Krishna Mohan K.S *Curriculum Vitae*

Personal Information

Name	Krishna Mohan K.S
Gender	Male
Date of Birth	9^{th} December 1985
Office Address	School of Environmental Studies, Cochin University of Science and Technology, Kochi 682022, Kerala, India
Permanent Address	Krishna, Ponganadu P.O, Kilimanoor, Trivandrum, Kerala, India - 695601
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Nationality	Indian

Education

Aug 2009 – Sep 2013 **Ph.D in Atmospheric Sciences** from Department of Atmospheric Sciences, Cochin University of Science and Technology, India

- **Thesis title:** Environmental Influences on the Frequency and Intensity of North Indian Ocean Tropical Cyclones.
- **Advisor:** Prof. Dr. K. Mohanakumar
- **Ph.D awarded on:** September 2013

Aug 2006 – Jul 2008 **M.Sc in Meteorology** from Department of Atmospheric Sciences, Cochin University of Science and Technology, Cochin, India

- **Subjects:** Meteorology, Oceanography, Mathematics, Computer programming
- **Marks: 7.7** GPA out of 10

Aug 2003 – Jul 2006 **B.Sc in Physics** from University of Kerala, India.

- **Subjects:** Physics, Mathematics, Chemistry
- **Marks:** Percentage: **87.9%**

Jun 2001 – Mar 2003 **Plus two (12th)** from Higher Secondary Board, Kerala, India.

- **Subjects:** Physics, Mathematics, Chemistry, Biology
- **Marks:** Percentage: **74%**

Mar 2001 **SSLC (10th)** from Board of Secondary Education, Kerala.

- **Marks:** Percentage: **77.3%**

Professional Experience

February 2021 - now **Assistant Professor** at School of Environmental Studies, Cochin University of Science and Technology, Kochi, Kerala, India.

Aug 2017 – February 2021 **Research Associate** at Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science, Bangalore, India on the topic Aerosol-Climate interactions on the project entitled **'Climate Modeling of Geo-engineering'.**

- Ported and configured NCAR Comminity Earth System Model (CESM) in high performance computing (HPC) platforms SahasraT and Tyrone at Supercomputer Education and Research Centre, IISc, India.
- Generated and implemented stratospheric aerosol forcing files for geo-engineering experiments for CESM Community Atmosphere Model version 4.
- Conducted various geo-engineering experiments to study the sensitivity of climate to the altitude of stratospheric aerosol layer.
- Analysed NCAR 'SO2 injection matrix' simulations to study the impacts of meridionaly varying geo-engineering aerosol injection locations in the global monsoon precipitation.

- Climate modeling experiments are conducted to study the impacts local and remote Black Carbon aerosols on the Indian summer monsoon precipitation.
- **Achievements:** Publications: 5 (International: 2, National: 1, Under review: 1, Under preparation : 1)

Apr 2014 – Mar 2016 **Postdoctoral fellow** at Laboratoire d'oceanographie et du climat : experimentations et approches numeriques (LOCEAN), Pierre and Marie Curie University, Paris, France on the project entitled **'Influence of air-sea coupling on tropical cyclone intensification in the Bay of Bengal'.**

- Ported and configured NEMO-Oasis-WRF (NOW) model at 25 km resolution for Indian Ocean and western Pacific in HPC platform Curie in TGCC, CEA, France.
- Modified and configured NEMO ocean model to study the effect salinity stratification due to freshwater flux on Bay of Bengal and its effect on Indian monsoon rainfall.
- Simulated various atmosphere-ocean interaction experiments to study the sensitivity of Indian monsoon and Indian Ocean tropical cyclones to the upper ocean stratification in Bay of Bengal.
- **Achievements:** Publications: 3 (International: 3)

Aug 2009 – Sep 2013 **Research fellow (Ph. D)** at Department of Atmospheric Sciences, Cochin University of Science and Technology, India on the topic **'Environmental Influences on the Frequency and Intensity of North Indian Ocean Tropical Cyclones'.**

