Fall Meeting, San Francisco, CA, 12-16 December 2016
- **Bohar Singh** and James L. Kinter: Intraseasonal variability in SpCCSM4: Impact of Ocean dynamics and Mean state, Modeling Hierarchies Workshop - World Climate Research Programme, Princeton University, New Jersey, USA, 2-4 November 2016
- **Bohar Singh** and James L. Kinter: Tracking of Tropical Intraseasonal Convective Anomalies, 6th International Workshop on Climate Informatics, NCAR Boulder, CO, 22-23 September 2016
- **Bohar Singh** and James L. Kinter, Seasonality of Tropical intraseasonal oscillations, AMS Annual Meeting, New Orleans, LA, 10-14 January 2016
- **Bohar Singh** and James L. Kinter, Seasonality of Tropical intraseasonal oscillations, AGU Fall Meeting, San Francisco, CA, 14-18 December 2015
- Rodrigo J Bombardi, Edwin K Schneider, Lawrence Marx, Subhadeep Halder, **Bohar Singh (Presenter)**, Ahmed B Tawfik, Paul A Dirmeyer, James L Kinter III, Sensitivity of Indian Summer Monsoon Rainfall Simulation to Convection Parametrizations and Convective trigger Functions., Annual Workshop on Monsoon-2014 and National Symposium of IMSP, Indian Institute of Tropical Meteorology, Pune, India, Mar 2-3 2015
- Invited talk (Paul A. Dirmeyer): Historical and future trends in land atmosphere interactions from CMIP5, Gordon Conf. on Radiation and Climate – 9 July 2013
- Dirmeyer, P. A., Y. Jin, **Bohar Singh**, and X. Yan, 2012: Land-atmosphere coupling trends in a changing climate. 1st GEWEX Pan-Global Atmospheric System Study (GASS) Conference, Boulder, Colorado, USA, 10-14 September 2012, PM41

## PEER REVIEWS

- Peer reviewing in following journals:
  - Climate Dynamics
  - Journal of Atmosphere
  - Journal of Geophysical Research-Atmosphere
  - Theoretical and applied Climatology
  - Journal of Climate
  - Weather and Forecasting
  - International Journal of Climatology

## IN PRINT MEDIA

- Voosen, Paul (2019, June 12). NASA overcomes military's GPS tweaks to peer inside hurricanes. *Science*. doi:10.1126/science.aay3678

## **PROFESSIONAL MEMBERSHIPS**

- American Geophysical Union
- American Meteorological Society