- A comprehensive analysis of North Indian Ocean tropical cyclone genesis and intensification is done with observational/reanalysis data-sets (tropical cyclone data-sets such as IMD and IBtRACS, and reanalysis data-sets such as NCEP/NCAR and ERA-interim).
- The changes in frequency of North Indian Ocean tropical cyclones, and its variability in intra-seasonal (MJO), inter-annual (ENSO), and decadal time-scales are studied.
- The North Indian Ocean tropical cyclone intensity changes related to environmental parameters over the Indian Ocean region are analysed. The changes related to upper ocean heat content and dynamic features related to the high speed center of the Sub-Tropical Jetstream are analysed in detail.
- **Achievements:** Publications: 2 (International: 2)

Aug 2008 – Jul 2009 **Project Junior Research Fellow** at Department of Atmospheric Sciences, Cochin University of Science and Technology, Cochin, India on the project entitled **'Measoscale Modeling of Monsoon related Predictions'.**

- Studied the intra-seasonal changes in Indian summer monsoon precipitation and the role of ocean mixed layer using Varsha GCM (a modified version of NCEP T80 model from National Aerospace Laboratory, Bangalore).
- Analyzed the impact of changes in oceanic mixed layer depth in Indian summer monsoon intra-seasonal oscillations by implementing an ocean mixed layer in the model, estimated from the Argo profiles.

Technical Skills

Models Expertise in climate modelling (Community Earth System Model - CESM, Varsha GCM - a modified NCEP T80 model) and regional climate modelling (NOW - NEMO-Oasis-WRF).

- Porting and configuring climate and weather models in multiple HPC environments such as Cray, Bullx, and Intel.
- Modifying atmosphere/ocean model codes for experiments.

Datasets Proficiency in handling and analysing large volume of datasets (observation, reanalysis, and satellite) in different data formats like NetCDF, HDF, GRIB, text files, etc.

Softwares Expertise in using general and meteorological related softwares such as NCL, Python, Matlab, GrADS, Ferret and IDL for data management and analysis.

- Handling large datasets using software such as CDO and NCO.
- Proficiency in shell scripting.

- Experience in using 3D visualisation softwares such as Paraview.

Operating systems — Extensive experience in using programming environments in Linux and Mac operating systems.

Awards and Achievements

April 2014 — Secured Indo-French Centre for the Promotion of Advanced Research (IFCPAR/CEFIPRA), funding for postdoctoral research in France.

Dec 2008 — Qualified CSIR (Council of Scientific and Industrial Research) Research Fellowships examination with CSIR JRF-NET.

Mar 2002 — Qualified "Diploma in Computer Applications" from Rastriya Computer Saksharatha Mission.

Publications

1 **Krishnamohan K.S.**, Modak., A, O., and Bala., G. Effects of local and remote black carbon aerosols on summer monsoon precipitation over India. *Environmental Research Communications*. https://doi.org/10.1088/2515-7620/ac18d1 (Impact Factor **2.104**)

2 **Krishnamohan K.S** and Bala, G., Sensitivity of global monsoon precipitation to the latitude of stratospheric aerosol injections (Under review in *Climate Dynamics*).

3 **Krishnamohan, K.S.**, Bala, G., Cao, L., Duan, L., and Caldeira, K. (2020). The Climatic Effects of Hygroscopic Growth of Sulfate Aerosols in the Stratosphere. *Earth's Future*, 8, e2019EF001326. https://doi.org/10.1029/2019EF001326 (Impact factor **7.50**).

4 **Krishnamohan, K.S.**, Bala, G., Cao, L., Duan, L., and Caldeira, K. (2019). Climate System Response to Stratospheric Sulfate Aerosols: Sensitivity to the Altitude of the Aerosol Layer. *Earth System Dynamics*, Vol 10, pp.10, 885–900. https://doi.org/10.5194/esd-2019-21 (Impact factor **5.540**).

5 **Krishnamohan, K.S.**, Vialard, J., Lengaigne, M., Masson, S., Samson, G., Pous, S., Neetu, S., Durand, F., Shenoi, S. and Madec, G. (2019) Is there an effect of Bay of Bengal salinity on the Indian Ocean Rainfall? *Deep Sea Research Part II Topical Studies in Oceanography*, doi: 10.1016/j.dsr2.2019.04.003 (Impact factor **2.732**).

6 **Krishnamohan, K.S.**, Mohanakumar, K. and Joseph, P. V. (2013). Climate Change in Tropical Cyclones and Monsoon Depressions of North Indian Ocean In book: *Monitoring and Prediction of Tropical Cyclones in the Indian Ocean and Climate Change, Springer Netherlands*, pp.33-39.

7 **Krishnamohan, K.S.**, Mohanakumar, K. and Joseph, P. V. (2012). The influence of Madden–Julian Oscillation in the genesis of North Indian Ocean tropical cyclones. *Theoretical and Applied Climatology*, 109(1), pp. 271–282.(Impact factor **3.179**).

8 Neetu, S., Lengaigne, M., Vialard, J., Samson, G., Masson, S., **Krishnamohan, K.S.**, and Suresh, I. (2019). Premonsoon/postmonsoon Bay of Bengal tropical cyclones intensity: Role of air-sea coupling and large-scale background state. *Geophysical Research Letters*, 46. https://doi.org/10.1029/2018GL081132 (Impact factor **4.72**)

9 Lengaigne, M., Neetu, S., Samson, G., Vialard, J., **Krishnamohan, K.S.**, Masson, S., Menkes, C., and Jullien, S. (2018) Influence of air–sea coupling on Indian Ocean tropical cyclones, *Climate Dynamics*. https://doi.org/10.1007/s00382-018-4152-0 (Impact factor **4.375**).

10 Bala, G., **Krishnamohan K.S.**, and Gupta, A. (2019) Geoengineering research activities in India. *Journal of Governance*, Vol-18, 299-307.

11 Aswathy, V.N., Quass, J., **Krishnamohan K.S.**, Boucher, O., and Quass., M. How long large and intense marine cloud experiment needs to be. (Under preparation, to be submitted in *Earths future*).

Conferences

Krishnamohan, K.S. and Bala, G., Stratospheric Aerosol Geoengineering: Sensitivity of Global Monsoon precipitation to latitude of injections, American Geophysical Union Fall Meeting 2020, December 2020.

Krishnamohan, K.S., Bala, G., Cao, L., Duan, L., and Caldeira, K. The Climatic Effects of Hygroscopic Growth of Sulfate Aerosols in the Stratosphere, European Geophysical Union General Assembly, May 2020.

Krishnamohan, K.S., Bala, G., Cao, L., Duan, L., and Caldeira, K. Climate System Response to Stratospheric Sulfate Aerosols: Sensitivity to the Altitude of the Aerosol Layer, GeoMIP 2019 Meeting, Beijing Normal University, China, August 2019.

Krishnamohan, K.S., Vialard, J., Lengaigne, M., Masson, S., Samson, G., Pous, S., Neetu, S., Durand, F., Shenoi, S. and Madec, G. Is there an effect of Bay of Bengal salinity on the Northern Indian Ocean Climate? on 2018 Ocean Salinity Science Conference 2018, Sorbonne University, Paris, France, November 2018.

Krishnamohan, K.S., Vialard, J., Lengaigne, M., Masson, S., Samson, G., Pous, S., Neetu, S., Durand, F., Shenoi, S. and Madec, G. Is there an effect of Bay of Bengal salinity on the Northern Indian Ocean Climate? on 2018 Ocean Sciences Meeting, American Geophysical Union, Portland, Oregon, USA. February 2018.

Krishnamohan, K.S., Mohanakumar, K. and Joseph, P. V., The influence of Madden–Julian Oscillation in the genesis of North Indian Ocean tropical cyclones on National Workshop on Atmospheric-Ocean interaction, Cochin, August 2013.

Krishnamohan, K.S., Mohanakumar, K. and Joseph, P. V., Climate Change in Tropical Cyclones and Monsoon Depressions of North Indian Ocean on Second WMO International Conference on Indian Ocean Tropical Cyclones and Climate Change, New Delhi, February 2012.

References

Dr. K. Mohankumar, Advanced Centre for Atmospheric Radar Research, Cochin University of Science and Technology, Cochin-682022, Kearla, India Email: kmkcusat@gmail.com

Dr. P. V. Joseph, Department of Atmospheric Science, Cochin University of Science and Technology, Cochin-682016, India. Email: joporathur@gmail.com

Dr. Govindasamy Bala, Professor, Centre for Atmospheric and Oceanic Sciences Indian Institute of Science, Bangalore, India. Email: gbala@iisc.ac.in

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